Earnings management and electoral cycle in Brazilian municipalities

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The accruals basis of accounting is gradually being implemented in the Brazilian public sector, which has increased the use of estimates. Although the judgments' main objective is to contribute to decision-making, they can also be used to manage perceptions on performance. This study aims to evaluate the relationship between the electoral cycle and earnings management practices in Brazilian municipalities. Tests based on frequency distribution were conducted, indicating a discontinuity around zero earnings and suggesting that municipalities with 'small surpluses' present higher levels of discretionary accruals. Finally, we gathered empirical evidence of an increase in the level of earnings management in the pre-electoral periods, which is mitigated in environments with strong political competition. The empirical findings indicate a correlation between earnings management practices and the electoral cycle. The study contributes to a growing literature about earnings management in the public sector, helping to identify circumstances that can lead to opportunistic behavior by public managers, especially in relation to elections.

Keywords: earnings management; electoral cycle; municipalities.

Gerenciamento de resultados e ciclo eleitoral em municípios brasileiros

O regime de competência tem sido gradualmente implementado no setor público brasileiro, ampliando o uso de estimativas para sua aplicação. Apesar de ter o objetivo de contribuir para a tomada de decisão, sabe-se que julgamentos também podem ser empregados para gerenciar a percepção sobre a performance. Assim, este estudo tem como objetivo avaliar a relação entre o ciclo eleitoral e a prática de gerenciamento de resultados nos municípios brasileiros. Os testes de análise da distribuição de frequência indicam que há descontinuidade em torno do resultado nulo, além de uma relação positiva entre o nível de gerenciamento de resultados e a probabilidade de o município apresentar um superávit logo acima de zero ("pequeno superávit"). Também foi evidenciado o aumento dos níveis de gerenciamento em períodos pré-eleitorais, bem como ambientes de maior nível de competição política. Portanto, há evidências de práticas de gerenciamento de resultados em função do ciclo eleitoral. O trabalho pretende suprir um pouco da falta de informação sobre o tema no setor público, bem como da identificação de padrões de comportamento oportunista por parte dos gestores locais brasileiros e sua inter-relação com os ciclos eleitorais.

Palavras-chave: gerenciamento de resultados; ciclo eleitoral; municípios.

Gestión de ganancias y ciclo electoral en municipios brasileños

El régimen de competencia se está implementando gradualmente en el sector público brasileño, lo que resulta en el uso de estimaciones para su aplicación. Aunque el objetivo principal es contribuir a la toma de decisiones, los juicios también se pueden utilizar para gestionar las percepciones sobre el rendimiento. Por lo tanto, el propósito de este estudio es evaluar la relación entre el ciclo electoral y las prácticas de gestión de ingresos en los municipios brasileños. Las pruebas basadas en la distribución de frecuencias indican que hay una discontinuidad alrededor de cero ganancias y que los municipios con "pequeños excedentes" presentan niveles más altos de los *accruals* discrecionales. Finalmente, presentamos evidencia empírica de que hay un aumento en el nivel de gestión de ingresos en los períodos preelectorales, que se mitiga en entornos con mayor competencia política. En conjunto, la evidencia empírica indica que existe una relación entre las prácticas de gestión de ingresos y el ciclo electoral. El estudio contribuye a la literatura cada vez mayor sobre la calidad de los ingresos en el sector público, ayudando a identificar circunstancias que pueden conducir a un comportamiento oportunista por parte de los administradores públicos, especialmente en relación con las elecciones.

Palabras clave: gestión de ingresos; ciclo electoral; municipios.

1. INTRODUCTION

The use of accruals basis of accounting has the objective to provide incremental information in addition to cash basis. However, considering potential conflicts of interest, accounting choices may also be used to manage earnings (Dechow, Sloan & Sweeney, 1995). Prior research has already identified determinants for earnings management in the private sector, such as size, type of audit firm, corporate governance structure etc. – for a review, see, for example, Dechow, Ge and Schrand (2010).

In the public sector, there is a movement towards the use of accrual basis of accounting, that would also allow politicians to exert influence on accounting choices in the attempt to control the perceptions and evaluations made by citizens about their behavior and performance (Leary & Kowalski, 1990).

As an example, in Portuguese municipalities, there is evidence that local politicians use accounting choices to avoid disclosing 'negative earnings' close to election periods (Ferreira, Carvalho & Pinho, 2013). However, there are still a few studies about earnings management in the public sector, especially when compared to those in the private sector (Ramos & Costa, 2011).

In Brazil, the federal, regional, and local governments are seeking to implement the International Public Sector Accounting Standards (IPSAS), considering a strategy that aims to promote the exchange of experiences and to induce initiatives that are aligned with the good practices of international public sector accounting (Portaria nº 548, September 24th, 2015). Consequently, Brazilian municipalities are gradually adopting the new Standards, that rely on accrual basis of accounting.

Prior literature indicates that public managers may incur in opportunistic behavior to obtain personal benefits, especially in election periods to maximize votes for reelection (Akhmedov & Zhuravskaya, 2004; Baber & Sen, 1986; Buchanan & Tullock, 1962; Coelho, 2004; Drazen & Eslava, 2005; Nakaguma & Brender, 2006; Preussler & Portugal, 2003). For example, evidence indicate that individuals and parties that are in office may manage public policies (Baber & Sen, 1986) and increase direct income transfers to voters (Akhmedov & Zhuravskaya, 2004).

In this study, a public manager's opportunistic behavior is defined as the change in policies to increase his or her success in the elections. Therefore, the gradual adoption of accrual basis of accounting in Brazil offers an ideal context to investigate actions made by public managers in an environment that considers a diverse set of municipalities based on their characteristics, thus being useful for providing contributions to the ongoing literature on earnings management in the public sector.

Based on the above, the purpose of this study is to investigate if there is a relation between the level of earnings management and pre-electoral and electoral periods in Brazilian municipalities.

We implemented two models to identify earnings management practices: one based on frequency distribution (Burgstahler & Dichev, 1997) and another, based on the estimation of discretionary accruals (an adjusted version of Modified-Jones model implemented by Dechow et al., 1995). Using Burgstahler and Dichev's (1997) model, we find a discontinuity around zero (breakeven) earnings, indicating that municipalities make accounting choices to avoid presenting 'small negative earnings'. We then estimate discretionary accruals and find a positive relation between the level of earnings management and the (pre-)electoral periods, as well as a negative relation with the level of political competition. Taken together, our evidence indicate that Brazilian municipalities implemented earnings management practices in electoral cycles to achieve opportunistic outcomes (i.e., success in elections).

Our findings contribute to the understanding about earnings management in the context of the public sector by identifying behavioral patterns of local Brazilian politicians and their relationship with electoral cycles. Our findings also inform informational intermediaries, such as the Federal and State Courts of Accounts, and the Federal and State 'Auditor-General' Offices, about patterns that may allow for the implementation of specific initiatives based on risk assessments in relation to accounting choices under accrual accounting. The potential new auditing guidelines may be useful to enhance the quality of accounting information in the public sector in Brazil.

This paper is organized as follows: the next section presents a literature review, explaining the development of accounting in the public sector in Brazil, as well as the potential relationship between earnings management and electoral cycles. We present the methodology and hypotheses development in section three. And finally, we present and discuss empirical findings in Section 4. Section 5 concludes.

2. LITERATURE REVIEW

2.1 Public Sector Accounting: International and National Developments

In the context of the new public management, that shifts the paradigm to performance evaluation of public managers, earnings under accrual basis becomes a relevant efficiency indicator for local public policies that are implemented to fulfill citizens' needs and priorities (Ferreira et al., 2013).

The so-called 'traditional public sector accounting', used until the 80's, had the focus on cash-basis with the objective to monitor the execution of the budget allowing an effective control for public spending (García, 2014). Transactions were, therefore, accounted at the receipt or disbursement, not providing additional information needed for decision-making by managers (García, 2014).

Changes with the objective to modernize accounting in the public sector were influenced by factors like globalization, the growing relevance of concerns related to public deficits, competition between public and private sectors for providing specific services, higher pressure for transparency, and the political need to provide public services to fulfill the needs of 'client-citizens' (García, 2014). Accordingly, accounting in the public sector became closer to Standards applied in the private sector because of the need for an approach devoted to efficiency and effectiveness *via* simplifying bureaucracy, enhancing disclosure and transparency, providing more control over public expenditures, and providing flexibility to the decision-making process (García, 2014, p. 349).

Since then, the International Public Sector Accounting Standards Board (IPSASB), under the umbrella of different standard-setting boards established by the International Federation of Accountants (IFAC), develops the of IPSAS. The Standards promote a gradual evolution in the way that economic and financial aspects within the public sector are recognized and disclosed (García, 2014). Among the changes, a significant step forward is the use of accrual basis of accounting, that has the purpose to better reflect economic activities of public entities (Barea, 1994).

There is an expectation that accrual basis will assist in the evaluation and monitoring of public managers, as well as will increase transparency (International Monetary Fund [IMF], 2014). However, there are other contributing factors to promote higher quality accounting information: internal controls, external auditing, and a Legislative Power with the ability to demand from the Executive Power proper documentation and judgment for providing accounting information (Hepworth, 2003).

In Brazil, the need for more transparency and comparability led to the decision to initiate the adoption process of a new accounting model for the public sector, based on the 'international model' (Silva, 2012). The adoption process was initiated in 2008, when the Brazilian Federal Council of Accounting and IFAC signed an institutional memorandum that subsequently led to the issuance of the first set of Brazilian Public Sector Accounting Standards ('Normas Brasileiras de Contabilidade Aplicadas ao Setor Público, NBC TSP 16), as well as to periodically new revisions of the Manual of Public Sector Accounting ('Manual de Contabilidade Aplicada ao Setor Público') (Mota, 2015).

In 2008 the 'Portaria MF nº 184/2008' was issued to establish guidelines to be implemented by public entities in light of 'convergence' (Portaria nº 184, August 25th, 2008). Consequently, there was a significant shift in the concepts related to accounting in the Public Sector in Brazil: from five decades focusing on budgetary aspects to the use of accrual accounting to better inform the decision-making process made by politicians and to enhance transparency to citizens (Mota, 2015).

The Brazilian National Secretary of Treasury issued Portaria nº 584, in 2015, defining the expected dates for implementation of new accounting standards in Brazil. The text was influenced by national and international experiences and the 'gradual implementation design' has the objective to use a logic that is founded in well-defined criteria and proper contextualization (Portaria nº 548, September 24th, 2015). After an open discussion with representatives of federal, state, and local levels, the deadlines for the gradual implementation of accrual accounting were established, considering specific topics, such as obligations with suppliers, provisions, property, plant and equipment, tax credits, among others (Portaria nº 548, September 24th, 2015).

In 2016, the 'convergence process' was intensified by the issuance of new Brazilian Public Sector Standards, including the new Conceptual Framework (NBC TSP EC) to guide the preparation and disclosure of general-purpose accounting standards by public entities (CFC, 2016). The new reports should then provide useful information for users to promote transparency and act, at least in part, as a means for accountability and decision-making (CFC, 2016).

According to the IPSASB (2016), the standards are based on the International Financial Reporting Standards (IFRS), that are widely applied in the private sector, being adjusted or complemented by guidance that considers the specificities of the public sector. Therefore, there is a proximity between criteria for recognition (including measurement) and disclosure, allowing for studies in the public sector to benefit from studies developed with the focus on the private sector, considering appropriate adjustments (Ferreira et al., 2013).

2.2 Earnings management

Earnings management is defined as the use of judgment and estimates, made by managers, to induce a desired outcome that may distort the representation of economic reality. Examples of situations that involve judgments are corporate transaction structuring, evaluation of impairment losses for long-term assets, the choice of the depreciation method, estimation of pension obligations, among others (Healy & Wahlen, 1999). The use of accrual basis yields an inherent necessity for the use of estimates and judgments. Managers, therefore, may use the flexibility to either better inform or to manipulate (Dechow, Richardson & Tuna, 2003). In the context of this study, we focus on earnings management.

Accruals represent the difference between earnings (measured using accrual basis of accounting) and cash flows (Dechow et al., 2010). One possibility to estimate the level of earnings management is the use of a model to decompose total accruals into discretionary and non-discretionary accruals (Dechow et al., 1995). This would be a direct approach to capture overall earnings management (Dechow et al., 2010).

There are several models developed and largely used in prior studies for estimating the level of earnings management (Dechow et al., 1995; Francis et al., 2005; Jones, 1991; Kothari et al., 2005). One of the most widely used models is the modified-Jones model (Dechow et al., 1995). The model is based on the original one developed by Jones (1991), that controls for the effects of changes in economic circumstances and the level of property, plant, and equipment. In the modified model, Dechow et al. (1995) consider that revenues may also be managed, therefore suggesting that only 'cash-revenues' should we included in the models by excluding credit sales. Dechow et al. (2010), however, highlight that there is a need to consider that models that attempt to estimate discretionary accruals may lead to Type I and II errors. Therefore, in this study, we not only use a model to estimate discretionary accruals, but also the one developed by Bursgsthaler and Dichev (1997), based on frequency distributions.

2.2.1 Earnings management and electoral cycles

Przeworski et al. (1999) argues that agency theory may be applied to the relationship between politicians and citizens, with politicians being considered as agents. Citizens, in this context, are considered as principals, since they choose a candidate based on campaign promises that is more suited to their preferences. Politicians, however, may behave opportunistically with the objective to secure reelection when their policies diverge from citizens' preferences. In those cases, there is a conflict of interest, and the agents (i.e., politicians) may use strategies to manipulate the public's perceptions.

Accounting information may be used to inform citizens about public managers' performance and to monitor their political actions. Therefore, in the public sector there are conflicts of interest that may induce the occurrence of earnings management practices (Ferreira et al., 2013). This approach is similar to that applied in the private sector for agency conflicts where the principal uses accounting information to reduce information asymmetry and as the basis for contracts (Zimmerman, 1977).

Wynne (2007) raises concerns about the movement towards accrual basis in the public sector because of the risk of having accounting choices being made by political motivation. On the other hand, the European Federation of Accountants (2003) argues that this effect may be mitigated by other factors during the implementation phase, such as external auditing, strengthening ethics within public entities, and using a control system that is accepted and understood among departments.

Among the studies related to electoral cycles, Akhmedov and Zhuravskaya (2004) present empirical data that indicate that public spending in 'well-being and assistance' programs increases by 5% in the pre-electoral period in Russia, thus increasing chances for reelection. In Brazilian States, Gonçalves, Funchal and Bezerra (2017) present empirical evidence that investments in infrastructure are influenced by pre-electoral and electoral periods.

Finally, Ferreira et al. (2013) present empirical evidence that local politicians in Portuguese municipalities manage earnings with the objective to avoid disclosing small deficits. The incidence of earnings management, however, would be mitigated in municipalities with stronger political competition (Ferreira et al., 2013).

2.3 Hypotheses

We first investigate if local politicians in Brazilian municipalities manage earnings to avoid disclosing 'small negative earnings'. We expect that local politicians will have the incentive to make accounting choices that would allow to present 'small positive earnings' instead of 'small negative earnings', as in Ferreira et al. (2013) for Portuguese municipalities, and in Australia (Ferreira & Costa, 2011; Pilcher & Zahn, 2008). Therefore, our first hypothesis is presented as follows: **H1** – There is a discontinuity in the distribution of earnings around zero.

We rely on Burgstahler and Dichev's (1997) approach to test hypothesis H1, that is based on frequency distribution, to identify discontinuities around breakeven ('zero earnings').

One possible concern about the discontinuity around zero is the possibility that local politicians weren't managing earnings and, therefore, accounting information would reflect performance accurately (Dechow et al., 2003). Thus, we also consider the level of earnings management, measured by discretionary accruals. We present our second hypothesis as follows: **H2** – The level of earnings management is higher in municipalities that present small positive earnings when compared to those presenting small negative earnings. Not rejecting H2 would imply that local politicians would be managing earnings to achieve their desired outcomes (i.e., avoid presenting negative earnings).

Based on above, prior literature has indicated that politicians tend to change their behavior around electoral periods, including earnings management (Ferreira et al., 2013). We, therefore, evaluate if the level of earnings management is related to the (pre-)electoral cycle. We present our third hypothesis as follows: **H3** – The level of earnings management is higher during (pre-)electoral periods when compared to other periods.

There is an expectation of a positive relationship between the level of discretionary accruals and (pre-)electoral periods (Ferreira et al., 2013). Since prior literature has indicated that political

competition mitigates earnings management, we control for the level of political competition in each Brazilian municipality included in our sample. We, therefore, also expect a negative relation between political competition and the level of earnings management.

3. METHODOLOGY

3.1. Sample

Our sample comprises all annual accounting information included in the 'declarações de contas anuais' (DCAs), from Brazilian municipalities, sent to the Ministry of Finance ('Ministério da Fazenda') *via* the Public Sector Accounting and Fiscal System ('Sistema de Informações Contábeis e Fiscais do Setor Público Brasileiro' – Siconfi), between 2013 and 2016. In addition, we collect data for the outcome of the 2016 municipal elections, available at the Superior Electoral Court's ('Tribunal Superior Eleitoral' – TSE) website.

Our sample period considers one full-electoral cycle for Brazilian municipalities, allowing for identifying if there is a higher incidence of earnings management in the (pre-) electoral periods (2015 and 2016), since this is the period that may influence public spending in Brazil (Gonçalves et al., 2017). Our final sample comprises 18,523 observations. We present our sample distribution, by year, in Table 1, presented below.

TABLE 1   NUMBER OF OBSERVATIONS BY YEAR

YEAR	No. OF OBSERVATIONS
2013	2,624
2014	5,182
2015	5,401
2016	5,316

Source: Research data.

According to Table 1, 2013 is the year with the fewest number of observations. The reason for this is that sending information using the Siconfi system became mandatory only in 2014. This would be considered as a limitation of this study. All continuous variables were 'winsorized' at the top and bottom one-percent to mitigate the effects of outliers.

3.2. Models

To test hypothesis H1, the method developed by Burgstahler and Dichev (1997), based on the Z-statistic. The test assumes that the frequency distribution of earnings should follow a normal distribution. Therefore, we use the following equation to calculate Z-statistic:

$$Z = \frac{na_i - ne_i}{\sigma(na_i - ne_i)} \quad \text{(1)}$$

Where na_i is the actual number of observations in interval i; is the expected number of observations in interval i, estimated as the average number of observations between the previous interval (i_{-1}) and the subsequent interval (i_{+1}); and $\sigma(na_i - ne_i)$ is the standard-deviation of the difference between the actual and the expected number of observations for interval i. We calculate using the following equation:

$$\sigma = \sqrt{Np_i(1 - p_i) + \frac{N(p_{i-1} + p_{i+1})(1 - p_{i-1} - p_{i+1})}{4}} \quad \text{(2)}$$

N represents the total number of observations in the sample; is the probability that an observation is included in interval i; and p_{i-1} and p_{i+1} are the probabilities that an observation is included in the previous (i_{-1}) and subsequent (i_{+1}) intervals, respectively.

To test hypothesis H2, we first estimate discretionary accruals using the Modified-Jones model (Dechow et al., 1995), that was also used in the public sector, with adjustments, by Ferreira et al. (2013). We use the indirect method to estimate total accruals (Healy, 1985; Jones, 1991), according to the following equation:

$$TA_{it} = [(\Delta AC_{it} - \Delta Disp_{it}) - (\Delta PC_{it} - \Delta DIV) - Deprecia_{it}] \quad \text{(3)}$$

TA_{it} represents total accruals for municipality i for year t; ΔAC_{it} is the change in current assets for municipality i between years t and t-1; $\Delta DISP_{it}$ is the change in cash and equivalents for municipality i between years t and t-1; ΔDIV_{it} is the change in short-term loans and other onerous obligations for municipality i between years t and t-1; ΔPC_{it} is the change in current liabilities for municipality i between years t and t-1; and $Deprecia_{it}$ is the sum of accrual-based expenses (VPD), including depreciation, amortization, and depletion for municipality i for year t.

After calculating total accruals, we use the Modified-Jones model (Dechow et. al.,1995) to estimate non-discretionary accruals. All variables are deflated by lagged total assets. We use the following equation:

$$TA_{it} = a_1(1/A_{it-1}) + \beta_1(\Delta REV_{it} - \Delta REC_{it}) + \beta_2(PPE_{it}) + \varepsilon_{it} \quad \text{(4)}$$

A_{t-1} represents total assets for municipality i for year t-1; represents changes in total revenues for municipality i between years t and t-1, deflated by lagged total assets (year t-1); ΔREC_t represents changes in total receivables for municipality i between years t and t-1, deflated by lagged total assets (year t-1); and PPE_t represents property, plant, and equipment for municipality i for year t, deflated by lagged total assets (year t-1).

We use the residuals of Equation 4 as a proxy for discretionary accruals (DA), our measure for the level of earnings management. In the private sector, the regression is usually estimated by industry-

year. In the public sector, we run the regression controlling by population by using deciles (i.e., we run the regression for each decile). Therefore, we expect that the estimation would yield more appropriate results by considering municipalities with similar characteristics.

To test hypothesis H2, we then evaluate if municipalities presenting 'small positive earnings' are those with higher levels of earnings management. We, therefore, test H2 using a Probit model (Ferreira et al., 2013):

$$Inter_{it} = a_{it} + \beta_1(DA_{it}) + CONTROLS + \varepsilon_{it} \tag{5}$$

$inter_{it}$ is an indicator variable that segregates municipalities into two groups: those presenting 'small negative earnings' (Inter=0) and those presenting 'small positive earnings' (Inter=1). We run the model including fixed effects for State and year.

To test hypothesis H3, we run a regression model inspired in Ferreira et al. (2013), with the objective to evaluate if the levels of discretionary accruals differ when considering (pre-)electoral periods and other periods, while also controlling for political competition. Accordingly, we run the following equation:

$$DA_{it} = \alpha_{it} + \beta_1(Ielection_{it}) + \beta_2(Dcomp_{t+1}) + \varepsilon_{it} \tag{6}$$

DA_{it} represents discretionary accruals for municipality i for year t, estimated using the Modified-Jones model (Dechow et al., 1995), according to equation 4; $Ielection_t$ is an indicator variable that assumes 1 for (pre-)electoral years (2015 e 2016) and 0, otherwise (2014); $Dcomp_{t+1}$ é an indicator variable that partitions our sample into two groups: it assumes 1 whenever there were three or more candidates receiving votes in the election (high competition), and 0, if there were two or less candidates receiving votes in the election (low competition) in 2016.

We calculate $Dcomp$ inspired in the model developed by Laakso and Taagepera (1979), that demonstrates the number or parties and their respective percentages of votes during the election. The model is used to verify the number of parties in each election (Ferreira et al., 2013), being estimated by the following equation:

$$Comp = \frac{1}{\sum_{i=1}^{n} p_i^2} \tag{7}$$

p_i^2 represents the fraction of valid votes during the election for each party j.

We present and discuss empirical findings in the next section.

4. RESULTS

4.1 Descriptive statistics

We present descriptive statistics for the main variables used in this study in Table 2, as follows:

TABLE 2   DESCRIPTIVE STATISTICS

Paneç A: Descriptive statistics						
Variables	N	Mean	Median	Std. Deviation	min.	max.
Ielection	10.093	0.816	1	0.388	0	1
Dcomp	10.093	0.159	0	0.366	0	1
TA	10,431	-0.00	0.0	0.186	-0.833	0.7
1/A t-1	10,431	0.01	4.77	0.980	-9.75	100
ΔREV– ΔREc	10,431	0.258	0.133	0.742	-18.86	42.27
PPE	10,431	0.778	0.805	0.323	0.01	23.36
DA	10,093	0.008	0.006	0.183	-0.864	0.793
Inter	2,038	0.7	1	0.458	0	1

Ielection is an indicator variable that assumes 1 for (pre-)electoral periods (2015 and 2016) or 0, otherwise; *Dcomp* is an indicator variable that assumes 1 for high-competition municipalities, and 0, for low-competition municipalities, calculated by using the model developed by Laakso and Taagepera (1979): $Comp = \frac{1}{\sum_{i=1}^{n} p_j^2}$.; *TA* represents total accruals, calculated by the following equation $TA_{it} = [(\Delta AC_{it} - \Delta Disp_{it}) - (\Delta LC_{it} - \Delta DIV) - Deprecia_{it}]$; A_{t-1} represents total assets for year t-1; ΔREV_{it} represents changes in in revenues between years t-1 and t; ΔREC_{it} represents changes in receivables between periods t and t-1; PPE_{it} represents property, plant, and equipment for year *t*; all variables used for the estimation of discretionary accruals are deflated by lagged total assets; DA_{it} represents discretionary accruals, estimated by the Modified-Jones model (Dechow et al., 1995): $TA_{it} = a_1(1/A_{it-1}) + a_2(\Delta REV_{it} - \Delta REC_{it}) + a_3(PPE_{it}) + \varepsilon_{it}$; and $Inter_i$ represents an indicator variable that segregates municipalities with 'small negative earnings' (*Inter* = 0) and those with 'small positive earnings' (*Inter=1*).
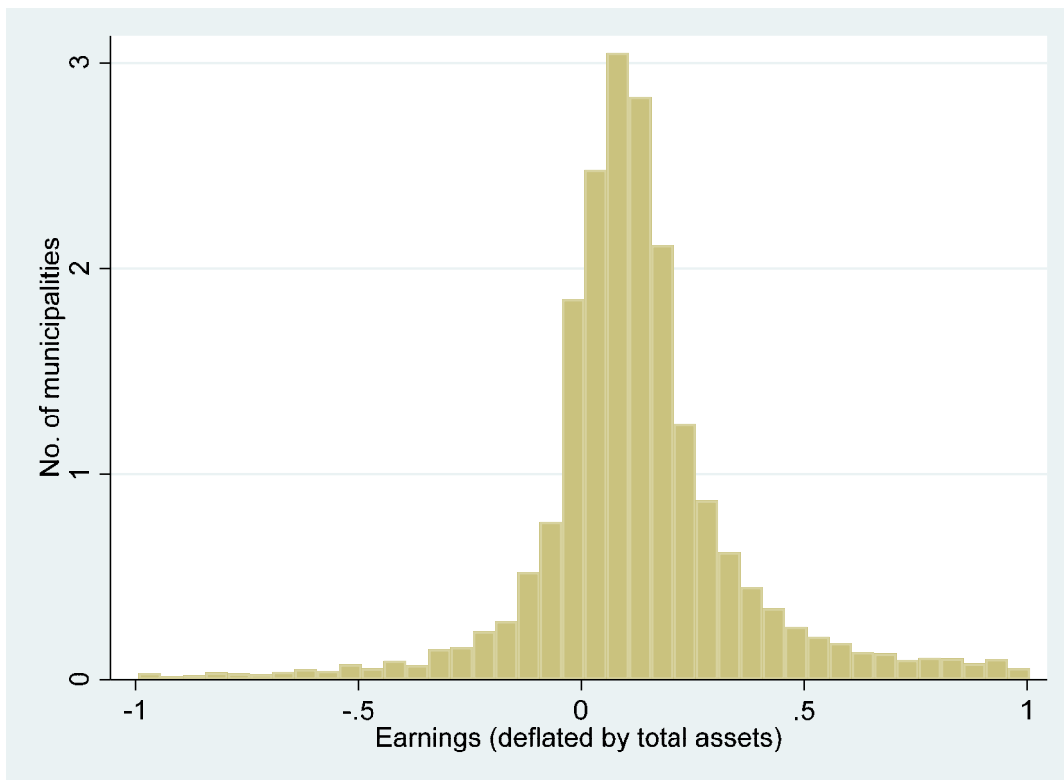
Source: Elaborated by the authors.

The total number of observations for *Ielection* and *Dcomp* is lower, when compared to the other variables. We have fewer observations because there is a lack of information about elections for some municipalities in 2016. We have fewer observations for *Ielection* because we just consider the subsample of municipalities with either 'small positive earnings' or 'small negative earnings'.

4.2. Results for hypothesis H1

We generate a histogram that represents the frequency distribution of earnings disclosed by Brazilian municipalities between 2013 and 2016, with the objective to graphically highlight the discontinuity around breakeven ('zero' earnings). We present the histogram in Figure 1.

FIGURE 1   **FREQUENCY DISTRIBUTION OF THE 'EARNINGS' VARIABLE**

Source: Elaborated by the authors.

Based on Figure 1, it is possible to note an apparent discontinuity between the interval that comprises municipalities with 'small negative earnings' (611 observations) and the interval that comprises municipalities with 'small positive earnings' (1,427 observations). We present the frequency for observations for intervals -3 to +3 in Table 3, below.

TABLE 3   INTERVALS AND FREQUENCY

INTERVAL	LIMITS	OBSERVATIONS
-3	]-0.15;-0.10]	243
-2	]-0.10;-0.05]	360
-1	]-0.05;0.00]	611
0	]0.00;0.05]	1,427
1	]0.05;0.10]	1,503
2	]0.10;0.15]	145
Total number of observations for the entire sample		10,431

Source: Elaborated by the authors.

After using equations 1 and 2, presented in subsection 3.2, we then test if the discontinuity presented in Figure 1 is statistically significant. We present results for the test in Table 4.

TABLE 4   STATISTICAL SIGNIFICANT FOR DISCONTINUITY AROUND 'ZERO' EARNINGS

INTERVAL	Actual observations	Expected observations	Z-statistic (*p-value*)
[-0.05;0.00]	611	893.5	-6.95***
[0.00;0.05]	1,427	1057	12.03***

We use the approach developed by Burgstahler and Dichev (1997), that assumes that the distribution of earnings should follow a normal distribution. We use the following equation to estimate Z-statistic: $Z = \frac{na_i - ne_i}{\sigma(na_i - ne_i)}$, na_i represents the number of actual observations within the interval i; represents the expected number of observations within the interval i, estimated as the average of the number of observations between the previous (i-1) and subsequent intervals (i+1), when considering interval i; and $\sigma(na_i - ne_i)$ is the standard-deviation of the difference between the actual and the estimated numbers of observations for interval i. To calculate the value of σ, the following equation was used: $\sigma = \sqrt{Np_i(1-p_i) + \frac{N(p_{i-1}+p_{i+1})(1-p_{i-1}-p_{i+1})}{4}}$, where N represents the total number of observations in the sample; P_i is the probability that an observation is located in interval i; and p_{i-1} and p_{i+1} are the probabilities that an observation is located in the earlier and later intervals, respectively.

Source: Elaborated by the authors.

Results presented in Table 4 provide empirical evidence that the number of observations in the interval comprising municipalities with 'small negative earnings' is smaller than it would be expected if the frequency would follow a normal distribution. Conversely, there is also empirical evidence that the number of observations in the interval comprising municipalities with 'small positive earnings' is higher than it would be expected if the frequency would follow a normal distribution. Taken together, we fail to reject H1, since there is indication that local politicians manage earnings to avoid presenting 'small negative earnings'.

4.3 Results for hypothesis H2

To test hypothesis H2, we first estimate discretionary accruals using the Modified-Jones Model (Dechow et al., 1995), according to equation 4. We then evaluate the relation between discretionary accruals and disclosure of 'small positive earnings'. We present results for our Probit model in Table 5. Our subsample comprises 2,038 observations (municipalities-year) with earnings near zero, either below or above (i.e., from -0.05 to +0.05), between 2014 and 2016.

TABLE 5   PROBIT MODEL

Panel A: Coefficients estimated via Probit model					
Variablees	N	Coefficients	S.E.	Z-statistic	p-value
Constant	2,038	0.025	0.887	0.03	0.978
DA	2,038	0.417	0.179	2.33	0.020
CONTROLS	Yes				
Panel B: explanatory power					
R2		0.033			

We run the following Probit model: $Inter_{it} = a_{it} + \beta_1(DA_{it}) + \varepsilon_{it}$. $Inter_{it}$ is an indicator variable that assumes 1 for municipalities with 'small posivite earnings' and 0, for municipalities with 'small negative earnings'; and DA_{it} represents discretionary accruals estimated by using the Modified-Jones model (Dechow et al., 1995). We include fixed effects for State and year.
Source: Elaborated by the authors.

Results presented in Table 5 provide empirical evidence about a positive relation between discretionary accruals and the probability for a municipality to present 'small positive earnings' (coefficient on *DA* is 0.417, significant at the five-percent level). Our findings are aligned with those presented by Ferreira et al. (2013) for Portuguese municipalities: empirical evidence indicate that local politicians manage earnings to avoid presenting 'small negative earnings'. We provide an additional analysis using an alternative model, based on 'extreme accruals' to corroborate our main findings. We present and discuss results in subsection 4.5.

4.4. Results for hypothesis H3

To test hypothesis H3, we run a regression to evaluate if the level of discretionary accruals (*DA*) is higher in (pre-)electoral years. We present results in Table 6, below.

TABLE 6   REGRESSION MODEL FOR TESTING HYPOTHESIS H3

Panel A: Coefficients and p-values					
Variables	N	Coefficients	S.E.	T-statistic	p-value
Constant	10,093	-0.004	0.004	-0.87	0.384
Ielection	10,093	0.018	0.005	3.80	0.000
Dcomp	10,093	-0.020	0.005	-3.86	0.000
Panel B: Explanatory power					
R2		0.002			
R2 ajust.		0.002			

We run the following regression model: $DA_{it} = \alpha_{it} + \beta_1(Ielection_{it}) + \beta_2(Dcomp_{t+1}) + \varepsilon_{it}$. DA_{it} represents discretionary accruals estimated using the Modified-Jones model (Dechow et al., 1995); *Ielection* is an indicator variable that assumes 1 for (pre-)electoral years (2015 and 2016) or 0, otherwise; *Dcomp* is an indicator variable that assumes 1 for municipalities with high political competigion and 0 for those with low political competition. We measure political competition using the model developed by Laakso e Taagepera (1979): $Comp = \frac{1}{\sum_{i=1}^{n} p_i^2}$, onde p_i^2 is the proportion of votes obtained by political party *i*.
Source: Elaborated by the authors.

Results presented in Table 6 indicate a positive relation between (pre-)electoral years and discretionary accruals (coefficient on *DA* is 0.018, significant at the one-percent level). Therefore, our findings indicate that local politicians manage earnings with the objective to maximize votes for reelection (Buchanan & Tullok, 1962; Ferreira et al., 2013; Gonçalves et al., 2017). Regarding political competition, and as expected, municipalities with high-competition exhibit lower levels of earnings management (coefficient on *Dcomp* is -0.020, significant at the one-percent level). Our findings are aligned with those presented for Portuguese municipalities (Ferreira et al., 2013).

4.5. Additional Analyses

4.5.1. Extreme accruals: additional test for hypothesis H2

In our main tests, we rely on estimates of discretionary accruals to evaluate if they are positively related to the probability of a municipality to disclose 'small positive earnings'. One potential concern is that the positive relation could be related to accruals reversals from prior periods, and not to accruals originations in the current period. Therefore, and as an additional test, we use the model developed

by Fedyk, Singer and Sougiannis (2020), adjusted for the public sector. The model considers 'extreme accruals' to identify accruals originations and reversals.

We first calculate total current accruals (*TCA*) by adding-back depreciation, amortization and depletion (*deprecia*) to total accruals (*TA*). Therefore, *TCA = TA + deprecia*. According to Fedyk et al. (2020), 'extreme accruals', either positive or negative, would be related to accruals originations, and not to accruals reversals. We rank total current accruals and label those in the top quartile as positive origination accruals.

We rerun a Probit model to test the relation between 'extreme positive accruals' and the probability for a municipality to disclose 'small positive earnings'. We use the following equation:

$$Inter_{it} = a_{it} + \beta_1(Pos\_TCA_{it}) + \varepsilon_{it} \tag{8}$$

$Inter_{it}$ is an indicator variable that assumes 1 for 'small positive earnings' and 0, for 'small negative earnings'. Pos_TCA_{it} is an indicator variable that assumes 1 if total current accruals are in the top quartile of ranked total current accruals in our subsample, and 0, otherwise.

In our (untabulated) results, our findings indicate that there is a positive relation between 'extreme positive accruals' and the probability of a municipality disclosing a 'small positive earnings' (the coefficient on *Pos-TCA* is significant at the five-percent level). We control for size, political competition, and prior period 'small negative earnings'. Our results, therefore, corroborate those presented in our main analyses: there is empirical evidence indicating that local politicians manage earnings upwards to avoid presenting 'small negative earnings'.

5. CONCLUSION

The purpose of this study is to investigate the relation between earnings management practices and electoral cycles made by Brazilian local politicians. Our findings show a discontinuity around 'zero' earnings, thus indicating that accounting choices are made to avoid presenting 'small negative earnings'.

We also find that municipalities that disclose 'small positive earnings' are those exhibiting higher levels of earnings management, measured by discretionary accruals. And finally, we show that the level of earnings management is higher in (pre-)electoral years, although it is mitigated by political competition, being aligned with prior literature (Ferreira et al., 2013).

Our findings should be of interest of entities and departments that have the responsibility for monitoring and transparency since there is an indication of the opportunistic use of accrual accounting in Brazilian municipalities. Empirical evidence highlight that the gradual implementation of accrual accounting in Brazil could also be used opportunistically, and not solely to better inform citizens about the performance of local politicians.

We acknowledge that there are limitations in this study, such as the smaller number of observations for year 2013. And despite using a set of controls, other characteristics were not evaluated, such as different electoral systems (one or two turns). A more in-depth understanding about earnings

management practices and potential mitigating factors could help to enhance accounting quality in the public sector. We suggest that future research expands our knowledge about earnings management practices in the Brazilian public sector, not only considering other levels (State-level, for example), but also governmental departments and other public entities.

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