Political competition as a motivation for earnings management close to zero: the case of Portuguese municipalities

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Abstract

Purpose – The main purpose of this paper is to evaluate if, motivated by political competition, municipalities engage in earnings management practices through discretionary accruals.
Design/methodology/approach – Quantitative methodology.
Findings – Results indicate that, in those municipalities where political competition is greatest, there is a greater tendency to report positive net earnings close to zero. This study also indicates that for such purpose, discretionary accruals are used.
Originality/value – The purpose of this paper is to respond to the lack of information in the area of earnings management in the public sector, to be able to evaluate responsibility, performance and efficiency regarding the allocation of public resources and the degree of satisfaction of citizens/voters' needs-accountability.

Keywords Earnings management, Discretionary accruals, Political competition, Agency theory, Public choice theory

Paper type Research paper

Introduction

Numerous contributions have been made from studies about earnings management in private sector. However, in the public sector, the contributions are limited.

In the public sector in general, and in the municipalities in particular, there has been a progressive demand for the application of an accounting model based upon accrual accounting (Pina *et al.*, 2009; Brusca *et al.*, 2015). The purpose of this is to respond to the lack of information in this area, to be able to evaluate responsibility, performance and efficiency regarding the allocation of public resources and the degree of satisfaction of citizens/voters' needs – accountability. However, the introduction of the accounting model based on accrual basis could, as in the private sector, enhance discretionary in the application of accounting options. The discretionary allowed by the accounting standards coupled with electoral motivations of the mayor (politician elected by the citizens) create conditions for the occurrence of earnings management. So, if mayors engage in earnings management when preparing financial information, the efficiency of accounting as a mechanism for contracting and monitoring is reduced, and inefficiencies arise in the management of public resources that could jeopardize future sustainability.

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In the context of New Public Management, one that has introduced a different paradigm for the performance evaluation of public managers (mayors in the municipalities) (Fowles, 1993; Humphrey, *et al.*, 1993; Johnston and Romzek, 1999; Lerner and Tetlock, 1999; Robinson, 2003; Torres and Pina, 2003a; 2003b; Tooley and Guthrie, 2004; Goddard, 2005) the level of net earnings achieved by municipalities is an efficiency and efficacy indicator.

Therefore, it is an accountability indicator for the mayor aiming to meet citizens/voters' needs. In addition, if the mayor has the ambition of re-election, this is an indicator that can be manipulated by means of accounting, with the purpose of obtaining more votes of the citizens. The negative earnings could be interpreting as the overuse of resources in order to reach a given level of needs satisfaction citizens, and the high positive earnings could be interpreting as tax overloads required to satisfy citizen's needs. From a sustainability perspective, earnings close to zero indicate the capacity of the mayor to keep the level of costs in line with income.

Because of that, some studies were developed to identify if earnings management occurs in the municipalities (Stalebrink, 2002, 2007; Pilcher and Van der Zahan, 2010; Ferreira *et al.*, 2008, 2009a; 2009b, 2012; Arcas *et al.*, 2013; Arcas and Martí, 2016; Drew, 2018; Donnatella *et al.*, 2018).

In Portugal, the municipalities (local government), according to the constitutional principle of municipal autonomy, have at their disposal a wide range of functional responsibilities. These include the direct supply of goods and services to the community. Moreover, with a view to strengthening the level of municipal autonomy, a municipal's budget is independent to the Government's budget, although it respects the principles of the Budget Framework Law (Law *n.*º 91/2001, 20th August). They are also responsible for the efficient and effective application of available resources in accordance with the population's needs. So, the mayor manages a considerable number of resources, which stem from revenues (ruled by law *n.*º 132/2015, 4th September), such as the levy of taxes, the setting of prices and local taxes charged for goods and services provided by municipal organisations, and, finally, from loan contracts.

Regarding accounting, the municipalities, must apply the accounting standards established in the Official Accounting Plan of Local Administration (Decrew-Law no. 54-A/99, 22nd February), since 2001. This is an accounting model that includes standards for budget accounting (based on cash basis), for financial accounting and management accounting (both based on the accrual basis). The standards for the financial accounting are based on the accrual basis, followed the international trend, namely, the International Public Sector Accounting Standards [1] and require the annual financial reporting (balance sheet and income statement, among others). The financial report aims to evaluate the responsibility of the public manager (mayor), the performance of the public organisation and the efficiency in the allocation of public resources. Financial accounting becomes an important tool for reducing uncertainty and for claiming responsibility (Brorström, 1998).

Donatella (2020) for Swedish municipalities, Cohen *et al.* (2019) for Greek and Italian municipalities and Ferreira *et al.* (2013) for Portuguese municipalities studied the determinants (motivations) for earning management and concluded that political competition and the electoral cycle were determinants of earnings management.

This article, which is an extension of the study by Ferreira *et al.* (2013), aims to study if local politicians, who face strong political competition, tend to be more prone to engage in earnings management close to zero. In this sense, it adds knowledge about the relationship between political competition, as a motivation of the local politicians, to earnings management, analysing a longer period with more political electoral cycles.

The study is justified by allowing to analyse whether opportunistic behaviour is maintained over time, independently of the mayor in the exercise of functions, bringing more robust contributions to the literature on political competition as a motivation to the earnings

management, to the learning of voters and political groups about opportunistic behaviour, fostering a more informed electoral process and, consequently, enhancing the efficiency of public resource management and accountability. This research would help regulatory bodies in their work and governments in designing appropriate systems to enforce regulations and thereby prevent politicians to behave inappropriately.

Following this introduction, section 2 focuses on the theoretical framework and develops the hypotheses. Section 3 describes the data and the methodologies used. Section 4 summarises the results of the empirical analysis. Finally, section 5 draws some conclusions and makes some suggestions for further research.

Theoretical framework and hypotheses

According to agency theory, one can expect that accounting information is used by both the politician (manager), as a way of signalling their own performance, and the principal (local participants in the political process, citizens/voters, creditors and donors) for monitoring political action and establishing contractual terms (Zimmerman, 1977 and Maher and Keller, 1979). As referred by Pina *et al.* (2012), the accounting system has been linked to the agency problem and, in the public sector, accountability relationships between principals and agents have been shown to be more complex than in the private sector.

Public choice theory assumes that politicians and government bureaucrats have pursue their own aims and act according to their preferences, that is, they have a rational behaviour (Buchanan and Tullock, 1962). In the public sector, public choice theory introduced the idea that the democratic process can be viewed as a competitive market whose operative agents (including politicians, citizens, public officials and interest groups) have selfish motivations. It assumes that politicians are motivated to maximise votes for re-election (Buchanan and Tullock, 1962).

A consequence of the positive approach taken by public choice theory is that, in order to maximise votes, a politician is motivated to manipulate economic policies to their own advantage (in an agency relationship, each actor takes actions designed to benefit themselves).

Therefore, according to the two theories, in the presence of conflicts of interest between politician (mayor) and principal (citizens/voters), it can be expected that the politician has enough motivation to engage in earnings management seeking to mislead the citizen/voter about their competence and, thus, get their vote. In turn, it is expected that the citizens/voters exercise monitoring over the mayor's performance, namely up through political parties.

Studies conducted on public choice theory have confirmed the existence of political budget cycles in local government to promote re-election. Examples of these studies are Cohen *et al.* (2019), who studied Greek and Italian municipalities; Drazen and Eslava (2005), who studied Colombian municipalities; Akhmedov and Zhuravskaya (2004), who analysed regional elections in Russia; Coelho (2004) and Veiga and Veiga (2004), who studied Portuguese municipalities; Preussler and Portugal (2003), who evaluated a number of federal states in Brazil, Escudero and Prior (2003), who addressed local governments in Spain, Baber and Sen (1986), who looked at local _US governments.

Based on agency theory, there are studies focused on municipalities (Stalebrink, 2002 and 2007; Pilcher and Van der Zahan, 2010; Ferreira *et al.*, 2013, 2009b, 2009a and 2008; Arcas *et al.*, 2013; Arcas and Martí, 2016; Donatella *et al.*, 2018, Drew, 2018, Donatella, 2020), others on hospitals and National Health Service trusts (Leone and Van Horn, 2005; Ballantine *et al.*, 2007 and Elshafie, 2007; Heese, 2017), and on charitable organisations (Trussel, 2003; Jones and Roberts, 2006; Verbruggen and Christiaens, 2012). All these studies have followed similar methodologies than those applied in a great number of studies from private sector literature.

On the studies focused on municipalities, based on agency theory, Stalebrink (2002) examined financial information prepared on an accrual basis for municipalities in Sweden, on

the premise that the primary objective of the politician is re-election. The results of Stalebrink's analysis (2002), mainly based upon regression models with panel data, allowed him to conclude that politicians employ various accounting practices to reach a level of earnings close to zero. The results of the study developed by Stalebrink (2007) go in an identical direction. Pilcher and Van der Zahan (2010) examined, for municipalities in Australia, the specific accruals, such as depreciation, that are used for earnings management, and find that unexpected depreciation was used to adjust financial performance. Ferreira *et al.* (2008; 2009a; 2009b and 2012) carried out studies, for the Portuguese municipalities, on earnings manipulation with the objective of signalling the competence of the mayor. They found evidence that municipalities facing the greatest political competition use discretionary accruals to disclose positive net earnings close to zero. Arcas *et al.* (2013), for municipalities in UK, conclude that they use accounting practices to achieve a 'surplus/deficit for the year' close to zero. Arcas *et al.* (2013) found that earnings management is achieved mainly by abnormal depreciation and impairment of fixed assets. Arcas and Martí (2016) also find for municipalities in UK that depreciation and impairment expense of fixed assets is the item most significantly related to abnormal accruals. Drew (2018), in a study of the municipalities of New South Wales (Australia), concluded that in order to maintain sustainability, there was earnings manipulation through accruals of depreciation. Donatella *et al.* (2018), conclude that Swedish municipalities' probability of applying earnings management is influenced by the engaged audit firm and Donatella (2020) concluded that, in the Swedish case, it is competition between governing parties and opposition, rather than competition between all parties represented in the council, which is the driver of earnings management through various accounting practices.

Therefore, studies based on both theories confirm the existence of opportunistic behaviour by the mayor. Furthermore, in the context of a new wave of public management, one that has introduced a different paradigm for the performance evaluation of public managers, the level of net earnings achieved by municipalities is an efficiency and efficacy indicator. Therefore, it is a resource management and competence (accountability) indicator for local politicians aiming to meet citizens/voters' needs. If one considers that the resources municipalities must allocate, stem mostly from taxes [2] levied on citizens/voters, and that municipality costs aim to meet different citizen/voters' needs, as a function of public choice and agency theories, then the level of earnings reported by municipalities is relevant.

The main goal of municipalities is not profit, but sustainability for the future. In one way, the negative earnings could be interpreting as incompetence of local politicians, through the overuse of resources required in order to reach a given level of needs satisfaction. Like Robert (1985) said, it also indicates that the city did not live within its means. From a sustainability perspective, earnings close to zero indicate the capacity of local politicians to keep the level of costs in line with income. On the other hand, citizens/voters may interpret high positive earnings as tax overloads required to satisfy their needs (Robert, 1985). In accordance with Leone and Horn (2005), high positive earnings can also be interpreted as a deferral, to future periods, of activities aimed at satisfying needs, or even as the incompetence of local politicians managing the available resources or taxes. So, according to Robert (1985), in most municipalities, the actual objective is to report a small surplus.

Since the mayor is both a manager and elected official, these factors have consequences to him because if he reports negative or high positive earnings, this may lead to a damaging evaluation of their performance, which is particularly relevant during periods of political pressure, namely, in times of fiscal stress and when political competition is high. In order to avoid the costs arising from reporting negative or high positive earnings, mayors need to find ways of reporting positive earnings close to zero. So, this hypothesis is developed.

H1. In order to demonstrate their high level of competence, local politicians try to manage earnings in such a way as to report positive earnings close to zero.

Earnings management through accounting occurs through the selection of policies and accounting practices in such a way that, they influence accruals (the difference between cash flow and operating earnings that comes from accounting principles and policies). In Portugal, the accounting standards established in the Official Accounting Plan of Local Administration (Decrew-Law no. 54-A/99, 22nd February) provides a set of accounting policy options that can be used to earnings management (for example: valuation of inventories, fixed assets, recognition of income and expenses). Considering the discretion allowed by the accounting regulations, this paper focuses on accounting earnings management, which explains the following hypothesis:

H2. Earnings management is achieved through accounting practices.

Public choice theory states that local politicians aim to maximise votes in order to ensure re-election. In this context, and where there is strong political competition, there will be greater scrutiny and monitoring, particularly by citizens, interest groups and political parties. Thus, when the competition is strong, mayors are more likely to look for ways of emphasising their competence and performance than when it is weak.

As net earnings demonstrate a local politician's competence, the greater the scrutiny and monitoring, the higher the local politician's motivation to manage earnings. This leads to the following hypothesis:

H3. Local politicians who face strong political competition tend to be more prone to upward earnings management and tend to report higher levels of income than local politicians facing weaker political competition.

The following section details the data gathered and explains the methodology used to test these hypotheses.

Data description and methodologies

Data description

The data examined in this study comes from the financial statements of Portuguese municipalities between 2002 and 2016. This period was chosen because, the municipalities must apply the accounting standards on accrual base since 2001, and so, the study use all the years in which the financial report is made on the accrual basis. The data was provided by The Centre for Research on Public Policy and Administration (CRPPA) [3] at the University of Minho, and by Research Centre on Accounting and Taxation (CICF) at The Polytechnic Institute of Cávado and Ave and collected from municipal balance sheets and profit and loss statements.

It was not possible to include all municipalities. Firstly, because municipalities report their financial statements at different times in compliance with the accounting model of the Official Local Administration Accounting Plan. Secondly, due to the quality of the information provided (in each year, observations referring to municipalities which recognise fixed assets, but which do not recognise amortisation costs, were not included). The calculation of some variables requires information from two consecutive years. Therefore, the study does not include those municipalities that do not offer information for two consecutive years.

Data relating to the 2009 and 2013 elections came from the website http://www.marktest.com/.

Methodology

Test of H1 hypothesis

To test H1, the methodology designed by Burgstahler and Dichev (1997) was used. These authors developed a methodology based on the analysis of the frequency distribution of

cross-sectional net earnings, on the assumption that, in the absence of earnings management, this distribution is smooth. To avoid heteroscedasticity problems, the authors divide net earnings by the market value of the capital at the beginning of the period.

As this study addresses municipalities; we cannot use market value of capital. Thus, like Leone and Horn (2005) the study uses total assets in the previous financial year as a conversion factor.

If the analysis of the frequency distribution of cross-sectional net earnings shows a high number of municipalities reporting earnings in the interval immediately to the right of zero, this may be seen as an indicator of a municipalities' tendency to report slightly positive earnings. In the same manner, a small number of municipalities reporting earnings in the interval immediately to the left of zero would indicate an avoidance of the reporting of negative earnings (Burgstahler and Dichev, 1997). In this case, we corroborate the H1 hypothesis.

In order to confirm the graphical analysis, Burgstahler and Dichev (1997) developed the statistic Z (significance measure) on the premise that, in the absence of earnings management, the frequency distribution of cross-section earnings is relatively smooth. The statistic is derived by the difference between the expected number of observations in the interval and the actual number of observations in the interval, divided by the standard deviation of the difference:

$$Z = \frac{(na_i - ne_i)}{\sigma \times (na_i - ne_i)}$$

where:

na_i – actual number of observations in a certain interval i;

ne_i – expected number of observations in a certain interval i, defined as the average of the actual number of observations in two immediately adjacent intervals assuming that in the absence of earnings management, the frequency distribution of cross-section earnings is relatively smooth: $ne_i = \frac{na_{t-1} + na_{t+1}}{2}$

$\sigma(na_i - ne_i)$ – standard deviation of the difference between the actual number of observations in a certain interval i and the number of expected observations in that same interval i: $\sigma = \sqrt{Np_i \times (1 - p_i) + \frac{N \times (p_{(i-1)} + p_{(i+1)})(1 - p_{(i-1)} - p_{(i+1)})}{4}}$

where:

N – total number of observations in the sample;

p_i – probability that one observation is placed in the interval i.

Regarding the premises put forward here, and in the absence of earnings management, Z would be zero. If Z has a positive (negative) value, significantly different from zero, in a certain interval, then the actual number of observations in that interval is higher (lower) than the expected number, thus confirming the earnings management hypothesis.

Test of H2 hypothesis

If discontinuity around zero occurs and if it stems from earnings management via discretionary accruals, then we expect a smooth frequency distribution cross-sectional of net earnings before management (earnings excluding the effect of discretionary accruals). If this occurs, we should understand it as confirmation of earnings management using an opportunistic choice of accounting options.

The total accruals are calculating this way:

$$TotalAccrual_{it} = \Delta CA_{it} - \Delta Cash_{it} - \Delta CL_{it} - Amort_{it}$$

where:

$TotalAccrual_{it}$ – total accruals of municipality i in period t;

ΔCA_{it} – variation of current assets of municipality i between periods t and t–1;

$\Delta Cash_{it}$ – cash variation of municipality i between periods t and t–1;

ΔCL_{it} – variation of current liability of municipality i between periods t and t–1;

$Amort_{it}$ – amortization of the accounting year of municipality i in period t.

This definition considers that accruals are a measure of a manager's discretion in choosing accounting options. The accruals are considered as a preferred instrument for measuring earnings management because its use has a low cost and is difficult to detect (Young, 1999). Besides which, the measure is also an aggregate one, consisting of the net effect of various accounting practices (Young, 1999; DeAngelo, 1986).

Since accruals reflect the choice of accounting practices in the context of earnings management, total accruals are composed of discretionary accruals (reflecting changes in earnings that stem from a manager's discretionary choice of accounting options) and non-discretionary accruals (reflecting changes in earnings that result from regular activity). However, neither of these can be observed directly, so methodologies aim to estimate discretionary accruals.

To estimate discretionary accruals, this study used the most commonly used model, as proposed by Jones (1991) [4], that is defined [5]:

$$\frac{TotalAccrual_{it}}{TotalAssets_{it-1}} = \alpha_1 \times \frac{1}{TotalAssets_{it-1}} + \beta_1 \times \frac{\Delta SS_t}{TotalAssets_{it-1}} + \beta_2 \times \frac{GTA_t}{TotalAssets_{it-1}} + \varepsilon_{it}$$

Where:

$TotalAccrual_{it}$ - total accruals of municipality i in period t;

$TotalAssets_{it-1}$ – total assets of municipality i at the end of period t–1;

ΔSS_{it} – sales and services variations of municipality i between the periods t and t–1 [6];

GTA_{it} – gross tangible assets of municipality i in period t;

ε_{it} – random error.

Parameters α_1, β_{1i} and β_{2i}, estimated by means of the previous regression, are used as estimators of a_1, b_{1i} and b_{2i}, respectively, for the estimation of discretionary accruals:

$$DisAccrual_{it} = \frac{TotalAccrual_{it}}{TotalAssets_{it-1}} - \left(a_1 \times \frac{1}{TotalAssets_{it-1}} + b_{1i} \times \frac{\Delta SS_{it}}{TotalAssets_{it-1}} + b_{2i} \times \frac{GTA_{it}}{TotalAssets_{it-1}} \right)$$

where

$DisAccrual_{it}$ – estimate of discretionary accruals of municipality i for period t, divided by total assets in period t–1.

According to the premises, as stated above, and as far as an H_1 test is concerned, the present study analyses the frequency distribution of cross-sectional net earnings before discretionary accruals. This was calculated as summarised below:

$$EBeforeDisAccrual_{it} = E_{it} - DisAccrual_{it}$$

where

$EBeforeDisAccrual_{it}$– net earnings before discretionary accruals of municipality i in period t divided by total assets in period t–1;

E_{it} – net earnings of municipality i in period t divided by total assets in period t–1;

$DisAccrual_{it}$ – estimate of discretionary accruals of municipality i in period t divided by total assets in period t–1.

In order to validate this analysis, the study also tested H_2, using the approach suggested by Leone and Horn (2005). This consists of the following regression:

$$DisAccrual_{it} = \alpha + \gamma_1 \times EBeforeDisAccrual_{it} + \gamma_2 \times E_{it-1} + \gamma_3 \times DisAccrual_{it-1} + \varepsilon_{it}$$

where

$DisAccrual_{it}$ – estimate of discretionary accruals of municipality i in period t divided by total assets in period t–1;

$EBeforeDisAccrual_{it}$ – net earnings before discretionary accruals of municipality i in period t divided by total assets in period t–1;

E_{it-1} – net earnings of municipality i in period t-1 divided by total assets in period t–1;

$DisAccrual_{it-1}$ – estimate of discretionary accruals of municipality i in period t–1 divided by total assets in period t–1;

ε_{it} – residuals.

These authors rely on the premise that discretionary accruals are used as a way of keeping positive net earnings close to zero (not very high). Thus, they expect an inverse relation between $DisAccrual_{it}$ and $EBeforeDisAccrual_{it}$ and, consequently, a negative value for the coefficientγ1. Leone and Horn (2005) include the independent E_{it-1} variable because, according to Kothari *et al.* (2005), there is a positive relation between past performance and discretionary accruals for the present period. Thus, they expect γ2 to be positive. Finally, they also consider the $DisAccrual_{it-1}$ variable in the regression to control for the probability of autocorrelation in discretionary accruals.

Test of H3 hypothesis

To test the H3 hypothesis, we consecutively applied several procedures in order to confirm the results achieved by each procedure. As with the H1 hypothesis, the study employed the Burgstahler and Dichev (1997) methodology.

For the period covered by this study, 2010–2016, we predicted that the performance of local politicians would be influenced by political competition, arising from municipal elections in 2009 and 2013. Given these circumstances, we divided the sample into two sub-periods. One sub-period covers the years 2010–2012 (years prior to the election year). We predicted that, for this period, the occurrence of earnings management would be influenced by political competition. The calculation was based on the 2009 elections. A second sub-period covers the years 2014–2016 (post-election years), and, it was predicted that the

occurrence of earnings management would be influenced by political competition of 2013. We exclude the year 2013 because it was an election year.

For each sub-period, we adopted a similar procedure to the one used by Moreira (2008) and Moreira (2006). This consists of the division of the sample, according to the level of political competition, which then allows for the comparison of the frequency distributions of cross-sectional net earnings amongst the different samples. In each period, we divided the sample into two sub-samples: one sub-sample includes municipalities in which there is weak political competition (WPC) and the other includes municipalities in which there is strong political competition (SPC).

In defining the political competition variable, we attempted to include all political parties. The elections in the municipalities contemplate the election of the executive body and the legislative body. The mayor will be the one who led the candidacy of the most voted political party (or coalition of parties). The political competition that the elected mayor will face in the exercise of his mandate will be all the greater, the more fragmented the vote. Thus, we used the measure developed by Laakso and Taagepera (1979). This measure is widely referenced in literature, as it is considered to be a good proxy for political competition. Hence,

$$PComp = \frac{1}{\sum s_i^2}$$

where

PComp – political competition;

s_i – votes achieved by party i at a certain electoral time.

As stated by Taagepera (2002), this ratio indicates, on average, the number of political parties, which are active in the political arena. However, when a political party has/wins a majority, it has to be complemented with the reverse of the majority. In this sense, the advantage is that if political competition falls below 2 whenever one party predominates (Taagepera, 1999), thus automatically signalling an absolute majority, and, consequently weak political competition. Therefore, municipalities with WPC are those with *PComp* less than two and municipalities with SPC are those with *PComp* more than two.

Following Moreira (2008) and Moreira (2006), for each sub-sample and sub-period, we also calculate the frequency grade of earnings management, with the purpose to test statistically whether there are differences in earnings management between sub-samples, for the various sub-periods.

Frequency grade of earnings management is defined as:

$$Fgm = \left| \frac{ne_i - na_i}{na_i} \right|$$

where

Fgm – frequency grade of earnings management;

na_i – actual number of observations in a certain interval i;

ne_i – expected number of observations in a certain interval i defined as the average of the actual number of observations in two immediately adjacent intervals assuming that in the absence of earnings management, the frequency distribution of cross-section earnings is relatively smooth: $ne_i = \frac{na_{i-1}+na_{i+1}}{2}$.

Similar to Moreira (2008), the Z2 statistic proposed by Sandy (1990) was used to test the statistical difference in success of two independent samples. This was designed to test

whether there are differences in earnings management across the sub-samples for the period under analysis. Under the null hypothesis of no previous statistical difference in the proportions, the Z2 may be summarised as:

$$Z2 = \frac{\widehat{p}_{SPC} - \widehat{p}_{WPC}}{\sigma}$$

where

$\widehat{p}_{SPC}$ – proportion of municipalities with SPC that manipulate net earnings;

$\widehat{p}_{WPC}$ – proportion of municipalities with WPC that manipulate net earnings;

σ – the standard deviation, which is estimated as:

$$\sigma = \sqrt{\frac{\overline{p}(1-\overline{p})}{n_{WPC}} + \frac{\overline{p}(1-\overline{p})}{n_{SPC}}}$$

where

n – expected number of municipalities with SPC and WPC;

$\overline{p}$ – weighted proportion of both samples: $\overline{p} = \frac{n_{SPC}\widehat{p}_{SPC} - n_{WPC}\widehat{p}_{WPC}}{n_{SPC}+n_{WPC}}$.

We tested the statistical significance of Z2 through the p-value, assuming a bi-directional test.

Finally, to complete the graphical analysis, and in keeping with Moreira (2008), Moreira (2006), Kim *et al.* (2003) and Beatty *et al.* (2002), a probit model was designed to test the probability of the influence of political competition leading to slightly positive and slightly negative earnings. A panel data method was also used to test the impact of political competition on the reporting of slightly positive and slightly negative earnings and to assess whether, given the known advantages of this methodology, it would provide better estimates.

The probit model is as follows:

$$Inter_{it} = \alpha + \theta_1 \times DPComp + \theta_2 \times DE_{it-1} + \theta_3 \times EDisAccrual_{it} + \theta_4 \times LnTotalAssets_{it} + \varepsilon_{it}$$

where

$Inter_{it}$ – dummy variable, the value of which is one if the municipality reports net earnings in the interval [0;0.03[and zero if it reports net earnings in the interval [-0.03;0[;

$DPComp$ – dummy variable, the value of which is one if the municipality has political competition equal or higher to 2 and zero if it has political competition lower than 2 (when a party has an absolute majority)

DE_{it-1} – dummy variable, the value of which is one if municipality i reports positive net earnings in period t–1 and zero if it reports negative net earnings;

$EDisAccrual_{it}$ – estimate of discretionary accruals for municipality i in period t divided by total assets in period t–1;

$LnTotalAssets_{it}$ – natural logarithm of total assets of municipality i in period t divided by total assets in period t–1;

ε_{it} – random error.

As our objective was to test whether political competition influences the probability of reporting slightly positive earnings, we expected the coefficient θ_1 to be positive. We introduced the DE_{it-1} variable into the analysis because we expected that the sign of net earnings for the former period would cause the sign of net earnings for the present period to be the same. Thus, the sign of θ_2 is also expected be positive. The study used the $EDisAccrual_{it}$ variable in the model, because, in the presence of earnings management, this variable should stimulate a positive relationship with the dependent variable. Therefore, the sign of θ_3 should also be positive. The $LnTotalAssets_{it}$ variable is a proxy for evaluating whether the municipality dimension has some influence upon earnings levels for the present period. There is no specific expectation with regard to the sign of θ_4.

The panel data method considers both the cross-section dimension and temporal dimension. This allows one to analyse a given observation unit cross-sectionally over a particular time-period. It has features that allow some limitations of cross-section regression and time series regression to be overcome (Baltagi, 2008).

Thus, we tested the above-mentioned model with panel data. In this case, the impact of political competition upon the disclosure of slightly positive earnings was evaluated. We expect the same signs for the coefficients, as with the probit model.

In the panel data methodology, the study relies upon three estimation techniques for unbalanced panels: Pooled Ordinary Least Squares (pooled OLS), the fixed effects model (FEM) and the random effects model (REM). According to Baltagi, 2008, this study applies the *F*-test to determine whether the pooled OLS or FEM model is more efficient and applies the Hausman-test to determine whether the FEM or REM model is more efficient.

The *F*-test tests the hypothesis that all coefficients (excluding the constant) are equal to zero, i.e. testing the hypotheses of specific effects in municipalities. Where the null hypothesis is accepted, and the F-test is not significant, the pooled OLS is the best estimation model, meaning there are no significant effects between municipalities. Where this is the case, we interpret the results of the pooled OLS model. Where the null hypothesis is rejected, a Hausman-test is carried out to check whether the FEM or REM is more appropriate.

The Hausman-test tests the null hypothesis that the REM is a more appropriate model than the FEM. The null hypothesis is that the coefficients in both models are similar. Therefore, if they differ from each other, it means the FEM is simultaneously consistent and efficient. Consequently, if the null hypothesis is not rejected, and the test is not statistically significant, the REM results may be interpreted. If the null hypothesis is rejected, and the test is statistically significant, the FEM results are interpreted (Vieira, 2007).

Empirical analysis

Hypotheses testing

Results of the H_1 hypothesis test. Table 1 summarises the descriptive statistics for net earnings for each year studied (2003–2016). Average net earnings are negative in the years 2009 and 2010, are zero in the years 2011, 2013, and 2014, and positive in the rest of the years. The net earnings negative in the years referred to coincide with the years of greatest crisis in Portugal, so, given this fact, it is not surprising. So, in general, the results are consistent with the hypothesis that the goal of municipalities is to report positive net earnings, close to zero.

Figure 1 is a histogram of the frequency distribution of cross-sectional net earnings for intervals of 0.03 [7] and Table 2 show statistical significance of discontinuities close to zero in the frequency distribution of cross-sectional converted net earnings.

The analysis of Figure 1 indicates that there is a clear discontinuity around the first interval, to the right of zero and Table 2 shows that, for this interval, statistic Z is 13.137, which is statistically significant at the 1% level. This confirms the observed discontinuity in the Figure 1 and indicates that the frequency distribution of the net earnings in the first interval to the right of zero is higher than expected. In the first interval to the left of zero there

also is a discontinuity, but in opposite way, that means there are less municipalities as expected, with negative earnings. Statistic Z is –6.872, which is statistically significant at the 1% level and confirms the observed discontinuity in the Figure 1.

These results can be interpreting as indicators that, for the municipalities included in the sample, local politicians try to do earnings management in such a way as to avoid reporting negative earnings (even though it was found that in 2009 and 2010 the average net results were negative) and an attempt to report positive earnings close to zero.

By doing this, local politicians aim to report net earnings that will not be interpreted by the public or interest groups as excessive. They present the idea that their public resource management is conducted based on economic and efficiency principles, in general, such resources are at the disposal of the public need. As in Ferreira *et al.* (2013) the results achieved confirm H1, meaning that over time the local politicians maintain the behaviour of disclosing positive net earnings close to zero.

Year	No. observations E_{it}	Average E_{it}	Standard deviation E_{it}	Q1 E_{it}	Q2 E_{it}	Q3 E_{it}
2003	118	0.100	0.181	0.013	0.055	0.129
2004	241	0.058	0.143	0.006	0.037	0.093
2005	266	0.035	0.079	−0.006	0.022	0.059
2006	272	0.038	0.160	0.000	0.022	0.054
2007	276	0.024	0.057	−0.006	0.016	0.049
2008	280	0.006	0.039	−0.014	0.005	0.025
2009	284	−0.007	0.060	−0.026	−0.002	0.016
2010	286	−0.002	0.035	−0.022	0.001	0.018
2011	287	0.000	0.032	−0.020	0.002	0.020
2012	287	0.004	0.026	−0.014	0.005	0.021
2013	288	0.000	0.030	−0.015	0.002	0.015
2014	288	0.000	0.028	−0.017	0.001	0.015
2015	288	0.006	0.027	−0.009	0.007	0.020
2016	288	0.006	0.036	−0.009	0.005	0.020
Total/Average	*3749*	*0,019*	*0,067*	*−0,010*	*0,013*	*0,040*

Table 1.
Descriptive statistics for net earnings in period t converted by total assets at the end of period t–1

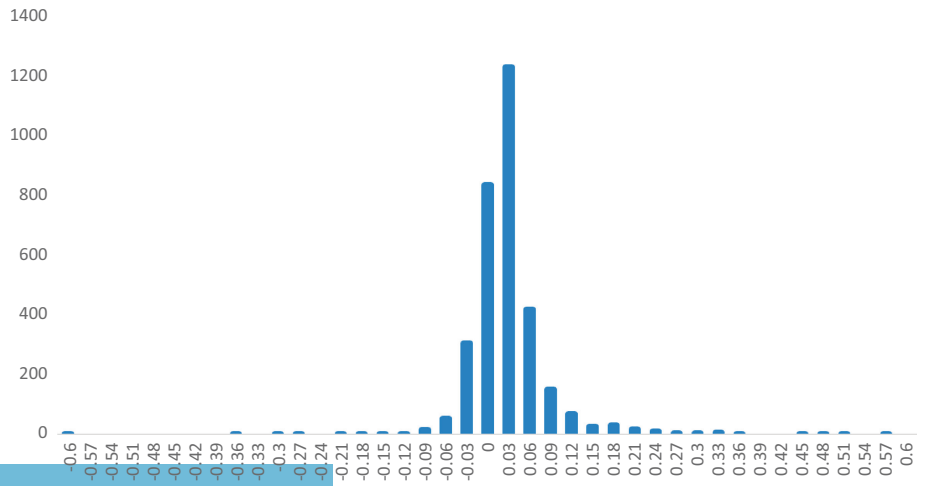

Figure 1.
Histogram of frequency distribution of cross-sectional net earnings for intervals of 0.03. The first interval to the right of zero includes all net earnings that are inside the interval [0;0.03]. The second interval includes all net earnings that are inside the interval [0.03;0.06] and so forth

Results of the H2 hypothesis test. As the information required to calculate some of the variables is spread across various consecutive periods, for the sake of comparability, the test was only applied to municipalities for which it was possible to calculate discretionary accruals for a given time period.

The descriptive statistics for the variables used in the test are summarised in Table 3. All variables show a positive average.

The Figure 2 (histogram of frequency distribution of cross-sectional earnings before discretionary accruals and histogram of frequency distribution of cross-sectional net earnings for intervals of 0.03) shows that both frequency distributions and discontinuities can be pinpointed to the interval on the right of zero.

The statistical significance of discontinuities around zero is shown in Table 4. For the first interval to the right of zero, statistic Z is 13.786 for cross-sectional net earnings and 6.651 for earnings before discretional accruals, both are statistically significant at the 1% level.

These results are consistent with the idea that local governments avoid disclosing negative net earnings and try to disclose positive net earnings close to zero. They also suggest that the municipalities under analysis use the discretional power allowed in election practices and accounting policies to report low positive net earnings.

The regression results summarised in Table 5 confirm Leone and Horn's expectations (2005), both for γ_1 (negative sign) and γ_2, (positive sign). Both coefficients are statistically significant at 1% level. The adjusted R^2 shows very high values. Like in Ferreira *et al.* (2013)

		2003 to 2016 E_{it}	
	No. of observations		
Interval	Real	Expected	Z-statistic (p-value)
[−0.03;0]	832	1028	−6.872*** *(−0.000)*
[0;0.03]	1224	821	13.137*** *(−0.000)*

Note(s):
(a) *** Significance level at 1%; ** Significance level at 5%; * Significance level at 10%.
(b) The statistical significance evaluated on the assumption that Z follows a standard normal distribution.
(c) Z-statistic is given by: $Z = \frac{(na_i - ne_i)}{\sigma \times (na_i - ne_i)}$
where
na_i – actual number of observations in a certain interval i;
ne_i – expected number of observations in a certain interval i, defined as the average of the actual number of observations in two immediately adjacent intervals: $ne_i = \frac{na_{i-1} + na_{i+1}}{2}$
$\sigma(na_i - ne_i)$ – standard deviation of the difference between the actual number of observations in a certain interval i and the number of expected observations in that same interval i: $\sigma = \sqrt{Np_i \times (1 - p_i) + \frac{N \times (p_{(i-1)} + p_{(i+1)})(1 - p_{(i-1)} - p_{(i+1)})}{4}}$
where
N – total number of observations in the sample;
p_i – probability that one observation is placed in the interval i

Table 2. Statistical significance of discontinuities close to zero in the frequency distribution of cross-sectional converted net earnings

Independent Variables	No Observations	Average	Standard deviation	Q1	Q2	Q3
E_{it}	3322	0.013	0.053	−0.011	0.010	0.033
$DisAccrual_{it}$	3322	0.005	0.061	−0.017	0.006	0.029
$EBeforeDisAccrual_{it}$	3322	0.008	0.078	−0.025	0.002	0.036

Table 3. Descriptive statistics for the variables used in the test of H2 with discretionary accruals calculated using the Jones (1991) model

for the shortest period (2003–2008), the results confirm H2. What means that this allows us to conclude that local politicians continuing use discretionary accruals as a way of maintaining positive net earnings close to zero.

Results of the H3 hypothesis test. The histogram in Figure 3 shows the frequency distribution of cross-sectional net earnings for intervals 0.03, for the sub-sample of municipalities with strong political competition (SPC) and weak political competition (WPC), in the pre-election period (2010–2012) [8]. As it can see, there is a discontinuity around the first interval to the right of zero for both SPC and WPC municipalities.

That discontinuity is confirmed by the Z value (Table 6) of 5.289 and 5.365 statistically significant at the 1% level for SPC municipalities and WPC municipalities respectively. We also observe discontinuity in the first interval on the left of zero, confirmed by statistic Z, but only for the SPC municipalities.

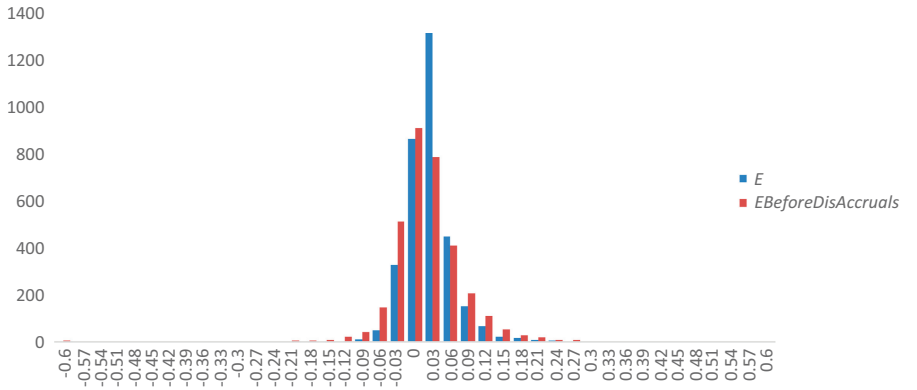

Figure 2.
Histograms of frequency distribution of cross-section net earnings and frequency distribution of cross-section net earnings before discretionary accruals to intervals of amplitude 0.03

	2004 to 2016 E_{it}			2004 to 2016 EBeforeDisAccrual$_{it}$		
	No. of observations		Z-statistic	No. of observations		Z-statistic
Interval	Real	Expected	(p-value)	Real	Expected	(p-value)
[−0.03;0]	836	1091	−7,820*** *(0.000)*	911	849	2,133** *(0.016)*
[0;0.03]	1318	834	13.786*** *(0.000)*	786	598	6,651*** *(0.000)*

Note(s):
(a) *** Significance level at 1%; ** Significance level at 5%; * Significance level at 10%.
(b) The statistical significance evaluated on the assumption that Z follows a standard normal distribution.
(c) Z-statistic is given by: $Z = \frac{(na_i - ne_i)}{\sigma \times (na_i - ne_i)}$
where
na_i – actual number of observations in a certain interval i;
ne_i – expected number of observations in a certain interval i, defined as the average of the actual number of observations in two immediately adjacent intervals: $ne_i = \frac{na_{t-1} + na_{t+1}}{2}$
$\sigma(na_i - ne_i)$ – standard deviation of the difference between the actual number of observations in a certain interval i and the number of expected observations in that same interval i: $\sigma = \sqrt{Np_i \times (1 - p_i) + \frac{N \times (p_{(i-1)} + p_{(i+1)})(1 - p_{(i-1)} - p_{(i+1)})}{4}}$
where:
N – total number of observations in the sample;
p_i – probability that one observation is placed in the interval i

Table 4.
Statistical significance of discontinuities close to zero in the frequency distribution of cross-sectional converted net earnings and the frequency distribution of cross-sectional converted net earnings before discretionary accruals

Independent variables	Expected sign	2005 Coefficient (*t*-value)	2006 Coefficient (*t*-value)	2007 Coefficient (*t*-value)	2008 Coefficient (*t*-value)	2009 Coefficient (*t*-value)	2010 Coefficient (*t*-value)	2011 Coefficient (*t*-value)	2012 Coefficient (*t*-value)	2013 Coefficient (*t*-value)	2014 Coefficient (*t*-value)	2015 Coefficient (*t*-value)	2016 Coefficient (*t*-value)
Const		−0.008**	0.004*	0.009***	−0.001	−0.010***	−0.006***	0.002	0.005***	−0.002*	0.002**	0.007***	0.002
		(-2.255)	*(1.655)*	*(3.316)*	*(-0.575)*	*(−3.062)*	*(-2.806)*	*(1.075)*	*(4.537)*	*(-1.788)*	*(2.051)*	*(5.119)*	*(1.202)*
$EBeforeDisAccrual_{it}$	-	−0.819***	−0.504***	−0.414***	−0.762***	−0.719***	−0.783***	−0.873***	−0.906***	−0.869***	−0.765***	−0.964***	−0.956***
		(-14.615)	*(-12.178)*	*(-10.101)*	*(-20.267)*	*(-23.740)*	*(21.010)*	*(-35.970)*	*(-36.170)*	*(-27.130)*	*(-25.370)*	*(-36.820)*	*(-82.250)*
E_{it-1}	+	0.527***	0.256***	0.038**	0.260***	0.134	0.167***	0.464***	0.544***	0.701***	0.503***	0.624***	0.787***
		(10.605)	*(6.573)*	*(2.423)*	*(6.670)*	*(0.137)*	*(5,181)*	*(9.803)*	*(15.050)*	*(13.170)*	*(11.530)*	*(14.570)*	*(11.130)*
$DisAccrual_{it-1}$		0.016	−0.016	0.041	0.107**	−0.040	0.010	(0.004)	−0.008	0.059*	0.075***	−0.017	0.004
		(0.332)	*(-0.376)*	*(0.727)*	*(2.545)*	*(-0.573)*	*(0.468)*	*(0.132)*	*(-0.458)*	*(1.907)*	*(2.676)*	*(-0.486)*	*(0.094)*
F-Statistic		77.907***	50.519***	35.251***	146.178***	190.390***	148.963***	433.653***	437.015***	267.650***	231.620***	459.543***	2280.940***
Adjusted R^2		0.650	0.389	0.286	0.629	0.689	0.622	0.828	*0.829*	*0.748*	*0.719*	*0.836*	*0.962*
No. Observations		125	234	258	258	258	271	271	271	271	271	271	271

Table 5. Results using the Leone and Horn (2005) regression

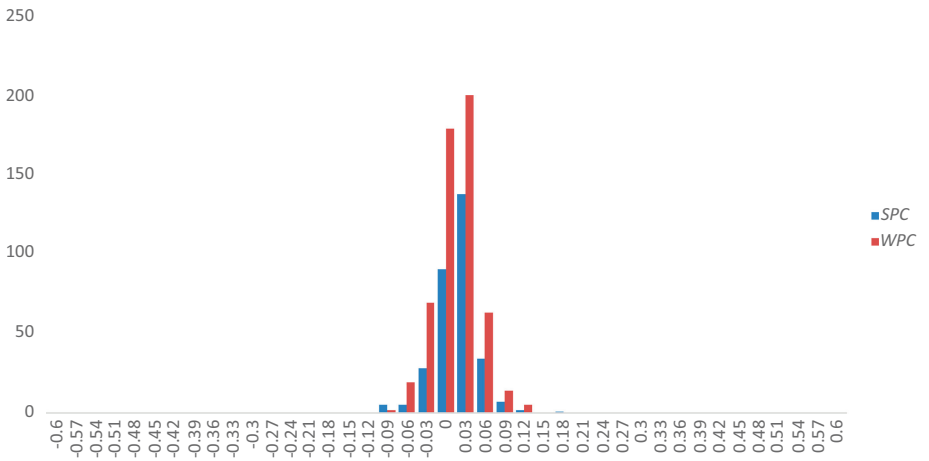

Figure 3.
Frequency distribution histogram of cross-sectional net earnings for intervals of 0.03 for the sub-samples of SPC and WPC municipalities in pre-election period (2010–2012)

Table 6.
Statistical significance of discontinuities around zero in the frequency distribution of cross-sectional net earnings for SPC and WPC municipalities in pre-election period (2010–2012)

	Pre-election period (2010–2012)					
	SPC			*WPC*		
Interval	No. of observations Real	Expected	*Z*-statistic (*p*-value)	No. of observations Real	Expected	*Z*-statistic (*p*-value)
[−0.03;0]	90	114	−2,579*** *(−0,000)*	178	189	−0.845 *(−0,199)*
[0;0.03]	137	86	5,289*** *(0,000)*	199	131	5,365*** *(-0,000)*

Ferreira *et al.* (2013) made the study for the pre-election period 2003 to 2004 and obtained results similar to those of this study.

A histogram of the frequency distribution of cross-sectional net earnings for intervals of 0.03 for sub-samples of SPC and WPC municipalities in post-election periods (2014–2016) [9] it presents in Figure 4. Once more, there appears to be discontinuity around the first interval to the right of zero.

In this case, for the first interval to the right of zero, Table 7 shows that *Z*, for SPC municipalities, is 5.166, statistically significant at the 1% level, and for WPC municipalities is 6.942, also statistically significant at the 1% level. For the first interval to the left of zero, Table 7 shows that *Z* for SPC municipalities is −3.161, statistically significant at the 1% level, and for WPC municipalities is −3.301, also statistically significant at the 1% level.

Ferreira *et al.* (2013) made the study for the post-election period 2006 to 2007 and obtained results close to those of this study.

Table 8 shows that *Fgm* for the pre-electoral and post-electoral periods. As it can see the *Fgm* for SPC municipalities is higher than *Fgm* for WPC municipalities whether for the first interval to the right of zero or the first interval to the left of zero. These results seem to indicate that, as a trend, the higher the political competition, the higher the predisposition to manage earnings.

The Z2 test for the difference in success between two independent samples for the pre-election period is not statistically significant for the first interval to the left of zero and is

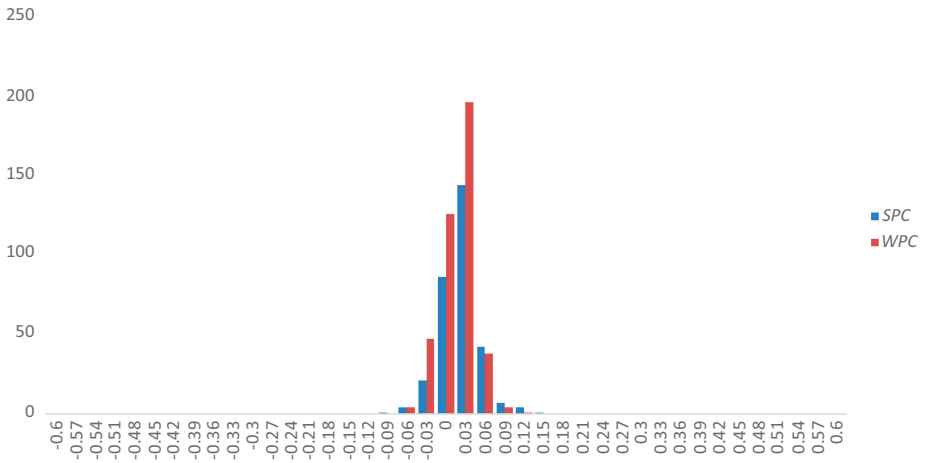

Figure 4. Frequency distribution histograms of cross-sectional net earnings for intervals of 0.03 for sub-samples of SPC and WPC municipalities for post-election period (2014–2016)

	Post-election period (2014–2016)					
	SPC			*WPC*		
Interval	No. of observations Real	Expected	*Z*-statistic (*p*-value)	No. of observations Real	Expected	*Z*-statistic (*p*-value)
[−0.03;0]	86	114	−3,161*** *(−0,000)*	125	160	−3,301*** *(−0,199)*
[0;0.03]	143	93	5,166*** *(0,000)*	195	117	6,942*** *(0,000)*

Table 7. Statistical significance of discontinuities close to zero in the frequency distribution of cross-sectional net earnings for SPC and WPC municipalities in post-election period (2014–2016)

	2010 to 2012 Pre-electoral period				2014 to 2016 Post-electoral period			
	[−0,03;0]		[0;0,03]		[−0,03;0]		[0;0,03]	
	SPC	WPC	SPC	WPC	SPC	WPC	SPC	WPC
Fgm	0.53	0.44	0.21	0.06	0.61	0.45	0.25	0.22
Difference in Fgm Standard deviation	0.09		0.15		0.15		0.03	
	0.06		0.050		0.066		0.048	
Z2	−1,387		−3,147***		−2,346***		−0.625	
(*p*-value)	*(−0,083)*		*(−0,001)*		*(−0,019)*		*(−0,532)*	

Table 8. Frequency grade of manipulation

statistically significant at 1% for the first interval to the right of zero. For the post-election period, the test is statistically significant at 1% for the first interval to the left of zero and not statistically significant for the first interval to the right of zero. The results of Ferreira *et al.* (2013) go generally in the same direction.

To make the analysis made so far more robust, a probit model was used to test the probability of political competition having an influence on reporting slightly positive and slightly negative earnings. The regression results are detailed in Table 9. The value of R^2 McFadden of Model A is acceptable.

Independent variable	Expected signal	Pre-electoral periods 2010 to 2012 Coefficient (*Z*-statistic)	Post-electoral periods 2014 to 2016 Coefficient (*Z*-statistic)
Const		−3.334***	−2.343**
		(−3.134)	*(−2.178)*
$DPComp_{2009}$	+	0.138*	–
		(1.370)	–
$DPComp_{2013}$	+	–	−0.034
		–	*(−0.344)*
DE_{t-1}	+	1.137***	1.056***
		(11.840)	*(11,010)*
$DisAccrual_{it}$	+	2.765***	0.643
		(3.114)	*(1.152)*
$LnTotalAssets_{it}$		0.134**	0.092*
		(2.293)	*(1.528)*
R^2 McFadden		0.155	0.123

Note(s):
(a) *** Significance level at 1%; ** Significance level at 5%; * Significance level at 10%.
(b) The dependent variable, *INTER*, has 813 observations for the pre-election period, of which 480 are zero and 333 are 1. SPC municipalities represent approximately 35% of the total number of observations. For the post-election period we have 813 observations of which 419 are zero and 394 are 1. SPC municipalities represent approximately 53% of the total number of observations.
(c) The model used is: $Inter_{it} = \alpha + \theta_1 \times DPComp + \theta_2 \times DE_{it-1} + \theta_3 \times DisAccrual_{it} + \theta_4 \times LnTotalAssets_{it} + \varepsilon_{it}$ where
$Inter_{it}$ – dummy variable, the value of which is one if the municipality reports net earnings in the interval [0;0.03 and zero if it reports earnings in the interval [-0.03;0[;
DPComp – dummy variable, the value of which is one if the municipality has political competition equal or higher to 2 and zero if it has political competition lower than 2 (when a party has an absolute majority)
DE_{it-1} – dummy variable, the value of which is one if municipality *i* reports positive net earnings in period *t*–1 and zero if it reports negative net earnings;
$DisAccrual_{it}$ – estimate of discretionary accruals for municipality *i* in period *t* divided by total assets in period *t*–1;
$LnTotalAssets_{it}$ - natural logarithm of total assets of municipality *i* in period *t* divided by total assets in period *t*–1;
ε_{it} – random error

Table 9.
Results of the probit model with *cross-sectional* data

It can see from Table 9 that the *DPComp* variable is statistically significant at 10% in the pre-electoral period, DE_{t-1} variable is significant at the 1% level in both periods, $DisAccrual_{it}$ variable is significant at the 1% level in the pre-electoral period, and $LnTotalAssets_{it}$ variable is statistically significant at 5% and 10% in pre-electoral and in post-electoral periods respectively.

Thus, for the pre-election period, the results appear consistent with the idea that the municipalities with SPC tend to be more likely to disclose positive net earnings close to zero, which is consistent with the graphical analysis and degree of frequency of earnings management. During this period, the empirical evidence confirms the H3 hypothesis.

For the post-election period, the results of the probit analysis are contrary to the results of the graphical analysis and degree of earnings management, suggesting that political competition has no influence on the level of positive earnings close to zero. Thus, for this period, the empirical evidence obtained so far does not support the H3 hypothesis.

It also carried out an analysis with panel data, trying to gauge whether this approach gives more robust results than the probit analysis. In the panel data approach, the goal was to use the three estimation techniques of pooled OLS, FEM and REM [10]. According to Baltagi

(2008), it used the Breusch-Pagan-test to select the better of the two pooled OLS and REM methodologies. Under this test, also called Lagrange Multiplier, the null hypothesis is that the components of cross-sectional variance are equal to zero. Thus, if the null hypothesis is rejected, this demonstrates that the test is not statistically significant, and the more efficient model is the pooled OLS. However, if this is not the case, the more efficient model is REM. We have compiled the results of the estimation and testing in Table 10 for the pre-election period (2010–2012) and post-election period (2014–2016).

On examining Table 10, we found that the value of the Breusch-Pagan-test is statistically significant, this suggests that the null hypothesis should be accepted, and the REM results should in turn be interpreted. For the REM model, the $DPComp_{2009}$ and $DPComp_{2013}$ variables are not statistically significant. The DE_{it-1} variable is statistically significant at 1% level and show the expected sign. The $DisAccrual_{it}$ and $LnTotalAssets_{it}$ variables are statistically significant at 1% level just in the pre-electoral period. In the post-electoral period the variables are not statistically significant. Thus, the results are indicative that the level of net earnings for the previous year influence the level of net earnings for the current year in

		2010 to 2012		2014 to 2016	
		Pooled OLS	REM	*Pooled* OLS	REM
Independent variable	Expected sign	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)	Coefficient (*t*-statistic)
Const		−0.671*	−0.607	−0.349	−0.389
		(−1.925)	*(−1.179)*	*(−0.932)*	*(−0.891)*
$DPComp_{2009}$	+	0.045	0.047	–	–
		(1.373)	*(1.179)*	–	–
$DPComp_{2013}$		–	–	−0.014	−0.012
		–	–	*(−0.395)*	*(−0.297)*
DE_{it-1}	+	0.409***	0.278***	0.397***	0.309***
		(13.140)	*(8.843)*	*(12.030)*	*(8.800)*
$DisAccrual_{it}$	+	*0.855***	*0.730***	*0.208*	*0.158*
		(3.071)	*(2.769)*	*(1.174)*	*(0.916)*
$LnTotalAssets_{it}$		0.047**	0.047**	0.033	0.038
		(2.459)	*(2.015)*	*(1.580)*	*(1.563)*
Adjusted R^2		0.195	–	0.159	–
F Statistic		50.056***	–	39.522***	–
Breusch-Pagan-test		–	24.992***	–	15.820***

Note(s):
(a) *** Significance level at 1%; ** Significance level at 5%; * Significance level at 10%.
(b) The dependent variable, *INTER*, has 813 observations for the pre-election period, of which 480 are zero and 333 are 1. SPC municipalities represent approximately 35% of the total number of observations. For the post-election period we have 813 observations of which 419 are zero and 394 are 1. SPC municipalities represent approximately 53% of the total number of observations.
(c) The model used is: $Inter_{it} = \alpha + \theta_1 \times DPComp + \theta_2 \times DE_{it-1} + \theta_3 \times DisAccrual_{it} + \theta_4 \times LnTotalAssets_{it} + \varepsilon_{it}$ where
$Inter_{it}$ – dummy variable, the value of which is one if the municipality reports net earnings in the interval [0;0.03 and zero if it reports earnings in the interval [-0.03;0];
DPComp – dummy variable, the value of which is one if the municipality has political competition equal or higher to 2 and zero if it has political competition lower than 2 (when a party has an absolute majority)
DE_{it-1} – dummy variable, the value of which is one if municipality *i* reports positive net earnings in period *t*-1 and zero if it reports negative net earnings;
$DisAccrual_{it}$ – estimate of discretionary accruals for municipality *i* in period *t* divided by total assets in period *t*-1;
$LnTotalAssets_{it}$ – natural logarithm of total assets of municipality *i* in period *t* divided by total assets in period *t*-1;
ε_{it} – random error

Table 10. Results obtained from panel data analysis for the pre-election and post-electoral periods

both periods. The results are also indicatives that discretional accruals and total assets influence the level of net earnings for the current year.

Thus, the probit model and the estimation of panel data lead us to a similar interpretation for both the pre-election period and the post-election period. In view of the empirical evidence gathered, the H3 hypothesis was confirmed for the pre-election period but not for the post-election period. The results of and Ferreira *et al.* (2013) go generally in the same direction.

Conclusion

One of the objectives of the present study is to examine if, motivated by political competition, local politicians, in Portuguese municipalities, engage in earnings management close to zero in order to demonstrate their level of competence. In general, the results of this study, which considers a longer period and more electoral cycles in the analysis, are consistent with those of Ferreira *et al.* (2013) and Donatella (2020).

We have interpreted the results, for the municipalities analysed, as indicators that local politicians manage earnings in such a way as to avoid reporting negative earnings and attempt to report positive earnings close to zero. By doing this, the local politicians aim to report earnings to signalling their competence (economic and efficiency) in the management of public resources.

Additionally, the results of the regression model confirm the results of the graphical analysis and indicate that discretionary accruals are used to engage in the practice of earnings management. Which means that municipalities use the discretional power allowed in election practices and accounting policies to report low positive net earnings.

The existence of these behaviour leads one to think that the management of public resources may be inefficient, which is a negative phenomenon in relation to the satisfaction of citizens needs and to a careful and proper allocation of resources. It also leads one to believe that this possible inefficiency could be reduced by the inclusion of restrictions on accounting options permitted by the accounting model for Portuguese municipalities. In this sense, the result indicates the need for possible intervention by the accounting standardisation bodies in order to reduce the options allowed by the accounting standards.

The results from Probit and Panel model allowed us to identify, for the pre-election period, a higher pre-disposition to earnings management in those municipalities where political competition is strong. For the same municipalities, in the post-election period, the results did not allow us to identify a higher pre-disposition to earnings management. These results are believed to be consistent with the idea that, in the post-election period, the pressure from political opponents is less and, therefore, the motivation for earnings management is also less.

We supported the hypotheses with the agency theory, and we assumed that local politicians are motivated to engage in earnings management through a desire to demonstrate a high level of competence with the aim of re-election. In general, the obtained results are consistent with the agency theory and public choice theory. These results are consistent with agency theory in that they indicate that local politicians manipulate accounting information (net results) to show their competence in managing public resources. The results are also consistent with the public choice theory because they indicate that politicians who have more political competition tend to be more likely to engage in earnings management, trying to manipulate the citizen/voter about their competency and thus promote your re-election.

The main contribution of this article to the literature on the earnings management in the public sector is about the knowledge of the relationship between political competition and earnings management over several political electoral cycles, independently of the mayor in the exercise of functions. The study also contributes to the knowledge that the earnings management is carried out through discretionary accruals. This contribution may be used by regulatory bodies in designing appropriate systems to enforce regulations and thereby

prevent politicians to behave inappropriately. Finally, the study can contribute to the learning of voters and political groups about opportunistic behaviour, fostering a more informed electoral process and, consequently, enhancing the efficiency of public resource management and accountability.

One limitation of the study can be the fact that agency theory and public choice theory implicitly assumes a perfect 'fit' between bureaucrats (prepares of accounting information) and governing parties. Another limitation is the fact that the years 2009 and 2010 have been of financial crisis may affect the analysis done so it may be considered a possible limitation. The measure of political competition also can be one limitation, bat we do not have enough data to use another type of methodology. However, we thought it would be interesting, as future development of this work, to use other methodologies to determine political competition.

Given that budget accounting is of significant importance in the management of municipalities and that there are regulations/rules in place which are designed to avoid budget deficits, a further area of study would be to analyse the way in which the tendency to report net earnings close to zero could be a consequence of the attempt to show a close to zero cash or budget balance. Further development of this study would be to analyse if the re-election of the mayor is related to the earnings management.

Notes

1. Further developments can be seen in Vinnari and Nä;si (2008).
2. This refers to taxes that are municipal revenues and to taxes that are Government revenues and assigned to municipalities as funds.
3. *This centre collects information relating to the reporting of* municipal *financial statements* to prepare the "Anuários Financeiros dos Munícipios Portugueses" (2003 from 2016), compiled by the following authors João Carvalho (University of Minho), Maria José Fernandes (Polytechnic Institute of Cávado and Ave), Pedro Camões (University of Minho) and Susana Jorge (University of Coimbra).
4. According to Young (1999), this model is a good measurement mechanism for non-discretionary accruals.
5. Every variable was scaled to control for heteroscedasticity. The conversion factor is the total amount of assets for the period *t*-1.
6. The test has used two other variables: (variations in sales, services and taxes); (variations in sales, services, taxes, and transferences and subsidies). Reliability of the estimates is also high, and the study results are not sensitive to the use of one, or any other, variable.
7. The interval amplitude was calculated using the same methodology as Silverman (1986): $0.79\times\sigma\times n^{-1/5}$, where n is the number of observations in the sample and σ is the standard deviation. Although space precludes the demonstration of a graph, the analysis using larger and smaller intervals was also carried out. However, the results were more or less the same.
8. Subdivision according to variable *PComp,* calculated for 2009 election results.
9. Subdivision according to variable *PComp,* calculated using election results of 2013.
10. When attempting estimations using these methodologies, we found that FEM is not possible due to the existence of a singular matrix.

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