

**Do firms in revitalization engage in earnings management:
The Portuguese case.**

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ABSTRACT

Purpose: This paper analyses earnings management of firms in revitalization. We aim to verify differences in discretionary accruals between firms that are still in activity and the others. Moreover, we study which determinants impact earnings management and if results depend on the firm' situation.

Methodology: The sample covers Portuguese firms that enter in 2012 in the special revitalization program. The sample period covers the period from 2011 till 2017. First the Kothari *et al.* (2005) model was used to calculate discretionary accruals. Then, we propose a model with seven determinants to explain earnings management.

Findings: Results show that distress firms engage in earnings management. Firms that are still in activity use upward accruals strategy, while firms that went to bankruptcy use downward one. Moreover, determinants related with leverage, return, the sign of net income, size and age are relevant to explain earnings management of firms that went to bankruptcy. To solvent firms, only age is statistically significant to explain discretionary accrual. Finally, we show that more than half of the firms that look for this program went to failure in the years after.

Practical implications: Our work giver relevant information to the government about the revitalization program success. Moreover, it calls attention for the need of legislation to limit earnings management to demotivate firms to engage in these practices.

Originality: Studies analyzing the impact of revitalization programs in earnings management are scarce, and the existing ones only analyze differences before and after solvency problems.

Keywords: Earnings Management, Accruals, Revitalization, Insolvency, Portugal.

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1. Introduction

Earnings management is not a new thematic. Although, while there is extensive research of models to detect it (e.g. Healy, 1985, Jones, 1991, Dechow, Sloan & Swenney, 1995, Burgstathker & Dichev, 1997, Kothari, Leone & Wasley, 2005, Roychowdhury, 2006), studies that analyze if firms have manage results, and which determinants impact it (e.g. Keating & Zimmerman, 2000, Moreira, 2006, DeFond, 2010, García-Lara, Osma & Neophytou, 2009, Koschtial & Franceschetti, 2013), the quality of financial information of firms with financial troubles is scarce.

In this study we focus on firms that enter in the special revitalization program created in 2012 by the Portuguese government. Using a set of determinants, we analyze the impact of it on earnings management using discretionary accruals as a proxy. Moreover, we analyze if the impact is influenced if the firms are still in activity or no. Previous studies found that firms with financial problems usually carry out accounting misbehaviors which explain their financial situation (García-Lara *et al.*, 2009, Nagar & Sen, 2018).

We expected that firms that went to bankruptcy engage in decreasing-income techniques while firms in activity use income-increasing ones since firms with financial problems may no more possibility to present an overly positive picture of the firm's activity, while firms that are still in activity want to show a consistent financial position to mislead all stakeholders, specially debtholders, customers, and suppliers.

First we have calculated discretionary accruals, a proxy of earnings management, using the Kothari *et al.* model (2005), a modification of the Jones model (1991). We have analyzed the impact of firm's situation (in activity or other), capital ratio, net debt ratio, EBITDA to interests coverage ratio, return on assets, net income sign, firm's size and age on discretionary accruals. We have also split the sample into two: firms in activity and others (that went to bankruptcy) to verify the main differences.

Results show that distress firms engage in earnings management. Firms that are still in activity use upward discretionary accruals strategy, while the ones that went to bankruptcy use the opposite. To solvent firms only age is statistically relevant to explain discretionary accruals. To insolvent firms, capital ratio, EBITDA to interests coverage ratio, ROA, negative sign of net income, size and age are relevant determinants to explain why these firms engage in discretionary accruals. Thus, as a conclusion we can say that the revitalization program had

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impact on the managers' choices and behaviors. Although, it does not succeed to all firms as more than half percent of the sample firms went to bankruptcy.

This work makes several contributions. First it increases literature review as it analyses the impact of revitalization programmes in earnings management. Firm's revitalization is a recent thematic at least in Portugal. Hence studies analysing it are scarce but this thematic has great potential. Some studies have analysed the impact of bankruptcy in earnings management, using essentially Anglo-Saxon countries and listed firms (Campa & Camacho-Miñani, 2014). We focus on a small-size country with a code law, which is almost unexplored, Portugal. Moreover, we analyze non-listed firms, mainly small and medium enterprises that are in financial problems.

Additionally, our work helps the government to improve regulations and conditions of firms to enter in this type of program in order to avoid earnings management, and misleading of information. We show that half of the firms that enter in this program have not succeed, suggesting that something is failing in the program. It can also be taken in consideration when establishing criminal consequences for firms that carry out accounting misbehaviors. Finally, we are aware that earnings management will always exist, but this work contributes to increase knowledge about it that may help to create new measures that may demotivate firms to engage in these practices.

After this introduction chapter, chapter 2 reviews existing literature of earnings management and presents hypotheses of this study. In chapter 3 we present the sample, and methodology used. Chapter 4 discusses the main results, and the last chapter shows the conclusions of the work.

2. Literature review

There are numerous definitions of earnings management, reflecting its complexity (Beneish, 1999). To Davidson, Stickney & Weil (1987) earnings management occurs when managers opt for accounting methods, within the generally accepted principles of accounting, that favor the firm's results. To Schipper (1989) earnings management results from the intervention of manager in the financial information reporting process with the purpose of obtaining advantages and private gains. In the perspective of Healy & Whalen (1999) earnings management arises when managers change financial information or the structure of transactions to mislead stakeholders about the true financial situation of the firm. As a synthesis we can say

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that earnings management involves changing financial information of the firm through changing accounting methods or the structure of the normal activity to show an image that favors the firm and misinform stakeholders.

Diverse reasons can explain managers' propensity to engage in earnings management. Healy & Whalen (1999) have grouped these reasons into three groups: capital market motivations, contracting motivations, and regulatory motivations. Capital market motivations can be explained due to the gap between firm performance and financial investors' expectations. Managers want to sustain the firms' reputation and acceptance from financial investors. Likewise, managers may tend to change financial information to meet investors' expectations or analysts' forecasts and/or achieve zero earnings surprise (Burgstahler & Dichev, 1997).

Contracting motivations can be divided into two main groups: lending contracts and managers' bonus contracts. Regarding lending contracts, before the company ask for a loan, the tendency is to present a stable financial situation to access to loans and benefit from the best interest rate (DeFond & Jiambalvo, 1994); when the firms already have a loan, earnings management allows the firm to meet debt covenants and thus to sustain contractual conditions, namely a smaller interest rate. Moreira & Pope (2007) found that firms with net losses have greater tendency to manage results to avoid costs of debt. With regards to manager's bonus contracts, firms apply manager's bonus contracts to increase the firms' and manager's wealth (Healy, 1985, Keating & Zimmerman, 2000). Although, managers are more concerned with their personal aims, and so may try to increase their bonus awards, which normally are linked with the firm's performance, even if they need to change financial information.

The last type of motivation is concerned with regulatory issues. Earnings management is a way to fulfill industry regulations, avoiding costs associated with it (Keating & Zimmerman, 2000). It is also a way to avoid the intervention of anti-trust regulators, which can increase political costs (Jones, 1991). Finally, when accounting and taxation are linked, managers engage in earnings management for tax planning purposes. They may try to pay less income tax, increasing costs and/or decreasing income (Moreira, 2006).

Hypotheses

Diverse determinants may explain earnings management. We have selected eight based on the paper's aim and previous literature. 1) Firm's actual situation. Firms in our sample have entered to the revitalization program to surpass insolvency problems. Although, not all have

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reached its aim and went to bankruptcy. Thus, we want to analyze if firms that are still in activity and the others have different ways and purposes to engage in earnings management. 2) We have selected capital ratio, net debt ratio and earning to income coverage ratio since are three ratios used to establish the firm's financial situation in Portugal. Most studies used leverage instead of capital ratio, but they are similar since capital ratio plus leverage equals to 100%. 3) Finally, we select some other firm's characteristics as previous researchers, namely, return on assets, sign of net income, firm's size and age.

Previous studies found that earnings management is linked with the failure of firms (Koschital & Franceschetti, 2013). In periods before bankruptcy, managers deteriorate the firm's performance, by decreasing cost of goods sold, releasing bad debt accruals, and others (e.g. DeFond & Jiambalvo, 1994, Sharma & Stevenson, 1997, García-Lara *et al.*, 2009, Campa & Camacho-Miñano, 2014). Managers want to sustain the firm's reputation, increase their bonus and meet debt covenants and other regulations (Rosner, 2003). These facts suggest that firms may have financial problems because in the past have try to maximize private benefits, decreasing the firm's net income and value. Hence, firms with financial distress can exhibit earnings management. This leads to our first hypothesis:

Hypothesis 1: Financially distress firms engage in earnings management.

Nagar & Sen (2018) argue that the way firms engage in earnings management may depend on the stage of distress. To avoid bankruptcy and show that are recovering from financial problems and improving performance, firms may engage in income-increasing accruals (Nagar & Sen, 2018). Thus, firms may avoid legal procedures and sustain debt covenants. Although, at some moment of time, managers may have no more opportunities for successful management, leading up to bankruptcy. In that moment, the firm reflects the firm's financial troubles, which may lead to decreasing earnings (DeAngelo, DeAngelo & Skinner, 1994). Kallunki & Martikainen (1999), Rosner (2003), García-Lara *et al.* (2009), Jones (2001), among others found that firms manage earnings upwards in years previous to bankruptcy. Our second hypothesis is the followed:

Hypothesis 2: Firms in activity may engage in income-increasing accruals, while firms in bankruptcy may engage in income-decreasing.

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One purpose to engage in earnings management is debt contract, or to gain approval of loans (to new loans), and/or maintain or reduce the firm's cost of debt (to existent ones) (Moreira & Pope, 2007). To meet debt covenants, firms may try to engage in income-increasing accruals otherwise interests expenses may increase (Defond & Jiambalvo, 1994). Therefore, earnings management may increase with leverage (Alves, 2012). Although, high leveraged firms are more controlled by debtholders (Jensen & Meckling, 1976), and so managers may have less opportunity to satisfy their self-interests. Paesnell et al. (2000) found a negative relation between earnings management and leverage.

In this paper we analyzed distressed firms that we expect to be too indebted. Thus, we expect that more indebted firms engage less in earnings management. As we use capital ratio instead of leverage ratio, the contrary sign is foreseen. The following hypothesis is established:
Hypothesis 3: Earnings management increases with capital ratio.

This situation may be more evident in bankruptcy firms than firms that are still in activity, since solvent firms show a growing performance and thus, debtholders may not exercise so active control. Therefore, hypothesis 3 can be divided in:

Hypothesis 3a: To bankrupt firms the impact of capital ratio on earnings management increases may be more relevant than to solvent firms.

Net debt ratio also measures the firm's leverage. It shows how many years the firm need to pay back its debt, ceteris paribus. A firm to avoid financial distress must have a net debt positive and smaller than 3, or at least, smaller than 10 to assure that debt will be repaid. The higher the number the more difficult may be to the firm to fulfill its contract obligations. If the value is negative the firm may have no opportunity to pay back its debt. Thus, firms with negative ratio of total debt may engage in income-increasing accruals to surpass this situation, increasing EBITDA. The following hypothesis naturally follows:

Hypothesis 4: Earnings management decrease with net debt ratio.

EBITDA to interest coverage ratio measures the firm's ability to pay off its interest expenses. The higher the value the greater is the firm's profitability to pay interests related with debt. A firm the show solvency must have a positive value greater than 1.3. Thus, the smaller

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this ratio the greater tendency to managers engage in earnings management. The following hypothesis is proposed:

Hypothesis 5: Earnings management decrease with earnings to interest coverage ratio.

Firm's profitability may also impact its earnings management. Firms with higher returns may want to pay less taxes, and then may downward accruals (Healy & Wahlen, 1999). In an opposite situation are firms with losses that may want to turn it in gains to provide a good picture of the firm to stakeholders (Lisboa, 2016). In this case, upward accruals strategy may be used.

As firms in our sample are distressed firms, that mainly have losses, we expect that earnings management is positively impact by return on assets. The following hypothesis is set:
Hypothesis 6: Earnings management increase with ROA.

Firms with positive net income may want to pay less taxes and thus may engage in income-decreasing strategy (Healy & Wahlen, 1999), while firms with losses way use the opposite strategy to avoid changing the relationships with stakeholders (Moreira & Pope, 2007). Chen, Firth, Gao, & Rui (2006) found that earnings management is negatively related with net profit. This relationship may be more evident to distress firms, since firms may be more concern to avoid losses than to pay less income tax. The following hypothesis naturally comes up:

Hypothesis 7: Earnings management increase when net income is negative.

The firm' size may also impact manager propensity to engage in earnings management. Large-size firms may have better accounting services and thus may also use it to change results (DeFond & Park, 1997). Moreover, these firms usually have agency problems between the principal and manager, since manager may try to satisfy his self-interests, namely increase his bonus, rather than maximize the firm's value (Jensen & Meckling, 1976). Although, for another side, large-size firms may want to maintain its reputation and thus. may have less propensity to engage in earnings management. Moreover, these firms may have a control system more efficient (Watts & Zimmerman, 1986).

Peasnell, Pope & Young (2000) found a negative relationship between firm' size and earnings management. As firms in our sample are distress firms, we expect that large-size firms

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have less propensity to engage in earnings management since have more ability to growth compared to small-sized firms. The next hypothesis is then established:

Hypothesis 8: Earnings management decrease with the firm' size.

Regarding age, the number of years the firm is in activity may explain is life-cycle, being young firms in a growth stage (Nagar & Sen, 2018). Young firms may have more difficulties to survive in a competitive market due to the lack of knowledge. Moreover, this type of firms has more difficulty to access to bank loans or even to benefit from better conditions with suppliers or other stakeholders. Therefore, young firms may engage more in earnings management. Similar result was found by Azibi, Azibi & Tondeur (2017). The last hypothesis is:

Hypothesis 9: Earnings management decrease with the firm' age.

3. Sample and methodology

3.1 Sample

The special revitalization program (in Portuguese PER: Programa Especial de Revitalização) was created in 2012 by the Portuguese government (law number 16/2012, of April 20, which is similar with the chapter 11 of the U.S. bankruptcy code). Its main aim is to restructure businesses with a difficult financial situation or in imminent insolvency but with probabilities of recovery (the firm possesses a going-concern value). This process allows these firms to negotiate with creditors a recovery plan that helps their financial solvency (Direção-Geral da Política de Justiça, 2012). As a consequence, these firms sustain employments and its activity, suspending coercive charges.

The revitalization program starts with a negotiation between (at least) a creditor and the firm, who agree with the firm's reorganization (article 17º, CIRE). Then, the firm must present a written report explaining its financial information to a court. The court will decide if accepts the agreement, and in that case an insolvent manger is designed to help to manage the firm and start its reorganization, or if refuse it, and in this case the firm goes to liquidation.

We collect the information about the firms' names that enter in PER in 2012 in IGNIOS. The financial information needed to test the proposed models was obtained in SABI database.

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In the year of 2012 1019 firms enter in PER. After deleting firms without at least two consecutive years of financial information, the final sample includes 917 firms (90% of total firms). The sample covers a period from 2011 till 2017. 2011 was the year before the entrance in the program, while 2017 was the last year with available financial information. Information for the year of 2010 was also collected to calculate the necessary variables. The final sample is an unbalanced sample with 4295 observations.

In the year of 2017 some of the firms in our sample were already in insolvency (around 50.6%), suggesting that the revitalization program had not the expected impact in all the firms.

3.2 Models

Measuring of accruals management

We used accruals as a proxy of earnings management as most researchers do since it is easier to detect it (Peasnell *et al.*, 2000). To calculate discretionary accruals, that represents earnings management, we have selected the Kothari *et al.* (2005) model, that includes the return on assets ratio (ROA) to the Jones model (1991) to control the performance effect. Diverse models could be selected, as for instance: There are various models to estimate discretionary accruals, as for example: Healy (1985), DeAngelo (1986), Jones (1991), Dechow *et al.* (1995), Kothari *et al.* (2005). We select the Kothari *et al.* model (2005) since it is an improvement of the Jones model (1991), the most important in this thematic.

Total accruals can be calculated using the following equation:

$$TA_{i,t} = \alpha_1 \times \frac{1}{A_{i,t-1}} + \alpha_2 \times \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \alpha_3 \times \frac{PPE_{i,t}}{A_{i,t-1}} + \alpha_4 \times ROA_{i,t} + \varepsilon_{i,t}$$

Where:

TA is total accruals, which is the variation of non-cash current assets, less the annual change in current liabilities, plus depreciations, divided by total assets of previous year

A is total assets

ΔRev is the annual change in revenues

PPE is the net value of property, plant and equipment

ROA is the return on assets (net income divided by total assets)

i represents the firm

t represents the fiscal year analyzed

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Then the coefficient obtained in the afford equation ($\hat{\alpha}$) are used to estimate the non-discretionary accruals (NDA):

$$NDA_{i,t} = \hat{\alpha}_1 \times \frac{1}{A_{i,t-1}} + \hat{\alpha}_2 \times \frac{\Delta Rev_{i,t}}{A_{i,t-1}} + \hat{\alpha}_3 \times \frac{PPE_{i,t}}{A_{i,t-1}} + \hat{\alpha}_4 \times ROA_{i,t} + \varepsilon_{i,t}$$

Finally, the difference between total accruals and non-discretionary accruals represent the discretionary accruals (DA):

$$DA_{i,t} = TA_{i,t} - NDA_{i,t}$$

Analyzing the impact of firm's characteristics on discretionary accruals

After calculating the discretionary accruals, we analyze the impact of some firm's characteristics on it. The estimated model is the following:

$$DA_{i,t} = C + \beta_1 \times CR_{i,t} + \beta_2 \times ND_{i,t} + \beta_3 \times E/I_{i,t} + \beta_4 \times ROA_{i,t} + \beta_5 \times DNI_{i,t} + \beta_6 \times Size_{i,t} + \beta_7 \times Age_{i,t} + U_i$$

Where

DA: discretionary accruals has a proxy of earnings management

CR: capital ratio

ND: net debt ratio

E/I: EBITDA to interests coverage ratio

ROA: return on assets

DNI: dummy variable which is one when net income is positive and zero otherwise

Size: natural logarithmic of total assets

Age: firm's age since foundation

U: fixed effects of firms (cross-section)

The model was estimated using the ordinary least square methodology (OLS) with fixed effects for firms. We have analyzed both effects: fixed and random and using the Hausman test we have decided that to total sample and insolvent firms fixed effects were more accurate to estimate the model. To solvent firms the model was not so accurate but has the main results were the same we decide to use the same estimation methodology to compare results. Results of the Hausman test are in the next table:

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Table 1: Hausman test

	Total sample	Solvent firms	Insolvent firms
Proposed model	13.9767 **	5.1278	34.4669 ***

*, *** Significant difference at the 10%, and 1% levels, respectively.

4. Results

In table 1 is presented the descriptive statistics of the variables included in the sample, as well as discretionary accruals calculates using the Kothari *et al.* model (2005). Panel A presents the values to total sample, while results to solvent firms are in panel B and to insolvent firms in panel C.

Table 2: Descriptive statistics

	Mean	Median	Maximum	Minimum	Std. Dev.
Panel A: Total sample					
DA	0.000196	-0.017265	109.2635	-59.91958	2.115748
CR	-3.271198	0.071273	0.941664	-10840.75	168.3404
ND	284166.1	21.48550	0.000000	-175524.1	17955313
E/I	-1811.191	0.595325	194747.8	-2332387	58156.44
ROA	-0.304957	-0.006006	26.52871	-922.7750	14.22621
DNI	0.645634	1.000000	1.000000	0.000000	0.478376
Size	14.60982	14.52900	20.20982	6.487045	1.624129
Age	21.84400	19.00000	98.00000	1.000000	14.55329
Panel B: Solvent firms					
DA	0.016650	0.003427	109.2635	-59.91958	2.423425

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CR	-0.150438	0.081380	0.807115	-41.14733	1.656468
ND	455118.9	23.24587	0.000000	-175524.1	22832337
E/I	-834.1084	1.194746	194747.8	-1684668	35850.62
ROA	-0.017830	0.001203	26.52871	-4.317816	0.592528
DNI	0.594503	1.000000	1.000000	0.000000	0.491080
Size	14.67878	14.60439	19.94524	8.372879	1.666238
Age	22.46875	20.00000	95.00000	1.000000	14.02464

Panel C: Insolvent firms

DA	-0.554753	-0.037247	39.53224	-996.2385	23.02004
CR	-8.201137	0.059314	0.941664	-10840.75	270.2598
ND	7021.773	19.07717	7416748	-69678.17	190311.8
E/I	-3339.705	-0.355986	23060.92	-2332387	81665.54
ROA	-0.760422	-0.022530	6.139875	-922.7750	22.82665
DNI	0.726891	1.000000	1.000000	0.000000	0.445690
Size	14.50341	14.40917	20.20982	6.487045	1.561197
Age	20.72749	17.00000	98.00000	1.000000	15.29930

Descriptive statistics of DA (discretionary accruals using the Kothari *et al.* model, 2005), CR (Capital ratio = total equity divided by total assets), ND (net debt = net debt divided by interests), E/I (EBITDA to interests coverage ratio = EBITDA divided by interests), ROA (return on assets = EBIT divided by total assets), DNI (dummy variable which is one when net income is positive and zero otherwise), size (natural logarithm of total assets), age (firm's age).

Analyzing the previous table, the following facts emerge:

1) discretionary accruals ratio is around zero, suggesting that some firms engage in income-increasing earnings management, while others in income-decreasing. Similar results were found by Alves (2012), and Lisboa (2016). Thus, our first hypothesis is proved: distress

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firms engage in earnings management. Analyzing solvent firms, discretionary accruals ratio is positive, meaning that in mean solvent firms engage in income-increasing earnings management, while to insolvent firms the results are the opposite. These results are in line with our second hypothesis and results found by Nagar & Sen (2018). Solvent firms may follow an opportunistic strategy to show an improved performance, while firms in bankruptcy have no more possibility to engage in earnings management. We also confirm that results are too volatile, and so we can conclude that not all firms follow the same tendency.

2) Capital ratio is negative, in mean, which point out that diverse firms are in technical bankruptcy. This result is more prominent to insolvent firms, which justify why firms went to bankruptcy. Although results are too volatile, suggesting that not all firms have the same financial situation.

3) Net debt ratio is positive but to high. This main mean that diverse firms may have difficulties to pay back its debt using EBITDA, justifying why they are in eminent insolvency.

4) EBITDA to interest coverage ratio is negative in mean, suggesting that most firms will have difficulties to pay its interests. This situation is more evident to insolvent firms, justifying why these firms went to effective bankruptcy.

5) Firms in the sample have negative profitability and in turn negative ROA. Thus, its investments are not generating enough return. 6) Net income is negative to diverse firms, but insolvent firms have more times positive net income, may be this is the main reason why these firms engage in earnings management, to transmit a picture of good performance. 7) Regarding size and age, the values are similar to both solvent and insolvent firms.

The Pearson coefficients of the correlation matrix are present in the next table:

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Table 3: Correlation matrix

	DA	CR	ND	E/I	ROA	DNI	Size	Age
DA	1							
CR	-0.0064	1						
ND	-0.0000	0.0003	1					
E/I	0.0047	-0.0002	-0.4460	1				
			**					
ROA	0.0003	0.3105	0.0003	0.0023	1			

DNI	-0.0372	-0.0141	0.0115	-0.0297	-0.0210	1		
	**			*				
Size	0.0072	0.0896	0.0186	0.0010	0.0749	0.1171	1	
		***			***	***		
Age	0.0228	0.0115	-0.0167	0.0257	-0.0050	0.0868	0.3261	1
						***	***	

Correlation matrix of the variables: DA (discretionary accruals using the Kothari *et al.* model, 2005), CR (Capital ratio = total equity divided by total assets), ND (net debt = net debt divided by interests), E/I (EBITDA to interests coverage ratio = EBITDA divided by interests), ROA (return on assets = EBIT divided by total assets), DNI (dummy variable which is one when net income is positive and zero otherwise), size (natural logarithm of total assets), age (firm's age).

*, *** Significant difference at the 10%, and 1% levels, respectively.

None of the selected variables are highly correlated. Discretionary accruals variable is only significantly correlated with the sign of net income, firms with negative results increase discretionary accruals. This result goes in line with our expectations, Portuguese firms engage in earnings management specially to sustain debt contracts. Moreover, large-size firms and older ones have usually positive net income.

In the next table the results of the regression of firm's discretionary accruals against the chosen determinants are present.

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Table 4: Impact of firm's characteristic on earnings management

	Total sample	Solvent Firms	Insolvent firms
C	0.2205	-2.4213	5.9299 ***
CR	0.0002	0.0267	0.0003 ***
ND	0.0000	-0.0000	0.0000
E/I	0.0000	-0.0000	0.0000 **
ROA	0.0012	0.1257	0.0028 **
DNI	-0.1881 **	-0.0942	-0.2599 ***
Size	-0.0655	0.0672	-0.3420 ***
Age	0.0393 *	0.0677 **	-0.0391 **
Adjusted R²	10.69%	7.07%	55.72%
F-statistic	1.5693 ***	1.4422 ***	5.6151 ***

Regression results of DA (discretionary accruals using the Kothari *et al.* model, 2005) by CR (Capital ratio = total equity divided by total assets), ND (net debt = net debt divided by interests), E/I (EBITDA to interests coverage ratio = EBITDA divided by interests), ROA (return on assets = EBIT divided by total assets), DNI (dummy variable which is one when net income is positive and zero otherwise), size (natural logarithm of total assets), age (firm's age).

*, *** Significant difference at the 10%, and 1% levels, respectively.

Results showed in previous table are obtained using the ordinary least square methodology to fixed effects for firms. The same estimations were done using random effects (results are sent under request).

The estimated model explains 11% of discretionary accruals for the total sample, only 7% to solvent firms and 56% to bankrupt firms. Moreover, analyzing the F-statistic we can see that the models are relevant.

Analyzing the first column (total sample), only the sign of net income (-) and age (+) are relevant determinants to explain firm's discretionary accruals. Firms with negative net income have more tendency to engage in earnings management to increase profits and give more confidence to stakeholders, showing that the firm is recovering. Hypothesis 7 is confirmed. We found the opposite sign expected in hypothesis 9, older firms engage more in earnings managements. We suppose that young firms need to upward accruals to benefit from better relationships with stakeholders. Although, results suggest that older firms engage in income-increasing, instead of young firms, may be because this firms have more knowledge about how to do it and do not want to damage their relationships with stakeholders.

When we subdivide the sample into solvent and insolvent firms, the impact of the determinants on earnings management is different. To solvent firms, only age positively impacts discretionary accruals. Older firms are the ones that want to show more confidence to stakeholders to continue benefiting from good relationships.

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To insolvent firms, capital ratio, EBITDA to interests coverage ratio and ROA positively impacts earnings management, while the sign of net income, size and age cause a negative impact. As we expected in hypothesis 3 and 3a earnings management increases with capital ratio as firms are more controlled by debtholders, especially the ones with more solvency problems. Jensen & Meckling (1976) argued that debt is an alternative measure to control managers' opportunistic behaviors. Moreover, to reduce the firm's cost of debt firms may engage in income-increasing accruals to show a growing performance.

EBITDA to interest coverage ratio positively impacts earnings management, contrary to our expectations in hypothesis 5. We expect that firms with more difficulties to pay interests engage more in earnings management. Although, our results suggest that firms use income-increasing strategies may be to increase EBITDA and to improve this ratio.

Hypothesis 6 is proven, firms with higher ROA engage in income-increasing accruals. Upward-accruals strategy is used to show a performance growing which may contribute to sustain or improve the relationships with stakeholders.

Firms with losses engage in earnings management to change it to profits and show increased core earnings to stakeholders. Hypothesis 7 is confirmed. Regarding size, we find that firms with small-size engage more in earnings management since these firms want to transmit confidence to stakeholders and acquire reputation in the market. Hypothesis 8 is confirmed. Finally, the firm's age has a negative impact on earnings management. As expected in hypothesis 9, young firms have more difficulties to establish good relations with stakeholders and thus may upward accruals to show a better financial situation of the firm. This sign is contrary to the one found to solvent firms, may be because firms that are still in activity want to sustain their good relationships with stakeholders.

5. Conclusion

This paper analyses earnings management of firm in the revitalization program created by the Portuguese government. We analyze a sample of 917 firms that looked for financial help in 2012. The period covers the years from 2011, one year before the firm ask help, till 2017, the last year with available financial data.

Findings support that financial distress firms engage in earnings management, and the strategy used depend on the firm's situation. While firms that are still in activity upward discretionary accruals, firms that went to bankruptcy during the period analyzed use a

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downward accruals strategy. Moreover, we found that the revitalization program has not help all the firms since more than 50% of the firms went to bankruptcy.

We also analyze the determinants that impact earnings management for the total sample and to the sample that covers solvent and insolvent firms. Results suggest that firms with losses and older engage more in earnings management. When we split the sample, to solvent firms only age positively impact earnings management. To insolvent firms, firms with less leverage, more return, with losses, younger and smaller engage more in earning management as they want to sustain their relationships with stakeholders, but over a certain point they have no more possibility to do it. Thus, findings purpose that a problem of distress firms is related with leverage, size and age.

Results of this study have several implications. Financial problems are not only a result of macroeconomics factors but includes also a degree of managers' misbehaviors. Hence, we suggest that this should be taken into account when the parts are involved to make a decision whether to give financial help. Evidence also suggest that the revitalization program has some limitations since it have not avoided that more than half percent of the firms went to bankruptcy, while the program' aim is to avoid it. Moreover, both firms in activity and the ones that went to bankruptcy engage in earnings management but use different strategies. Though, earnings management still exist. Evidence suggest a need to establish rules and policies to penalize firms that engage in earnings management, and a creation of more mechanisms to detect it.

This paper is not free from limitations. Findings are based on a proxy of earnings management: accruals. It could be interesting to analyze the impact on real activities manipulation. Moreover, we analyze a sample of firms that enter in the revitalization program in the first year of its application. After it the program had some changes and some of these identified problems may be solved. Thus, extending the sample to other periods could be interesting to see the persistence of conclusions. Moreover, comparing solvent (without any need to ask financial help) and firms with financial problems should enhance the impact of accounting misbehaviors in this type of firms. Finally, our study should be done to other countries to corroborate results and extend empirical results.

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