EARNINGS MANAGEMENT AND CEO CHARACTERISTICS IN PORTUGUESE FIRMS

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Abstract

The separation between control and ownership in the modern firm creates information asymmetry between managers and shareholders. The superior knowledge about the firm's operations stimulates managers to manage financial information. We investigate which managers characteristics are more likely to positively influence earnings management practices. Specifically, we study whether the CEO's age, education, expected tenure and duality of roles affects earnings management for a sample of listed Portuguese firms for the fiscal years 2005 to 2009.
Results indicate that older CEOs, CEOs with management or finance background, and CEOs that also hold the position of Chairman of the board of directors are more prone to manage earnings.

Keywords: Corporate Governance, CEO, Earnings Management

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1. Introduction

Accounting literature has widely studied the concept and the implications of earnings management. Earnings management behavior takes place when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the firm or to influence contractual outcomes that depend on reported accounting numbers (Healy and Wahlen, 1999). Because capital markets are imperfect and incomplete, accounting information is necessary to solve information asymmetry problems (Jensen and Meckling, 1976; Dechow and Skinner, 2000). Managers are required to provide financial reports to external users of information particularly to capital providers. Discretionary reporting and earnings manipulation occur because managers have more knowledge about the firm than external users and have incentives to manipulate. Managers manipulate earnings to increase compensation, ensure job security, and meet analysts' earnings forecasts (Schipper, 1989; Burgstahler and Eames, 2006). In addition, managers manage accounting numbers to avoid violation of debt covenants and maintain favorable conditions in debt contracting (Chava *et al.*, 2010; Defond and Jiambalvo, 1994).

As the CEO is the critical agent determining financial reporting quality, his particular conditions on the job are likely to influence the level of earnings management. We investigate the association between characteristics of the firm's CEO and earnings management, namely the CEO's age, education, expected tenure in the firm, and duality of chair roles. Prior studies have established a link between these characteristics and financial reporting policies. For example, Gibbons and Murphy (1992a) show that the agency problem increases as the CEO approaches retirement. In his last year in the job the CEO takes advantage of his private information to improve firm performance in order to achieve higher compensation in the final year or after leaving the job. And Bhagat *et al.*, (2010) find that CEOs with MBA degrees tend to manage accounting numbers in order to improve short-term firm performance. We study the association between CEO characteristics and earnings management in Portuguese listed firms for the period 2005 to 2009. Portugal is a small economy where many firms are family-owned, CEOs often have close relationships with board members and shareholders, and controls over-sighting the CEO actions are usually weak (La Porta *et al.*, 1998; La Porta *et al.*, 1999; Djankov *et al.*, 2008). Moreover, Portuguese regulation of corporate governance is mostly about disclosure and it is often not enforced. In fact, both the stock market regulator and the OECD recognize that the application of the rules has been weak (CMVM, 2006 and OECD, 2011). It is interesting to observe such context because on one hand CEOs have more freedom to manage earnings when governance

controls are inefficient and enforcement is weak, but on the other hand CEOs has fewer incentives to manage accounting numbers because there is less information asymmetry between shareholders and managers.

The empirical results show that CEO's characteristics affect earnings management behavior in listed Portuguese firms. Namely, we find that older CEOs, CEOs with management or finance education, and CEOs that also hold the position of Chairman of the board of directors are more prone to manage earnings. The results indicate that the choice of the individual to manage the business and his contract conditions have important economic consequences for shareholders and users of financial information. These findings can help shareholders in the selection of the appropriate CEO and can also assist financial statement users to infer about the quality of accounting numbers reported by the manager.

The remainder of the study is organized as follows. Section 2 reviews prior literature and develops the hypotheses. Section 3 presents the research design. Section 4 describes the sample and descriptive statistics. Section 5 discusses the empirical results. Section 6 concludes.

2. Prior literature and hypotheses

Agency theory suggests that CEO reporting practices vary throughout his career. When a CEO is older and is nearing retirement age the horizon problem may occur. The horizon problem is related to a myopic behavior of the CEO who focuses on short-term performance instead of investing on future profitability and firm value creation (Dechow and Sloan, 1991). As the CEO comes close to retirement, reputation and career concerns typically diminish. In addition, in the last years with the firm the CEO is less prone to take on positive net value projects that have long payback periods that will only reward their successors. This behavior increases the agency problem as the CEO take advantage of his private information to improve short-term firm performance in order to achieve better compensation in the last years, greater retirement pay, and greater option value (Gibbons and Murphy, 1992a). For these reasons we expect to observe more earnings management as the CEO´s age increase. This phenomenon has been observed in relation to R&D expenses (Barker and Mueller, 2002), capital expenditures (Conyon, 2006) and firm profitability (Davidson III *et al.*, 2007). Taking these points into consideration we test the following hypothesis:

H1: The CEO's age is positively related to earnings management

CEO education is one of the characteristics considered by the board when selecting a executive to manage the firm. The board typically chooses a manager with appropriate knowledge, expertise and competence to maximize shareholder value. CEOs with higher education in management and finance sciences are usually seen as the best equipped to run a business and make it grow. However, their expertise can also be used for their own benefit. Given the right incentives CEOs with a management and finance background are more skilled to use discretion in the choice of accounting policies and to manipulate earnings. Bhagat *et al.*, (2010) show that hiring CEOs with MBA degrees leads to improvements in short-term firm performance but not in long-term performance. Bertrand and Schoar (2003) find that CEOs with MBAs are in general more aggressive managers. Thus, we study the following hypothesis:

H2: Management and financial education of the CEO increases the practice of earnings management

When the CEO plans to leave the firm in a short horizon he may be motivated by self interests rather than maximizing shareholders' wealth. Similarly to older CEOs, the executive with short-term horizon takes on projects with lower or negative net present values, with higher current earnings and fast payback periods instead of projects with higher net present value but with longer payback periods (Antia *et al.*, 2010). In order to get greater compensation and signal superior abilities to the labor markets, the CEO may choose to manage earnings in his last years in the firm hoping to exit the firm before his poor performance becomes visible (Campbell and Marino, 1994). For example, Dechow and Sloan (1991) shows that CEOs decrease R&D and advertising expenditures in their final years in office to increase short-term earnings and bonuses. But contrary to this evidence Cheng (2004) does not find a relation between CEO turnover and R&D expenditures, and Gibbons and Murphy (1992a) and Murphy and Zimmerman (1993) show that investment decisions are not explained by CEO turnover. Another motivation of CEOs to manage earnings in the final years in office is to ensure board seats. The number of board seats after retirement depends largely on the reported performance of the CEO in his final years in the firm. Therefore, CEOs about to retire have incentives to use their discretion to manage earnings as a way to ensure future board roles (Brickley *et al.*, 1999). But this desire to get more board seats can also work as an incentive to non-manipulation behavior because the CEO may want to keep a board seat in his firm after retirement and be worried about maintaining his reputation. We investigate whether the proximity of the CEO's final year in the job increases or decreases earnings management behavior. We state the following hypothesis:

H3: When the CEO is in his final years in office there is higher earnings management

Another agency problem that may lead to earnings management is the concentration of CEO functions, particularly the functions of Chairman of the board and CEO. National and international regulations recommend separation between the Chairman and the CEO as a way to allocate monitoring and management responsibilities to different individuals (OECD, 2004; CMVM, 2010). The separation between management and monitoring improves independence and the quality of internal controls. In addition, non-dual leadership promotes the protection of minority shareholders that face higher information asymmetries as they are less informed and less in contact with top executives than the controlling shareholders (Fama and Jensen, 1983; Jensen, 1993). Prior empirical literature found evidence that earnings management increases when the CEO is simultaneously the chairman of the board (Dechow *et al*., 1996; Davidson *et al*., 2004). And Chen *et al*., (2006) show that firms that commit fraud usually have a CEO who also serves as the Chairman. However, Brickley *et al*. (1997) suggests that dual structures have costs associated with non-optimal decisions such as information costs, costs with two large salaries, reputational costs and other costs related to shared authority, suggesting that role separation costs may be higher than the agency costs of dual leadership. Thus, it is unclear whether duality affects earnings management behavior. We investigate whether there is a link between the firm's leadership structure and the susceptibility to earnings management activities and state the following hypothesis:

H4: When a CEO assumes both the role of chief executive and chairman of the board of directors there is higher earnings management

3. Research design

3.1. Earnings management

Earnings management is difficult to observe and thus complex to measure. A widely used method to detect earnings management is the discretionary accruals models. Although extensively used these models have also been criticized for measuring earnings management with substantial error (Guay *et al*., 1996; Dechow and Dichev, 2002; Dechow *et al*., 2010).

Income *Smoothing* is another method of detecting earnings management. The idea behind the method is that the CEO smooths earnings by maintaining it at the same level for several years and thus giving the idea of a constant earnings growth. The CEO may delay income recognition (understate) when the firm is over performing and shift income forward when the firm is underperforming (Gaver *et al.*, 1995). This way, the manager leads shareholders to believe that the value of their shares will constantly increase in the future. By smoothing earnings, the CEO feels that his tenure is secure and his bonus compensation will keep in line with the earnings level that he establishes (Fudenberg and Tirole, 1995; Gaver *et al.*, 1995). Examples of recent studies that measured earnings management through income smoothing are Burgstahler *et al.* (2006), Tucker and Zarowin (2006) and Leuz *et al.* (2003). We use income smoothing as a proxy for earnings management and estimate the following model:

$$P\,[Earnings\ management_{i,t} = \Psi\,[\propto_0 + \propto_1 CEO\ characteristics_{i,t} + \propto_2 Control\ variables_{i,t} + \varepsilon_i]$$

Ψ represents the logit response function $e^{\alpha' x} / (1+e^{\alpha' x})$. Next we define variables. All variables are for firm *i* and time *t* but for ease of notation subscripts are removed throughout the text.

Earnings management is defined as a dichotomous variable taking the value of one if the firm´s smoothness ratio is above the sample median and zero otherwise. Smoothness is calculated as the ratio of the five-year standard deviation of operating income divided by the five-year standard deviation of cash flows from operations, multiplied by minus one so that higher values of the measure indicate higher values of earnings management (Leuz *et al*., 2003). Using a discrete variable to measure earnings management has the advantage of reducing the influence of extreme observations which is particularly important in small samples.

3.2. CEO characteristics

We study the following CEO characteristics. The age of the CEO (*AGE*) defined as the CEO's age in years. In case of CEO turnover before the end of his mandate the average of both executives age is used. The CEO´s education (*EDUCATION*) defined as an indicator variable coded one when the manager's education is in the management or finance fields and zero otherwise (other fields of education). The CEO's *TENURE* defined as an indicator variable coded one if the CEO has one year or less to end his mandate and zero otherwise (more than one year left on the job). Duality of the CEO (*DUALILTY*) defined as an indicator variable that takes the value of one if the same individual held the positions of CEO and Chairman of the board in the firm and zero otherwise (CEO and Chairman are different

individuals). Following the hypotheses developed in the previous section we expect a positive relation between earnings management and these CEO characteristics.

3.3. Control variables

We have also considered firm specific conditions identified in previous studies as being associated with earnings management behavior. The firm characteristics are as follows. *SIZE* is measured as the log market capitalization at the fiscal year end. Large firms have more possibilities to manage earnings but they are also under more scrutiny from the public and regulatory entities which reduces incentives to manipulate earnings (Leuz *et al.*, 2003; Moses, 1987). *LEVERAGE* measured as the ratio of debt to equity is expected to be positively related to earnings management. Firms with higher leverage are more likely to violate debt covenants and thus have incentives to manage earnings (Watts and Zimmerman, 1986). *GROWTH* measured as the standard deviation of the firm's rolling five-year sales revenues, scaled by total assets. Growth in sales is usually associated with more earnings volatility and more negative values of our earnings management measure (Burgstahler *et al.*, 2006). *PERFORMANCE*, measured as *ROA* (return on assets equal to net income scaled by total assets), is a proxy for firm performance and is negatively associated with earnings management. Firms with better performance are more likely to meet analysts' forecasts and debt contracts thus do not need to resort to manipulation (Kalyta, 2009; Bauman and Shaw, 2006).

4. Data and descriptive statistics

Financial data for the sample firms was obtained via Thomson/Datastream and checked against firms' financial reports. CEO information was hand-collected from financial reports and press releases. The sample comprises all firms included in the PSI-20 stock market index. After dropping firm-years for which financial information was not available the final sample consists of 90 firm-year observations for 19 firms and for fiscal years 2005 to 2009. We selected these firms because they are the largest and economically more significant firms in the Portuguese economy. Also, they are subject to more stringent public and regulatory scrutiny and to additional auditing which is expected to result in higher reporting quality. These circumstances are likely to work against us finding the expected results.

Table 1 reports descriptive statistics. The average sample firm has 3,782 million Euros of market capitalization, 16,114 million Euros of assets and operating income of 330 million Euros. The level of debt exceeds equity more than three times and financial performance, based on ROA, is relatively low (3%). About 47% of the sample firms show signs of earnings management as the level of smoothness is above the sample median. The average executive age is 53 years. The CEO has a management or finance background in 84% of the cases, is about to leave his job in 31% of the cases, and accumulates the role of CEO and Chairman of the board in 37% of the cases.

Table 2 presents Pearson correlation coefficients for the variables used in the regression tests. The correlation between earnings management and the CEO characteristics is positive in all cases except for *TENURE* when it is close to zero. Overall, the Pearson correlations between variables are low indicating that multicollinearity is not a problem and is unlikely to affect the regression results. Variance inflation factors (VIFs) were also computed to check for multicollinearity problems. The VIF results (not tabulated) confirm that multicollinearity is not a serious problem as the factors are all smaller than the usual threshold of ten.

5. Empirical results

The empirical results of the association between earnings management behavior and four CEO characteristics are presented in Tables 3 to 6. For each CEO characteristic we estimate three logit models with a different set of control variables.

Table 3 presents the results of the association between earnings management and the CEO age. We find that age is positively and significantly associated with earnings management practices, for the three models. This result supports *H1* and indicates that older CEOs are more inclined to manipulate earnings to achieve higher short-term performance. In line with previous literature (Gibbons and Murphy, 1992a) we interpret this behavior as an attempt to improve compensation as retirement age approaches. The results for the firm-specific variables suggest that earnings management increases with leverage and decreases with growth and financial performance. But the results for the control variables are not statistically significant at the conventional levels.

The results of the association between earnings management and CEO education support *H2* (Table 4). Managers with management or finance studies are more prone to smooth earnings in all model specifications. This result is in line with the argument that a CEO with finance knowledge has more ability to manipulate accounting information. A CEO with management or finance education is more likely to manage earnings in order to report better firm performance in the short-term (Bhagat *et al.*, 2010).

Table 5 reports the estimated results on the relation between the CEO's tenure and earnings

manipulation. Contrary to the stated *H3* we find no significant association between the two variables. The fact that the manager is about to leave the job does not seem to increase earnings management. A possible reason for this result is that in a small business environment such as the Portuguese economy the CEO is often re-appointed as CEO or appointed to other relevant job in the firm. And even when he leaves the firm it is common that he keeps personal and professional links. Another explanation is the existence of governance mechanisms that mitigate managers' opportunistic behavior before turnover like stock-based incentives linked to future firm performance. But we have no information to explore these explanations.

Finally, in Table 7 we provide empirical estimations on the association between CEO duality and earnings management. Consistent with *H4* we find that earnings management increase when the CEO also holds the position of Chairman of the board of directors. When the same individual assumes the functions of CEO and Chairman that individual has more power to influence board members reducing efficient board monitoring (Jensen, 1993).

Overall, the empirical results indicate that some CEO characteristics are relevant determinants of earnings management.

Conclusion

This study analyzes the relation between characteristics of the firm's CEO and earnings management. We find that earnings management behavior increases when the CEO is older, has a management or finance background and accumulates the role of CEO and Chairman of the board of directors. We study the association between CEO characteristics and earnings management in Portuguese listed firms for the period 2005 to 2009. Portugal is a small economy where many firms are family-owned, CEOs have close relationships with board members and shareholders, and controls over the CEO actions can be weak (Djankov *et al.* 2008). Moreover, Portuguese regulation of corporate governance is often not enforced (CMVM, 2006; OECD 2011). It is interesting to observe such context because on one hand CEOs have more freedom to manage earnings, but on the other hand CEOs face less incentives to manage accounting numbers because there is less information asymmetry between shareholders and managers. The empirical results show that CEO's characteristics affect earnings management behavior. Namely, we find that older CEOs, CEOs with management or finance education, and CEOs that also hold the position of Chairman of the board of directors are more prone to manage earnings. The results indicate that the choice of the individual to manage the business and his contract conditions have important economic consequences for shareholders and users of financial information. These findings can help shareholders in the selection of the appropriate CEO and can also assist financial statement users to infer about the quality of accounting numbers reported by the manager.

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Table 1. Descriptive statistics

Variable	Mean	Median	SD	%
Market capitalization (million Euros)	3,781.86	2,818.54	3,719.33	
Total assets (million Euros)	16,113.72	4,124.38	25,096.80	
Operating income (million Euros)	330.45	167.39	431.79	
Operating cash flow (million Euros)	494.49	315.90	588.86	
Smoothness	-0.85	-0.58	0.73	
Earnings management				47.1
Age	53.00	52.00	6.60	
Education				83.5
Tenure				31.8
Duality				36.5
Size	3.32	3.45	0.56	
Leverage	3.88	2.16	4.35	
Growth	7.66	7.48	1.05	
Performance	0.03	0.03	0.03	

No.observations = 90

This table presents mean, median, and standard deviation (for continuous variables), frequencies (for discrete variables) and the number of firm-year observations. The sample consists of 19 Portuguese firms included in PSI-20 index for fiscal years 2005 to 2009. *Earnings management* is an indicator variable taking the value of one if the smoothness ratio is above the sample median and zero otherwise. Smoothness is defined as the ratio of the five-year standard deviation of operating income divided by the five-year standard deviation of cash-flow from operations, multiplied by minus one. *Age* is the CEO´s age in number of years. *Education* is an indicator variable that takes the value of one if the CEO's education is in the management or finance fields and zero otherwise. *Tenure* is an indicator variable that takes the value of one if the CEO has one year or less to end his mandate and zero otherwise. *Duality* is an indicator variable that takes the value of one if the same individual hold the positions of CEO and Chairman of the board of directors and zero otherwise. *Size* is the log of market capitalization at fiscal year-end. *Leverage* is the ratio of debt to equity at fiscal year-end. *Growth* is the standard deviation of rolling five-year sales revenues scaled by total assets. *Performance* is the ratio of net income to total assets at fiscal year-end.

Table 2. Correlations

	Earnings management	Age	Education	Tenure	Duality	Size	Leverage	Growth	Performance
Earnings management	1								
Age	0.2083	1							
Education	0.1645	-0.0483	1						
Tenure	-0.0357	0.1155	0.0305	1					
Duality	0.1671	0.2681*	-0.0589	-0.0445	1				
Size	0.0092	0.1862	-0.3055*	-0.0776	0.0972	1			
Leverage	0.1452	0.1417	-0.1577	0.0689	0.081	-0.0003	1		
Growth	0.1547	0.3198*	-0.2343*	0.0264	-0.139	0.6173*	0.0815	1	
Performance	-0.1668	0.0141	-0.2817*	-0.045	0.0164	0.4738*	-0.3719*	0.1513	1

This table shows Pearson correlation coefficients between variables. The sample consists of 19 Portuguese firms included in PSI-20 index for fiscal years 2005 to 2009. *Earnings management* is an indicator variable taking the value of one if the

smoothness ratio is above the sample median and zero otherwise. Smoothness is defined as the ratio of the five-year standard deviation of operating income divided by the five-year standard deviation of cash-flow from operations, multiplied by minus one. *Age* is the CEO´s age in number of years. *Education* is an indicator variable that takes the value of one if the CEO's education is in the management or finance fields and zero otherwise. *Tenure* is an indicator variable that takes the value of one if the CEO has one year or less to end his mandate and zero otherwise. *Duality* is an indicator variable that takes the value of one if the same individual hold the positions of CEO and Chairman of the board of directors and zero otherwise. *Size* is the log of market capitalization at fiscal year-end. *Leverage* is the ratio of debt to equity at fiscal year-end. *Growth* is the standard deviation of rolling five-year sales revenues scaled by total assets. *Performance* is the ratio of net income to total assets at fiscal year-end. The symbol ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.

Table 3. Earnings management and CEO age

	Model (1)	Model (2)	Model (3)
AGE	0.112**	0.138**	0.140**
	(2.08)	(2.08)	(2.12)
Size	-0.683	0.795	0.868
	(-1.04)	(0.79)	(0.82)
Leverage	0.022	0.015	0.015
	(0.40)	(0.30)	(0.28)
Growth		-0.705	-0.703*
		(-1.62)	(-1.65)
Performance			-3.581
			(-0.31)
Intercept	-3.933	-5.388	-5.619
	(-1.09)	(-1.34)	(-1.40)
No. observations	90	90	90
Pseudo R2	0.34	0.36	0.36
Time fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes

This table reports estimates of a logit model of earnings management on CEO age and firm-specific variables. The sample consists of 19 Portuguese firms included in PSI-20 index for fiscal years 2005 to 2009. *Earnings management* is an indicator variable taking the value of one if the smoothness ratio is above the sample median and zero otherwise. Smoothness is defined as the ratio of the five-year standard deviation of operating income divided by the five-year standard deviation of cash-flow from operations, multiplied by minus one. *Age* is the CEO´s age in number of years. *Size* is the log of market capitalization at fiscal year-end. *Leverage* is the ratio of debt to equity at fiscal year-end. *Growth* is the standard deviation of rolling five-year sales revenues scaled by total assets. *Performance* is the ratio of net income to total assets at fiscal year-end. The symbol ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.

Table 4. Earnings management and CEO management/financial education

	Model (1)	Model (2)	Model (3)
EDUCATION	1.584**	1.541**	1.910*
	(1.97)	(1.99)	(1.86)
Size	0.023	0.715	0.306
	(0.04)	(0.71)	(0.27)
Leverage	0.039	0.035	0.050
	(0.71)	(0.66)	(0.86)
Growth		-0.333	-0.303
		(-0.78)	(-0.70)
Performance			13.678
			(0.95)
Intercept	-1.306	-1.401	-1.039
	(-0.52)	(-0.56)	(-0.40)
No. observations	90	90	90
Pseudo R2	0.34	0.34	0.35
Time fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes

This table reports estimates of a logit model of earnings management on CEO education and firm-specific variables. The sample consists of 19 Portuguese firms included in PSI-20 index for fiscal years 2005 to 2009. *Earnings management* is an indicator variable taking the value of one if the smoothness ratio is above the sample median and zero otherwise. Smoothness is defined as the ratio of the five-year standard deviation of operating income divided by the five-year standard deviation of cash-flow from operations, multiplied by minus one. *Education* is an indicator variable that takes the value of one if the CEO's education is in the management or finance fields and zero otherwise. *Size* is the log of market capitalization at fiscal year-end. *Leverage* is the ratio of debt to equity at fiscal year-end. *Growth* is the standard deviation of rolling five-year sales revenues scaled by total assets. *Performance* is the ratio of net income to total assets at fiscal year-end. The symbol ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.

Table 5. Earnings management and CEO tenure

	Model (1)	Model (2)	Model (3)
TENURE	-0.164	-0.126	-0.125
	(-0.23)	(-0.17)	(-0.16)
Size	-0.193	0.586	0.584
	(-0.32)	(0.62)	(0.56)
Leverage	0.018	0.015	0.015
	(0.32)	(0.27)	(0.28)
Growth		-0.359	-0.359
		(-0.94)	(-0.94)
Performance			0.053
			(0.00)
Intercept	0.511	0.370	0.373
	(0.21)	(0.15)	(0.15)
No. observations	85	85	85
Pseudo R2	0.30	0.30	0.30
Time fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes

This table reports estimates of a logit model of earnings management on CEO tenure and firm-specific variables. The sample consists of 19 Portuguese firms included in PSI-20 index for fiscal years 2005 to 2009. *Earnings management* is an indicator variable taking the value of one if the smoothness ratio is above the sample median and zero otherwise. Smoothness is

defined as the ratio of the five-year standard deviation of operating income divided by the five-year standard deviation of cash-flow from operations, multiplied by minus one. *Tenure* is an indicator variable that takes the value of one if the CEO has one year or less to end his mandate and zero otherwise. *Size* is the log of market capitalization at fiscal year-end. *Leverage* is the ratio of debt to equity at fiscal year-end. *Growth* is the standard deviation of rolling five-year sales revenues scaled by total assets. *Performance* is the ratio of net income to total assets at fiscal year-end. The symbol ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.

Table 6. Earnings management and duality of CEO roles

	Model (1)	Model (2)	Model (3)
DUALITY	0.776*	1.137**	1.129**
	(1.69)	(2.31)	(2.29)
Size	-0.241	-1.200**	-0.935
	(-0.58)	(-2.11)	(-1.48)
Leverage	0.080	0.067	0.047
	(1.42)	(0.93)	(0.69)
Growth		-0.762**	-0.729**
		(-2.32)	(-2.21)
Performance			-8.168
			(-0.99)
Intercept	0.562	-2.211	-2.564
	(0.39)	(-1.13)	(-1.25)
No. observations	90	90	90
Pseudo R2	0.06	0.11	0.12
Time fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes

This table reports estimates of a logit model of earnings management on CEO duality and firm-specific variables. The sample consists of 19 Portuguese firms included in PSI-20 index for fiscal years 2005 to 2009. *Earnings management* is an indicator variable taking the value of one if the smoothness ratio is above the sample median and zero otherwise. Smoothness is defined as the ratio of the five-year standard deviation of operating income divided by the five-year standard deviation of cash-flow from operations, multiplied by minus one. *Duality* is an indicator variable that takes the value of one if the same individual hold the positions of CEO and Chairman of the board of directors and zero otherwise. *Size* is the log of market capitalization at fiscal year-end. *Leverage* is the ratio of debt to equity at fiscal year-end. *Growth* is the standard deviation of rolling five-year sales revenues scaled by total assets. *Performance* is the ratio of net income to total assets at fiscal year-end. The symbol ***, **, * denote statistical significance at 1%, 5% and 10% levels, respectively.