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Research Paper

Board structure and earnings management Evidence from Morocco

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ABSTRACT: *This study investigates the relationship between board structure and earnings management for a sample of listed Moroccan companies. The literature suggests that corporate governance mechanisms, including board structure, may control managerial discretion and reduce opportunistic behavior such as earnings management. We analyze Board structure in terms of its size, the independence of directors, the CEO duality and the existence of an audit committee. Using generalized least square method, our results suggest that the audit committee play an important role to ensure financial statement quality, as we find a significant negative relationship between its existence and discretionary accruals, our proxy of earnings management. We conclude that audit committee is an effective device for monitoring managers. Conversely, we find no evidence that board of directors' size, the separation between CEO and chairman positions and board independence are significantly related to a reduction in earning management level.*

KEYWORDS: *Audit committee; Board structure; Discretionary accruals; Corporate governance; Earnings management.*

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I. INTRODUCTION

In last few decades, earnings management has particularly interested researchers not least because of its malicious and legal aspects. This accounting manipulation method, which is associated with the destruction of long-term shareholder value (Graham et al., 2006), remains a legal practice as it is based on accounting choices provided for by regulations, in order to ensure faithful representation of financial information. As a result, and given the impossibility of resorting to legal coercion, other restrictive means are used to deal with this form of manipulation of results. These include corporate governance mechanisms, in particular the controls exercised by the board of directors.

Agency theory attaches particular importance to the board of directors as the ultimate internal mechanism to control managers (Fama, 1980), who, in the absence of an effective control, tend to implement measures and actions that deviate from shareholders' interests (Fama and Jensen, 1983).

In order to prevent such situation, agency theory makes many recommendations as the separation of the Chief Executive Officer (CEO) and the board chairman position. Jensen (1993) argues that the CEO duality may impede the board effective monitoring.

Similarly, it is often recommended that the Board of Directors be made up of independent members, which is considered to be a necessary condition for its proper functioning and a guarantee of the effective performance of its duties. Furthermore, board size and the audit committee role, are also highlighted in the literature as mechanisms that may influence managers' behaviour. Thus, several studies (Abdul Rahman and Ali, 2006; Xie et al., 2003) show a negative relationship between board size and earnings management. Similarly, many studies (Bedard et al., 2001; Davidson, Goodwin- Stewart, and Kent, 2005; Klein, 2002; Xie et al., 2003) provide evidence that audit committee, which is a board subcommittee, is effective in reducing earnings management.

In Morocco, the government has been committed since the 1990s to strengthening its legal framework through the adoption of several pieces of legislation aimed primarily at reinforcing good governance in Moroccan companies. This period saw the adoption of law 17/95 on public limited companies aimed at introducing new rules for the organization and administration of companies, as well as Directives of Moroccan Securities Commission.

In the early 2000s, the issue of corporate governance received renewed attention in Morocco following the outbreak of a number of international financial scandals, such as Enron affair, as well as local ones (The BNDE and CIH bank affairs). The BNDE bank has been implicated in practices prejudicial to the interests of minority shareholders while publishing unreliable accounting information, as has the CIH, which has also presented inaccurate accounting information certified by external auditors (Rigar and Solhi, 2008).

Therefore, in 2008, the country adopted two codes of good governance practice, one for private companies and the other for public establishments, and also amended Law 17/95 (by the Law 20-05) to better protect shareholders interests and to control financial reporting process. Another amendment to the law 17-95 (Law 78-12) was adopted in 2016 making it compulsory for listed companies to have an audit committee.

These various laws have given particular importance to the Board of Directors, which has been assigned a number of tasks, including ensuring that managerial decisions are in line with the interests of shareholders, overseeing the execution of the company's strategy, fulfilling the obligation to report and guaranteeing the reliability of financial information. And in order to enable the Board to carry out its duties effectively, the Moroccan regulatory framework insists on compliance with certain rules relating to its independence and composition.

Thus, the Moroccan codes of good governance practice strongly recommend that directors should be independent. Similarly, law 17-95 limits the number of employee directors on the board to one-third and requires that non-executive directors outnumber the other board members. This law sets limits on the size of the board of directors, indicating the minimum and maximum number of members.

In light of the above, it seems that board structure is determining factors in its effectiveness and its ability to deal with an opportunistic practice such as results management.

Therefore, the objective of this study is to examine whether board structure can constrain earnings management in listed Moroccan companies.

This study is structured as follows: first, we focus on the literature on the relationship between earnings management and board structure, and develop our hypotheses. Next, we present the study data and research methodology, and finally, we present our results, robustness tests and conclusions.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Earnings management

Schipper defined earnings managements (1989, p. 92) as "a deliberate intervention by the manager in the external financial reporting process for the purpose of personal gain". Another definition is suggested by Degeorge et al. (1999, p. 2) who state that earnings management is "the strategic use of managerial discretion to influence the outcome disseminated to stakeholders".

Earnings management may occur using accounting choices through accruals, or by structuring transactions (DeAngelo, 1986; 1988; Healy and Wahlen,1999; Schipper, 1989). Accruals consist of the difference between earnings and cash flows from operating activities, resulting of the application of accounting standards. However, some accruals have more to do with managerial discretion than with normal application of accounting choices. This is why accruals are divided into non-discretionary accruals, considered as normal, and discretionary accruals or abnormal accruals reflecting earnings management.

Previous literature observes that there are many different incentives for earnings management, such as those based on positive accounting theory (Watts and Zimmerman, 1978; 1986), divided into three assumptions: the bonus plan, the debt convention and the political cost. Another reason put forward in the literature is that managers may manipulate earnings to avoid declaring declines and losses in earnings (Burgstahler and Dichev, 1997; Dechow et al., 2003; Degeorge et al., 1999; Hayn, 1995) or to meet their own earnings forecasts (Kasznik, 1999). Some authors (Teoh et al., 1998) suggest that managers have a greater incentive to manipulate earnings during IPOs, while others (McNichols, 2000; Myers and Skinner, 2006; Skinner and Sloan, 2002) suggest that companies with significant growth opportunities can manage earnings to maintain the upward trend and avoid negative market reactions.

Regarding the multiple managers incentives to manipulate earnings, the existing literature displays different forms of earnings management. For example, managers may use their accruals discretion to manipulate earnings upward in order to maximize reported income, as shown by many prior studies (Healy and Wahlen, 1999; Gu et al., 2005; Jones, 1991; Sweney, 1994; Watts and Zimmerman, 1986). They can also manage profits downwards by using accounting choices to reduce current income (Healy, 1985). Consequently, in difficult times, managers may take the opportunity to declare as many losses as possible in order to clean up their financial statements, in what is known as “big bath”. This practice consists of recognizing non-recurring losses or expenses in the current period in order to improve reported future profits (Jordan and Clark, 2004), and has been documented empirically by several previous studies (Walsh et al., 1991; Kirschenheiter and Melumad, 2002; Riedl and Srinivasan, 2010).

Another form of earnings management is earnings smoothing, which involves using accounting choices to reduce fluctuations in earnings rather than to maximize or minimize reported earnings (Moses 1987). Many previous studies examine whether managers manipulate earnings with the intention of smoothing them and provide evidence of earnings smoothing (Defond and Park 1997; Goel and Thakor, 2003; Liu and Ryan, 2006; Tucker and Zarowin, 2006).

2.2 Board structure

As a body vested with extensive powers to achieve the company's objectives, the board of directors is considered to be a corporate governance mechanism capable of managing conflicts of interest between shareholders and managers (La Porta et al., 1999). Thus, much of the research into the mechanisms of corporate governance has focused on the board structure mainly consisting of board composition and board size.

2.2.1 Board size

Several studies (Aygun et al. 2014; Bedard et al., 2001; Klein, 2002; Xie et al., 2003; Yasser and Mamun, 2016) argue that the board size is one of factors which determine its effectiveness, as they find that large boards are inversely related to earnings management.

Chen and Zhou (2007) report that companies with larger boards and more independent members were the first to end their relationship with the auditing firm Arthur Anderson, implicated in the Enron scandal. Abdul Rahman and Ali (2006), using a sample of 97 Malaysian firms over the period 2002-2003, conclude that there is a negative relationship between board size and earnings management. Similar result is reported by Xie et al. (2003) using a sample of 282 observations of U.S. listed companies during 1992, 1994 and 1996.

In another U.S. study, Bedard et al. (2001) find that firms with larger boards are associated with less level of earnings management and conclude that they are more effective in monitoring financial reporting process. Aygun et al. (2014) examined the effects of ownership structure and board Size one earnings Management for a sample of Turkish listed for the period from 2009 to 2012. Among other things, the authors found that the board size have a negative significant effect on the earnings Management

Using a sample of 330 firm-years observations from some Asian Pacific countries (Australia, Malaysia, The Philippines and Pakistan) during the period of 2011-2013, Yasser and Mamun (2016) find a negative association between board size and earnings management in Australia and Malaysia and conclude that large boards may help to improve reporting quality.

Therefore, it seems difficult for managers to influence a large number of directors in order to make decisions that serve their self-interest to the detriment of shareholders' interests. However, some studies state that a large board of directors may be inefficient because of coordination problems and potential disagreements. Thus, Jensen (1993) argues that the optimal number for board size is about seven to eight members, beyond which it become less effective as it is easier for management to control it.

On the other hand, Vafeas (2000), using a sample of 307 U.S. companies find that earnings are more informative in small boards. Chen and Kao (2004) document a positive relation between board size and higher levels of discretionary accruals, and conclude that large boards are less effective in controlling managers because of a higher risk of conflict between there members. More recently, Githaiga et al. (2022) examined the effect of board characteristics on earnings management in the East African Community, using a sample of 88 listed firms from 2011 to 2020. they find that large boards are positively and significantly related to earnings management. imilar results are reported by Nguyen et al. (2021) and Egbunike and Odum (2018) in Vietnam and Nigeria respectively suggesting thus that large boards are less effective in monitoring managers. Interestingly, Ferris and Liao (2019) who used a sample of 51,147 firm-year observations of 46 countries during the period of 1999-2012, failed to find evidence of a significant relationship between board size and earnings management. In this paper, we support the first view that larger boards provide effective monitoring of earnings managements and formulate the following hypothesis:

H1: Board size is negatively associated with earnings management.

2.2.2 CEO duality

Another important feature of the board of directors is the independence of the chairman. According to agency theory (Jensen and Meckling, 1976; Fama, 1983), the position of CEO should be separate from that of chairman of the board. Dual roles can be detrimental to the quality of accounting information and the interests of shareholders. Jensen (1993) advocates separating the two functions in order to ensure effective control by the board of directors. He explains that the chairman of the board makes certain crucial decisions, such as hiring or firing executives, which require independence. Gul and Leung (2004), who studied 385 Hong Kong companies, found that duality is associated with lower levels of voluntary disclosure and poor quality of accounting information.

Several empirical studies examined the relation between CEO duality and earnings management and many of them provide evidence that this situation may increase this practice.

Using a sample of 69 firms covering the period from 2002 to 2007, Ben Ayed Koubaa (2010) finds, in a French study, that the dual structure is positively associated with discretionary accruals.

Anderson et al. (2004) provide evidence that board chairman independence improves financial reporting process. Klein (2002) find that firms where the CEO sits on some board's subcommittees are positively related to earnings management and thus conclude that board chairman independence may ensure a better monitoring role of the accounting information disclosure.

Ajward and Rajeevan (2019) examined the relation between Board characteristics and earnings management in Sri Lanka. They use a sample of 70 listed companies during the period 2015-2017 and provide evidence that CEO duality affects positively real earnings management. the authors conclude that this situation may be justified by a high level of concentration of ownership among Sri Lankian listed companies.

Similarly, Egbunike and Odum (2018) document that CEO duality is positively related to earnings management in the Nigerian context while Alareeni (2018) found that CEO duality have no effect on it in listed companies in Bahrain. Consequently, the following hypothesis is proposed:

H2: CEO duality is positively associated with earnings management and board chairman.

2.2.3 Board independence

The literature review attaches particular importance to the independence of the board of directors as a necessary condition for the exercise of effective control over management. The subordinate relationship between inside directors and management makes it difficult to challenge or take a position contrary to the decisions of line managers. External directors, on the other hand, are more independent and in a better position to control management, since they are not part of the company and are therefore less likely to be subject to influence.

Thus, many studies (Ajward and Rajeevan, 2019; Alves, 2011; Cornett et al., 2006; Xie et al 2003, Davidson et al., 2005; Klein, 2002; Peasnell et al., 2000) observe that boards comprised of independent outside directors are more effective in monitoring managers and constraining earnings management.

Using a sample of 45 non- financial listed Nigerian companies from 2011 to 2016, Egbunike and Odum (2018) provide evidence that the proportion of non-executive directors is significantly and negatively related to earnings management. Similarly, Alves (2011) find firms with a greater proportion of non-executive directors are less associated with discretionary accruals. The author used a sample of 34 listed Portuguese companies during the period 2002-2007.

Peasnell et al. (2000) examined whether outside directors affect earnings management. Interestingly, they find that companies with a large proportion of outsiders are negatively related to upward earnings management to avoid reporting losses and earnings decreases. Conversely, they find no evidence that outside directors affect downward earnings management when income before manipulation is high.

Xie et al. (2003) examined the relationship between board characteristics and earnings management. They study a sample of 282 US firm-year observations for the years 1992, 1994, and 1996, and find that companies with a greater proportion of independent directors and corporate experience have lower level of earnings management.

Jouber and Fakhfakh (2012) document that independent boards in French and Canadian contexts provide effective monitoring of earnings management, and conclude that the board independence is important to ensure high-quality of financial reporting. A similar finding was documented in more recent studies by Ferris and Liao (2019) and Githaiga et al., (2022).

Likewise, Park and Shin (2004) found no evidence of a relationship between the presence of outsider directors in the board and abnormal accruals. Similarly, Abdul Rahman and Ali (2006) did not find a link between earnings management and the independence of board members.

H3: Board independence is negatively associated with earnings management.

2.2.4 The Audit Committee role

The purpose of the audit committee is to evaluate the internal control system, ensure collaboration between internal and external auditors, and oversee the financial disclosure process in order to reduce information asymmetry between the firm's stakeholders.

Several studies (Alzoubi, 2019; Bedard et al., 2001; Davidson et al., 2005; Chen and Zhou, 2007; Xie et al., 2003) indicate that audit committees play an active role in monitoring management decisions. Some studies examine the effect of its existence on earnings management, while others focus on certain characteristics of the committee, such as its composition, independence and expertise.

For example, Ho and Wong (2001) indicate that the existence of an audit committee is positively related to high level of voluntary disclosure of accounting information.

In a more recent study, Alzoubi (2019) examines the relationship between audit committee and earnings management for a sample of 86 Jordanian listed companies between 2007 and 2010. The author provides evidence that the existence of an audit committee reduces earnings management levels. Similar results are documented by EL Haddad and Ez-zarzari (2017) who conducted a study on Moroccan listed companies from 2011 to 2014.

Xie et al. (2003) find that audit committees are associated with low levels of discretionary accruals in firms whose audit committee members have corporate or investment banking backgrounds.

Using a sample of 434 listed Australian companies, Davidson et al. (2005) report a significant negative relationship between earnings management and the presence of a majority of non-executive directors in audit committee. In another Australian study, Hutchinson et al. (2008) find that audit committees with independent directors are associated with lower level of earnings management. Their sample contains 200 listed companies and covers the period between 2000 and 2005.

Bedard et al. (2001) used 3.947 U.S. firms in 1996 to show that audit committees with outside members who don't have other management responsibilities are less associated with upward earnings manipulation. They find also a negative relationship between earnings management on the one hand, and audit committee's expertise, a clear mandate to oversee both financial statement and external auditing, and the presence of independent members that meet more than twice a year, on the other hand.

Marra et al. (2011) analyses the effectiveness of the board monitoring activities for the pre- and post-IFRS periods from non-financial using a sample of listed Italian companies from 2003 to 2006. Their results indicate that existence of an audit committee play an effective role in constraining earning management.

Conversely, Ajward and Rajeevan (2019) examine several features of audit Committee (independence; meetings; skills). The authors find no relationship between these features and earnings management.

Given that Moroccan companies do not systematically disclose the characteristics of their audit committee (independence, expertise, meetings), we have used the existence of an audit committee as a variable. The following hypothesis is therefore proposed:

H4: The existence of an audit committee is negatively associated with earnings management.

III. DATA AND METHODOLOGY

3.1 Sample selection

The initial sample includes all companies listed in Casablanca stock exchange during the period 2010-2015, which numbered a total of 76 companies. We have excluded companies in the financial sector (bank, insurance, finance) because of the specific nature of their accounting system, as well as companies with missing data. Thus, the final sample is made up of 42 companies per year for a total of 252 observations.

We have chosen 2010 as the starting period on the one hand, because it follows the introduction of Moroccan codes of good governance (2008) and the amendment of law 17-95 (by law 20-05, 2008), and on the other hand, because of lack of information about some board characteristics for many companies in 2009.

In addition, we stopped the study period at 2015 because it predates the entry into force of the Law 78-12 in 2016, which made it compulsory for listed companies to have an audit committee. Indeed, given the data unavailability about audit committee attributes (independence, skills, working experience) which Moroccan companies do not systematically disclose, we limited the study about audit committee on the impact of its presence on earnings management. Thus, we have limited the study period to the period before 2016.

Data are manually collected from firms' financial statements reported by Casablanca Stock Exchange and Moroccan Capital Market Authority, as well as information memos on stock market operations and minutes of general meeting.

3.2 Measurement of variables

3.2.1 Earnings management measurement

We use the absolute value of discretionary accruals to measure earnings management in order to take into account both increasing and decreasing earnings management. First, we calculated total accruals by deducting cash flows from earnings. Next, we used Kothari et al. (2005) model to estimate normal values from total accruals using a set of dependent variables such as the gross property, plant and equipment, the change in revenues, but also firm's performance. Kothari et al. (2005) find that including performance as another explanatory variable improves model explanatory power and make it better specified than the Jones (1991) model or Dechow et al. (1995) model. The literature review refers to other models, such as the Roychowdhy (2006) model or the Gunny (2005) model, which are mainly used to study the real earnings management.

The Kothari et al. (2005) model used to estimate normal accruals used is presented as follows:

$$AT_{it} / A_{it-1} = \alpha\,(1/ A_{it-1}) + \beta 1\,(\Delta REV_{it} - \Delta REC_{it})/ A_{it-1} + \beta 2\,(PPE_{it} / A_{it-1}) + \beta 3\,(ROA_{it}) + \varepsilon_{it}$$

Where:

AT is total accrual; A is total assets at beginning of the year t; ΔREV is the change in revenue, ΔREC is the change in receivable's; PPE is total gross property, plant and equipment; ROA is net income on assets for the current period.

Then, to get discretionary accruals, we subtracted the predicted value (normal accruals) of the Kothari et al. (2005) model from total accruals as follows:

$$AEM_{it} / A_{it-1} = [AT_{it} / A_{it-1}] - [\hat{\alpha} (1/ A_{it-1}) + \hat{\beta}_1 (\Delta REV_{it} - \Delta REC_{it} / A_{it-1}) + \hat{\beta}_2 (PPE_{it} / A_{it-1}) + \hat{\beta}_3 (ROA_{it}) + \varepsilon_{it}]$$

Where:

AEM: Absolute value of discretionary accruals.

The variable AEM, our proxy of earnings management, is the absolute value of distortionary accruals. We choose to study discretionary accruals in absolute value to take into account both upward and downward earnings management. hence, the highest values of AEM variable correspond to the highest level of earnings management, whether carried out with the aim of increasing and decreasing incomes.

3.2.2 Dependent variables

To study the relationship between board structure and earnings management, we include four dependent variables consisting of BRDSIZE (board size), DUAL (CEO duality), COAUD (existence of an audit committee) and BRDIN (board independence).

We define BRDSIZE as the total number of board members as used by the majority of prior studies (Aygun et al., 2014; Cornett et al., 2006; Davidson et al., 2005; Xie, et al., 2003; Egbunike and Odum 2018).

DUAL is a dummy variable taking the value of 1, when the same person holds both the CEO and chairman positions, and 0 otherwise, consistent with several previous studies (Cornett et al., 2006; Davidson et al., 2005; Egbunike and Odum, 2018; Melville and Merendino, 2019).

COAUD is a dummy variable taking 1, if an audit committee exists, and 0 otherwise. This measure is also used in many prior studies (Alves, 2011; Davidson et al., 2005; Marra et al., 2011).

We include BRDIN as a dummy variable taking 1, if the board is comprised of a majority of non-executive directors and 0 otherwise as used by many prior studies (Davidson et al., 2005).

3.2.3 Control variables

In order to control the effects of several others variables which are likely to influence earnings management, we added to the model certain control variables as proxies for performance, growth opportunities, external audit and threshold avoidance.

We include return on assets (ROA) as an indicator of firm performance consistent with several prior studies (Aygun et al., 2014; Chen and Zhou, 2007; Hutchinson et al., 2008). Indeed, several prior studies (Burgstahler et al., 2006; Jiang et al., 2008; Peasnell et al., 2000; Zhong et al., 2007) confirm that managers have stronger incentives to manage earnings in order to conceal poor performance.

Some authors (McNichols, 2000; Myers and Skinner 2006; Skinner and Sloan, 2002) have found that firms with major growth opportunities have a greater incentive to manage earnings in order to maintain the upward trend and avoid negative market reactions.

Thus, to control for the effect of the firm's growth opportunities on earnings management, we Added the GROWTH variable, measured by sales change, following many previous studies (Ajward and Rajeevan, 2019; Rath and Sun, 2012; Yasser and Mamun, 2016).

Prior studies (Burgstahler and Dichev, 1997; Burgstahler et al., 2006; Dechow et al., 2003; Degeorge et al., 1999; Hayn, 1995) provide evidence that managers may manage earnings to avoid reporting losses. Thus, we control threshold avoidance by including the binary variable (LOSS), that takes 1 if earnings before manipulations is a loss, and 0 otherwise. This measure is also used in previous studies (Jeanjean, 2001; Peasnell et al., 2000; Rath and Sun, 2012; Zhong et al., 2007).

External audit is presented as an important device that may constrain managerial opportunism by assessing the quality of financial reporting and the internal control system. Several prior studies (Ben Othman and Zeghal 2006, 2007; Caramanis and Lennox, 2008; Habbash, 2010; Mard, 2004) examined whether audit provide effective monitoring of earnings management practice.

Overall, they indicate that a high-quality audit in terms of competence and independence acts as a deterrent against those opportunistic behaviours.

AUD as a dummy variable that takes 1 if at least one of the auditors is from the Big 4, and 0 otherwise. This measure is reported by many previous studies (Chen and Zhou, 2007; Ben Othman and Zeghal 2006, 2007; Caramanis) that consider auditing performed by big audit firms (BIG 4, 5, 6) as high audit quality.

3.3 Tested model

The explanatory model of the relationship between earnings management and the internal corporate governance is presented as follows:

Where AEM is the absolute value of discretionary accruals as measured by Kothari et al. (2005) model

$$AEM_{it} = \alpha + \beta_1\ BRDSIZE_{it} + \beta_2\ DUAL_{it} + \beta_3\ BRDIN + \beta_4 COAUD_{it} + \beta_5\ ROA_{it} + \beta_6\ GROWTH_{it} + \beta_7\ AUD_{it} + \beta_8\ LOSS_{it} + \varepsilon_{it}$$

as previously defined.

In terms of analysis technique, we use GLS regression to estimate panel data as our sample is composed of both cross-sectional units and time-series dimension. Panel data present many advantages as it allows to increase the number of observations and improve estimator precision (Hsiao, 2003).

Secondly, we use Hausman's test to determine whether a random effects or fixed effects model is appropriate for our model, under the null hypothesis of random effects. the test result rejects the null hypothesis. According to Kpodar (2007), if the null hypothesis is rejected, it is more appropriate to choose between the two estimators depending on the author's beliefs and the relevance of the two models. Thus, we consider GLS regression is the most appropriate for our analysis.

Thirdly, we use Breusch Pagan test to examine errors heteroscedasticity under the null hypothesis of homoscedasticity. The test result indicates that there is no heteroscedasticity in our model.

To test for autocorrelation, we used Wooldridge (2002) under the null hypothesis of no autocorrelation. The test is significant, indicating that there is autocorrelation in the model. This problem is solved by White's robust standard error method. Finally, we fitted our model using the generalized least squares (GLS) method corrected by White's robust standard error.

IV. RESULTS

4.1 Descriptives statistics

Table 1 reports the descriptive statistics for the variables in the model. On average, the absolute value of discretionary accruals in listed Moroccan companies is about 6,13% of total assets, with a minimum of 0,01% and a maximum of 33.91%.

The minimum number of board members is 3 whereas the maximum is 15. According to Corporate Law 17-95 and corporate governance codes, the board size must be composed of a minimum of 3 members without exceeding a maximum of 12. However, this number can be increase to 15 for listed companies, to 24 for merged companies and to 27 for listed merged companies.

The averages size of the board is 7.75 members which appears to be in line with Jensen's (1993) recommendations which suggest the number of 7 or 8 members as the optimal board size.

Compared with other similar countries (emerging economies or countries belonging to the same region), the Moroccan average seems to be close to the 8 members presented by Alves (2012) in Portugal and the 9 members reported by Egbunike and Odum, (2018) in Nigeria, but below the number of 11.75 observed by Nguyen et al. (2021) in Vietnam.

As regards the duality of CEOs, it stands at more than 62% on average in listed Moroccan companies. This rate is lower than the 79.5% reported in Nigeria by Egbunike and Odum (2018). Descriptive statistics also show that 46% of Moroccan companies have audit committees. This concerns the period under review (2010-2015). It should be remembered that from 2016, the entry into force of Law 78-12 made the existence of an audit committee mandatory for listed companies

Regarding board independence, 69% of listed Moroccan companies have boards with a majority of independent directors. The mean value of AEM is about 6,13% of total assets, as this variable is measured by the absolute value, this rate is consisting of both upward and downward earnings management.

Performance has a minimum of -12,83% and a maximum of 37,08% whereas the average is about 8,39%. Corporate GROWTH has an average of 3,25% of assets with a minimum of -5,25% and a maximum of about 118%. In terms of external audit quality, our study shows that 61% of listed Moroccan companies are audited by Big 4 auditors. This rate is higher than the one reported by in Alshirah et al. (2021) in the Jordanian context but it is lower than the averages of 96% by Swai and Mbogela (2016) in East Africa.

Loss is a dummy variable that has one if pre-managed earning is less than zero (or equal) and 0 otherwise. 25% of firms studied make losses before earning manipulation.

To test the normality of the variables in our model, we used the skewness and kurtosis test. Variables are assumed to be normally distributed if the test statistic is within ±1.96 (Ghasemi & Zahediasl, 2012). The results presented in table 1 show that certain variables do not follow the normal distribution. When one of the OLS hypotheses is not met, non-parametric tests become more appropriate (Balian,1982, as cited in Habbash, 2010). Consequently, we used GLS regression as an estimator and Spearman's non-parametric test to analyze correlations.

Table 1: Descriptive statistics

Variables	Mean	Std. dev	Minimum	Maximum	Skewness	Kurtosis
AEM	0.0613731	0.0556959	0.0001557	0.3391062	1.641637	6.687347
BRDSIZE	7.714286	2.939922	3	15	-0.3477238	2.17508
DUAL	0.6269841	0.4845687	0	1	-0.525155	1.275788
BRDIN	0.6984127	0.4598604	0	1	-0.8646431	1.747608
COAUD	0.4642857	0.4997153	0	1	0.651018	1.423824
AUD	0.6111111	0.4884682	0	1	-0.4558423	1.207792
GROWTH	0.032558	0.1443611	- 0.5254265	1.179933	1.948489	21.09782
ROA	0.083938	0.0759258	- 0.1283035	0.3708895	0.908496	4.312457
LOSS	0.250000	0.4338744	0	1	0,1913459	1,036613

AEM is the absolute value of discretionary accruals as measured by Kothari et al. (2005) model; BRDSIZE is defined as the total number of board members, DUAL is a dummy variable that takes 1 if the executive holds the position of Chairman of the Board of Directors and 0 otherwise; BRDIN is a dummy variable taking 1 if the board is comprised of a majority of non-executive directors and 0 otherwise; COAUD is a dummy variable that takes 1 if an audit committee exists and 0 otherwise, ROA is the net income on total assets; GROWTH is the Change in sales scaled by total assets; AUD is a dummy variable that takes 1 if at least one of the external auditors belongs to the Big 4 and 0 otherwise; LOSS is a dummy variable taking 1 if earnings before manipulation are lower or equal to zero and 0 otherwise.

4.2 Correlation analysis

Firstly, Table 2 shows that there are no strong correlations between the variables, since the correlation coefficients are below than 50% overall. This result reinforces the likelihood of the absence of multicollinearity in our model, given that a strong correlation can be a sign of a perfect link between the variables. For Hair et al (2010), when the correlation between variables is greater than 90%, it is considered strong.

The correlation table shows a negative and significant relationship between earnings management and the COAUD (audit committee) variable, which indicates that companies with audit committees have lower earnings management levels. Another significant but relatively weak correlation is between board size and AEM variable, suggesting that large board are associated with less earnings management.

There is a negative relationship between the DUAL variable, on the one hand, and BRDSIZE and AUD variables on the other, indicating that companies whose CEO is also chairman are less likely to use big 4 auditors and more likely to have small boards. This result suggests that the dual structure contributes to weakening corporate governance mechanisms and is consistent with the predictions of agency theory that the dual structure may have a negative effect on board controls.

Nevertheless, the study of the relationships between the variables cannot be relevant without a multivariate analysis, which simultaneously examines the interaction between them.

Table 2: Correlation matrix of variables

	AEM	BRDSIZE	DUAL	BRDIN	COAUD	ROA	GROWTH	AUD	LOSS
AEM	1.0000								
BRDSIZE	-0.1051	1.0000							
	(0.0959) *								
DUAL	0.1224**	-0.2109***	1.0000						
	(0.0524)	(0.0008)							
BRDIN	-0.1855***	0.1461**	-0.4563***	1.0000					
	(0.0032)	(0.0204)	(0.0000)						
COAUD	-0.1602***	0.3986***	-0.0785	0.2491***	1.0000				
	(0.0109)	(0.0000)	(0.2148)	(0.0001)					
ROA	0.0691	0.0964	0.0203	0.1471**	0.1029	1.0000			
	(0.2742)	(0.1269)	(0.7482)	(0.0196)	(0.1033)				
GROWTH	0.1615***	-0.0275	0.1365**	-0.1413**	-0.0497	0.2346***	1.0000		
	(0.0103)	(0.6637)	(0.0304)	(0.0249)	(0.4315)	(0.0002)			
AUD	-0.0963	0.3186***	-0.1272**	0.1680 ***	0.2368***	0.0698	-0.1494**	1.0000	
	(0.1271)	(0.0000)	(0.0430)	(0.0077)	(0.0001)	(0.2692)	(0.0178)		
LOSS	0.2356***	-0.1111	-0.0663	-0.0987	-0.0916	-0.4492***	0.0288	-0.0470	1.0000
	(0.0002)	(0.0783)	(0.2945)	(0.1183)	(0.1447)	(0.0000)	(0.6491)	(0.4560)	

*Significant at the level of 10%, ** Significant at the level of 5%, *** Significant at the level of 1%.

4.3 Multivariate analysis

Table 3 presents the results of the GLS regression analysis and shows that the model is statistically significant at the 1% level with an R2 Between of 25,09%. According to Kpodar (2007), the R2 Between is the most relevant in random-effects models.

Turning to the dependent variables, we find that there is a significant negative relationship between the COAUD variable (existence of an audit committee) and the absolute value of discretionary accruals (significance level is 1%). This result is consistent with our fourth hypothesis, which indicates that the existence of an audit committee is associated with a lower level of earnings management. This result provides evidence of an effective monitoring role of audit committees on managers' behaviours, in line with several previous studies (Alzoubi, 2019; Bedard et al., 2001; Davidson et al., 2005; Marra et al. 2011; Xie et al., 2003).

On the other hand, the other variables do not show a significant relationship with the dependent variable. Thus, board size (BRDSIZE and DUAL) is not significantly associated with earnings management, despite a negative coefficient. Consequently, we find no support for the first hypothesis. This result is consistent with several previous studies (Jamaludin et al., 2015; Ferris and Liao, 2019; Peasnell et al., 2000) which observed that board size has no effect on earnings management.

Furthermore, the DUAL variable shows a positive coefficient as we predicted in the second hypothesis, but it is not significant, indicating that there is no significant link between CEO duality and the absolute value of discretionary accruals.

Table 3: Board structure and earnings management

Variables	Coefficients	Z	p > |z|
BRDSIZE	-0.0002504	-0.17	0.866
DUAL	0.0078074	0.75	0.453
BRDIN	0.0085313	0.82	0.412
COAUD	-0.0217658	-2.39	0.017***
ROA	0.0710633	1.52	0.127
GROWTH	0.0741988	2.55	0.011***
AUD	0.0021803	0.25	0.803
LOSS	0.0325926	3.70	0.000***
Constant	0.0421151	2.22	0.026
R^2 within	0.1016		
R^2 between	0.2509		
R^2 overall	0.1463		
Wald chi2(8)	27.83***		

*Significant at the level of 10%, ** Significant at the level of 5%, *** Significant at the level of 1%.

AEM is the absolute value of discretionary accruals as measured by Kothari et al. (2005) model; BRDSIZE is defined as the total number of board members, DUAL is a dummy variable that takes 1 if the executive holds the position of Chairman of the Board of Directors and 0 otherwise; BRDIN is a dummy variable taking 1 if the board is comprised of a majority of non-executive directors and 0 otherwise; COAUD is a dummy variable that takes 1 if an audit committee exists and 0 otherwise, ROA is the net income on total assets; GROWTH is the Change in sales scaled by total assets; AUD is a dummy variable that takes 1 if at least one of the external auditors belongs to the Big 4 and 0 otherwise; LOSS is a dummy variable taking 1 if earnings before manipulation are lower or equal to zero and 0 otherwise.

These results are consistent with the vast majority of prior empirical studies (Alareeni, 2018; Bedard et al., 2001; Chen and Kao, 2004; Gonzalez and Garcia-Meca, 2014; Peasnell et al., 2000; Yasser and Mamoun, 2016) which failed to find a significant impact of CEO duality on earnings management. Regarding board independence, the coefficient of the BRDIN variable is not statistically significant.

Therefore, we cannot conclude that independent non-executive directors affect earnings management in listed Moroccan firms, in line with many previous studies.

Regarding the control variables, we find that the GROWTH and LOSS variables are positively and significantly associated with discretionary accruals. The GROWTH variable is significant at the 1% level, indicating that companies with high growth opportunities tend to manipulate earnings more. This result is consistent with previous studies (Myers and Skinner, 2006; Skinner and Sloan, 2002) which confirm that companies with high growth opportunities have a greater incentive to manage earnings. Thus, when managers fail to meet expert forecasts, they may choose to manipulate earnings in order to avoid a negative market reaction.

LOSS variable is positively and significantly correlated with the variable AEM (significance level is 1%). This result shows that, in the presence of a loss, listed Moroccan companies are more inclined to manage earnings. As the dependent variable is in absolute value, we conclude that the presence of a loss before manipulation is an incentive to manage earnings both upward and downward. On the upward to avoid reporting losses, and on the downside, as a big bath technique when it seems hard to manage earnings to meet targets.

4.4 Additional Analyses

As a robustness test of our results, we have chosen to run our model with an additional control variable, in this case sales performance, defined as net income on sales (Model 1).

we have also run the model with some variables (AUD, ROA, LOSS) removed (Model 2). In addition, we ran a third model using the OLS estimator (Model 3). The results of these different analyses are shown in Table 4.

Table 4: Results of additional analyses

	Model 1		Model 2		Model 3	
Variable	**Coef**	**Z (p value)**	**Coef**	**Z (p value)**	**Coef**	**t (p value)**
BRDSIZE	-0.0002566	-0.17(0.863)	-0.0006256	0.39(0.700)	-0.0002166	0.16 (0.877)
DUAL	0.0077206	0.74(0.459)	0.0045724	0.44(0.662)	0.0083952	0.87 (0.392)
BRDIN	0.0086277	0.83 (0.408)	0.0082023	0.75(0.451)	0.0040369	0.45 (0.657)
COAUD	-0.021717	-2.38 (0.017) ***	-0.0217321	2.39(0.017) ***	-0.0203186	2.64 (0.012) ***
ROA	0.0696055	1.46 (0.145)			0.1460328	2.77(0.008) ***
GROWTH	0.0741199	2.54 (0.011) ***	0.0687042	2,32 (0.020) **	0.0431152	1.89 (0.066) *
AUD	0.0022584	0.26 (0.796)			0.0035503	0.43 (0.667)
LOSS	0.0326106	3.65(0.000) ***			0.0415141	5.32 (0.000) ***
ROS	0.0003922	0.24 (0.810)				
Constant	0.0421706	2.22 (0.026)			0.0368674	2.05 (0.046)
R^2 within	0.1019		0.0432			
R^2 between	0.2492		0,1553			
R^2 overall	0.1461		0.0784			
Wald chi2(8)	28.31***		15,40***			
R-squared					15.16	
F statistics					4.62***	

*Significant at the level of 10%, ** Significant at the level of 5%, *** Significant at the level of 1%.

For all three models, White's robust standard error method is used either to fix the problem of heteroscedasticity or autocorrelation of the errors.

Robustness tests show that the Coaud variable (the existence of an audit committee) has a systematic positive relationship with earnings management in all statistical tests while other dependent the other variables remain insignificant. This finding provide evidence that the audit committee may play an effective role in monitoring managers.

There was no major change in the coefficients of the LOSS variable, which are the same in the direction with the same level of significance in all tests. We can therefore confirm that companies manage their results all the more when they record losses. On the other hand, the growth variable did not appear to be robust. Thus, we don’t support the hypothesis that firms with greater growth opportunities are more involved in earnings management.

V. CONCLUSION

In the wake of the financial scandals of the 2000s, there has been renewed interest in opportunistic managerial behavior studies and the means likely to limit it. Since then, recommendations from several government and academic bodies have focused on corporate governance mechanisms as effective means of constraining such behaviors, including earnings management.

As a result, various countries around the world, including Morocco, have chosen to strengthen corporate governance mechanisms, in particular the structure of the board of directors.

However, empirical studies provide no consensus about the effectiveness of corporate governance, including board structure, in limiting earnings management.

In the light of the above, the aim of this study is to contribute to research examining the relationship between board structure and performance management in the Moroccan context.

Thus, we used GLS regression for panel data to investigate this relationship in listed Moroccan companies. We focused of some attribute as board size, board independence, the presence of an audit committee and CEO duality while earning managements was estimated by Kothari et al. (2005) model. The regression results show that the existence of an audit committee is negatively associated with discretionary accruals. This finding seems to confirm the effectiveness of this device in monitoring managers by properly carrying out the tasks assigned to it. Indeed, according to the Moroccan code on the governance of public institutions, the audit committee must ensure the reliability of financial reporting and monitor the effectiveness of internal control as well as the independence and the quality of the work of both internal and external auditors. Then, we conclude that audit committee may play an active role in constraining earnings management.

interestingly, we fail to find a significant association discretionary accrual and the others variables. Thus, we find no evidence that CEO duality affect earnings management, neither do size board or external audit quality. On the other hand, we find evidence that firms that companies making losses are more involved in earnings management.

Finally, it should be noted that this work has some limitations, as do many previous studies. For example, we omitted some interesting board characteristics, such as board gender diversity, which appears to affect earnings management according to many previous studies.

The choice of dependent variables and the measurement of earnings management may be controversial. In addition, the study period was limited to 2015 to take into account the variable presence of an audit committee because of the unavailability of data on others audit committee attributes (independence, activities and expertise). It will therefore be interesting to see in future studies whether other aspects of audit committees are likely to affect earnings management once the requirement to have an audit committee in listed companies is introduced.

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