EQUITY INCENTIVES, EARNINGS MANAGEMENT AND CORPORATE GOVERNANCE: EMPIRICAL EVIDENCE USING UK PANEL DATA

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Abstract

Using a UK panel data set drawn from 1675 Chief Executive Officer (CEO) year observations and 1540 Chief Financial Officer (CFO) year observations, we examine the relationship between CEO and CFO equity incentives and earnings management. In addition, we examine the moderation effect of corporate governance mechanisms on the relationship between executives' equity incentives and earnings management. We use multivariate regression models to test our hypotheses. We find that CEO equity incentives are related to higher absolute and income increasing earnings management. These results support the managerial power theory argument that CEOs exploit equity-linked compensation to obtain more personal benefits without causing public anger. Contrary to CEO equity incentives, we could not find any significant relationship between CFO equity incentives and any of the earnings management proxies. In addition, we find that corporate governance quality (measured by individual mechanisms and overall index) has no effect on the relationship between executives' equity incentives and earnings management. This result indicates that whereas some corporate governance mechanisms can reduce earnings management in general, they do not affect wealth driven incentives to manipulate accruals. In total, results question the effectiveness of the corporate governance system in mitigating opportunistic behavior motivated by executives' compensation structures.

Keywords: Discretionary Accruals, Executive Compensation, Corporate Governance, Agency Theory, Managerial Power Theory

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1. INTRODUCTION

The major question addressed by this paper is whether equity-based compensation induces executives to manipulate earnings. In addition, the paper examines the role of the governance system in curbing such wealth driven opportunistic behaviour. The use of equity-linked compensation has been dramatically increased over the past decades in an attempt to link the mangers' personal incentives

with shareholders' interests. Jensen and Murphy (1990b) indicate that CEOs had little motivation to maximize shareholders' value as a result of their low ownership stakes in their corporations. The authors claimed that the best way to create a direct link between managers' and shareholders' wealth is managerial stock ownership. These outcomes hastened US companies towards increasing adoption of equity-linked compensation that resulted in a significant increase in executives' holdings of equity during the period of 1990s. This substantial growth in equity-linked compensation and stock ownership is evidenced by Hall and Murphy (2002) who report that median stock and option holdings of S&P 500 executives increased from $11 million in 1992 to more than $31 million by 1999.

Executives are given variable compensation and incentives either through the normal flow of compensation items such as salary, bonus, options, and other components or through changes in their portfolio and options (Antle & Smith, 1986; Jensen & Murphy, 1990b). The vast majority of a typical CEO's incentives to increase stock price result from changes in the value of his stock and options portfolio that is not by flow compensation (Murphy, 1985; Jensen & Murphy, 1990b; Hall & Liebman, 1998). Equity incentives may be defined as "the incentives created by equity securities that motivate managers to increase the stock price" (Core, Guay, & Larcker, 2003, p. 29).

There are two contradicting viewpoints regarding equity compensation. On the one hand, in line with agency theory (Jensen & Meckling, 1976), equity compensation is considered as an important tool in aligning executives' incentives with shareholders' interests through granting the executive an ownership stake in the company. Supporters of equity-linked compensation claim that equity incentives are needed components of an executive compensation scheme that might be effective in linking the executive's personal benefits with shareholders' interest in a way that minimizes the risk of adverse consequences. On the other hand, managerial power theory (Bebchuk & Fried, 2003, 2004) considers equity-based compensation as a way through which executives can get more compensation without causing public anger or what managerial power theorists call "outrage constraint". The widespread of many negative phenomena that are related to equity compensation such as at – the money options, option re-pricing, reload options, restricted stock in lieu of options, and executives' freedom to unwind their equity incentives implies that this kind of pay may lead to undesired actions such as earnings manipulation. Also, regulators, shareholder advocacy groups and the financial press have raised many concerns that equity-linked compensation offers motivations for managers to increase their personal financial benefits through manipulating the accounting results. In addition, the academic literature provides a piece of considerable evidence for these concerns (e.g. Beneish & Vargus, 2002; Cheng & Warfield, 2005; Bergstresser & Philippon, 2006; Cornett, Marcus, & Tehranian, 2008; Jiang, Petroni, & Wang, 2010, Chen, Chou, & Lee, 2020).

The possibility to manage earnings comes from the discretion that accounting standards and "GAAP" offer to mangers when recording the changes in firm value that are not reflected directly in current cash flows. The gap between the firm's cash flow and the reported income is covered by the accruals component of income (Bergstresser & Philippon, 2006). From this perspective, earnings management can be defined as the purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain (Schipper, 1989).

Some recent studies claim that equity-linked compensation provides motivation for executives to manipulate accounting results for personal benefits. Despite the importance of this issue, there is only a limited number of empirical studies that investigated the relationship between equity incentives and earnings management. Almost all of these studies used US data and most of them used a cross-sectional econometric approach. Therefore, this study contributes to the literature by examining the relationship between executives' equity incentives and earnings management by using the UK panel data set. Although both countries represent the Anglo-American model of corporate governance, the UK has a different institutional environment regarding executive compensation in many aspects.

Firstly, Conyon and Murphy (2000) document that the UK compensation level and sensitivity are lower than in the USA. Secondly, CEO duality is still a feature that gives strength for the UK's corporate governance system over the USA's one. Therefore, compared to the USA, there is a greater restriction on the exercise of CEO power in the UK (Aguilera, Williams, Conley, & Rupp, 2006). Thirdly, Guest (2010) reports several reasons that weaken the monitoring functions of the UK non-executive directors compared to the USA. For example, the UK non-executive directors are less legally accountable for not satisfying their tasks. In addition, the UK boards are historically less independent from management than the US boards in terms of the proportion of non-executive directors and their appointment process. Moreover, the UK non-executive directors get lower remuneration and shareholdings compared to their US counterparts, which may result in less financial incentives for monitoring. Fourthly, although both the UK and the USA have comparable percentages of institutional ownership, the composition of these investors is different. Insurance companies and pension funds predominate in the UK, while investment advisors (i.e. money management firms) are the largest institutional investors in the USA (Aguilera et al., 2006). Fifthly, Short and Keasey (1999) argue that the UK market for corporate control is should be stronger than its US counterpart because the UK companies have less available takeover defenses. Finally, the UK issued an important regulation for executive compensation called "Directors Remuneration Regulation" in 2002 by the Department of Trade and Industry. In addition to forcing quoted companies to publish a detailed report on directors' compensation in their annual report, more unique, this regulation states that companies must hold a shareholder vote on the directors' remuneration report at each general meeting, which is called as "say on pay". This regulation became a legal requirement in the USA in 2009 only for companies receiving funds from the troubled asset relief program (TARP).

In addition, most of the previous studies used the unsigned or absolute value of discretionary accruals as a measure of earnings management

(Cheng & Warfield, 2005; Bergstresser & Philipon, 2006; Cornett et al., 2008). Unsigned accruals may simply capture firm performance or operating volatility, however in which case they would wrongly be attributed to earnings management. Such measurement error may increase the risk of incorrectly rejecting the null hypothesis of no earnings management (Kothari, Leone, & Wasley, 2005; Hribar & Nichols, 2007). This study contributes to the literature by using both the absolute value and directional values of earnings management.

Moreover, contrary to most of previous studies which used only total discretionary accruals generated by the Modified Jones Model (Cheng & Warfield, 2005; Bergstresser & Philipon, 2006; Cornett et al., 2008), this study used the current discretionary accruals generated by the performance adjusted model as developed by Kothari et al. (2005). In addition, this study used total accruals generated by the modified Jones model in the sensitivity analysis. Kothari et al. (2005) contend that the abnormal accruals, as measured through both Jones and modified Jones models, may result in severe measurement error in abnormal accruals when these models do not control for the prior performance of the company. Therefore, Kothari et al. (2005) propose a model that includes an intercept and control for the firm's performance using the lag of return on assets (ROA) to reduce the problematic heteroskedasticity and miss-specification concerns of the Jones and modified Jones models in calculating accruals. They suggest adding the return on assets of the previous year (ROA) as an additional regressor to the cross-sectional modified Jones model. Moreover, Guenther (1994) and Becker, Defond, Jiambalvo, and Subramanyam (1998) suggest that management has greater discretion over current accruals than over long-term accruals. Also, Sloan (1996) reports that most of the variations in total discretionary accruals are driven by current discretionary accruals.

Finally, the current study examines the moderation effect of corporate governance on the relationship between equity incentives and earnings management. We measure the moderation effect of corporate governance by including the individual corporate governance mechanisms as well as an overall index for corporate governance quality. The use of general index instead of individual corporate governance mechanisms has twofold benefits. First, it gives more accurate measurement for the strength of the corporate governance system instead of the individual mechanisms that may give contradicting effects. Second, it enables us from measuring the effect of corporate governance system on the equity incentives relationship in two ways, firstly by including this index as an additional control variable similar to individual mechanisms, secondly by including a new variable that measures the interaction between equity incentives and corporate governance.

The remaining of this paper is structured as follows. Section 2 reviews the theoretical and empirical literature related to the relationship between equity incentives, earnings management, and corporate governance. Section 3 discusses the research methods of this paper. Section 4 provides and discusses the empirical results, and finally, Section 5 concludes the paper.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. The application of agency theory to executive compensation design and earnings management

According to the agency theory point of view equity compensation is the best way to link executives' pay with stockholders' wealth (Conyon, 2014; Core et al., 2003; Hall & Liebman, 1998; Jensen & Meckling, 1976; Jensen & Murphy, 1990a). Executives get variable compensations and incentives not only from the flow of compensation, which is the total of the executives' annual salary, bonus, new equity grants and other components of their compensation packages but also from changes in their portfolio of stock and options (Antle & Smith, 1986; Jensen & Murphy, 1990b). Thus, equity compensation gives other incentives through managerial ownership. Murphy (1985) and Hall and Liebman (1998) show that most CEO incentives to increase stock price come from changes in their portfolio of stock and options not from the normal flow of compensation.

By applying the hypothesis of separation of ownership and control to earnings management. It can be said that earnings management occurs when managers (the agent) initiate and implement decisions in the firm's financial reporting policies which are within the constraints of GAAP, and they are not the major residual claimants thus do not bear a major share of the wealth effects of the decisions. The principals (e.g., shareholders, debt holders, and other stakeholders) do bear the wealth effects of the decisions; the principals (e.g., shareholders, debt holders, and other stakeholders) do bear the wealth effects.

2.2. Managerial power approach

Bebchuk et al. (2002) states that "a large extraction of rents will not cause the executives or directors harm if it can be dressed, packaged, or hidden – in short, camouflaged – so that it is not readily apparent as such" (p. 788). According to managerial power theory, managers will prefer compensation packages and processes that enable them to extract rent in a "camouflaged way" Bebchuk et al. (2002). One of the techniques that can help managers to extract rent in a camouflaged way is earnings management. Since earnings management is difficult to detect and usually occurs within GAAP, i.e. without violating regulations. Therefore, earnings management may be a good opportunity for managers to get more wealth in a hidden way. Healy and Wahlen (1999) in their review of earnings management literature conclude that "in general, the evidence is consistent with firms managing earnings to window-dress financial statements prior to public securities' offerings, to increase corporate managers' compensation and job security, to avoid violating lending contracts, or to reduce regulatory costs or to increase regulatory benefits" (p. 367).

Several empirical studies provided evidence that compensation contracts create incentives for earnings management (e.g. Healy, 1985; DeAngelo, 1988; Dechow & Sloan, 1991; Holthausen, Larcker, & Sloan, 1995; Guidry, Leone, & Rock, 1998; Balsam, 1998; Cheng & Warfield, 2005; Bergstresser & Philippon, 2006; Cornett et al., 2008; Alhadab & Al-Own, 2019; Park, 2019; Chen et al., 2020).

2.3. Hypotheses development

2.3.1. Equity incentives and earnings management

According to the managerial power approach, there is a negative association between the effectiveness of board monitoring and CEO power (Bebchuk & Fried, 2004). Taking into consideration the low effectiveness of the monitoring role of UK non-executive directors, we expect that the managerial power prospective that executives exploit equity-linked compensation to achieve personal gains will be dominant in the UK settings. Therefore, we expect a positive relationship between equity incentives and earnings management. This leads us to the following hypothesis:

H1: There is a positive relationship between equity incentives and earnings management.

2.3.2. The moderation effect of corporate governance mechanisms on the relationship between equity incentives and earnings management

According to the agency theory view, corporate governance monitoring mechanisms can play an important role in mitigating the managers' self-serving preferences (Lubatkin, Lane, Collin, & Very, 2005). In addition, corporate governance literature provides evidence that governance mechanisms can play a dual role in this issue. First, corporate governance can do a significant role in setting executive compensation in a way that mitigates the misalignment of interests between managers and shareholders (e.g. Core et al. 1999; Hartzel & Stark, 2003; Sun & Cahan, 2009; Al-Najjar, 2017; Chen et al., 2020). Second, the literature shows evidence that corporate governance variables may help in curbing managers' actions regarding accounting manipulation (Beasley, 1996; Klein, 2002; Peasnell, Pope, & Young, 2005; Cornett et al., 2008; Gonzalez & Garcia-Meca, 2014; Habbash & Alghamdi, 2017). Given this double effect of corporate governance, we claim that equity incentives are essential components of compensation that, when coupled with adequate governance controls, are effective in aligning managers' incentives with those of shareholders with minimal risk of adverse consequences. Accordingly, we expect that including such mechanisms as additional control variables in our model that examine the expected positive association between equity incentives and earnings management will moderate this association.

H2: The inclusion of corporate governance mechanisms moderates the relationship between equity incentives and Earnings management.

2.3.3. The effect of corporate governance index on CEO's equity incentives and earnings management relationship

Instead of using individual corporate governance mechanisms as a proxy for corporate governance quality, we use an overall index for the corporate governance system. The index reflects the effect of a group of corporate governance variables rather than measuring the effect of each individual variable (Webb, 2006). The use of general index instead of individual corporate governance mechanisms is more useful as it gives more accurate measurement for the strength of the corporate governance system compared to the individual mechanisms that may give contradicting effects. The used index is issued by the Institutional Shareholder Services (ISS) which issued a new[1] corporate governance indexes measuring the quality of corporate governance in the UK capital market. ISS' Corporate Governance Quotient (CGQ) was established to assist institutional investors in evaluating the quality of corporate boards, and the impact governance practices may have on portfolio performance. Many of the world's largest and most respected financial institutions have incorporated ISS' CGQ ratings into various aspects of their equity research and investment decision-making processes.[2]

According to ISS' indexes, the higher the value of the index, the higher is the quality of corporate governance. Consequently, we expect the existence of a high corporate governance index will reverse the expected positive relationship between executives' equity incentives and earnings management, or at least, make it insignificant. This leads to the following hypothesis:

H3: The relationship between equity incentives and earnings management is decreasing in the existence of high corporate governance index.

3. RESEARCH METHODOLOGY

3.1. Sample

The initial sample of this study includes an unbalanced panel of the non-financial companies listed in the FTSE-350 index. We selected the FTSE-350 index because it includes the largest 350 companies by capitalization, which have their primary listing on the London Stock Exchange. We focus on large companies because some corporate governance provisions of corporate governance code might not be applied for small companies that lie outside this index. To the extent that Corporate Governance Code (2003) mentions that explicitly in note no. 6 in the Preamble: "Smaller listed companies, in particular, those new to the listing, may judge that some of the provisions are disproportionate or less relevant in their case. Some of the provisions do not apply to companies below the FTSE 350".

This study will cover eight years from 2004 to 2011. We set 2004 as the beginning of this study to investigate the effect of the Combined Code issued in November 2003, whereas 2011 represents the most recent data available for this study. To be included in the sample, a firm should have data available for all of the study variables for a minimum of 4 years between 2004 and 2011 (Ozkan, 2011). Firms are allowed to exit the panel as they merge, go private or bankrupt, or otherwise cease to exist in their initial form, thereby limiting the effects of survivorship bias.

It is well established in earnings management literature to exclude financial firms from research samples due to their special accounting practices

[1] These indexes were initially launched in June 2002.

[2] CGQ is the industry's most comprehensive corporate governance database, scoring more than 8,000 companies worldwide, representing more than 98% of the US equity market and all of the major global indexes.

that estimate discretionary (abnormal) accruals difficult (e.g. Klein, 2002; Peasnell et al., 2005; Kuang, 2008). Furthermore, discretionary accruals models are calculated cross-sectional using homogenous industry groups. Therefore, industry groups with less than eight observations are excluded from the sample to ensure the accuracy of calculations (Defond & Jiambalvo, 1994; Kuang, 2008; Subramanyam, 1996).

3.2. Data sources

Concerning this study, corporate governance data have been hand collected from companies' annual reports (Source: Northcote & Companies' Websites). The process involves examining the corporate governance report and directors' profiles to identify board and subcommittees members and their independence. Data for audit and non-audit fees have been collected from Financial Analysis Made Easy (FAME) database. Earnings management is calculated based on data collected from Bloomberg and DataStream databases. As in Kuang (2008) executive compensation variables have been collected from BoardEx database. Finally, all other accounting and financial data have been collected from Bloomberg and DataStream databases.

3.3. Research models

To test the study's hypothesis and answer its questions we construct two multivariate regression models. The first multivariate model examines the relationship between discretionary accruals, metric for earnings management (dependent variable) and each of CEO and CFO equity incentives. Discretionary accruals is measured using both the Performance Adjusted Model (Kothari et al., 2005) which will be used in the main regression analysis and the modified Jones model which will be used in the robustness tests. Both absolute and signed values of discretionary accruals will be used. The independent variables will be CEO or CFO equity incentives measured as the change in CEO or CFO equity wealth for each 1% change in the company's stock price. The regression model is detailed in equation (1).

$$\begin{aligned} EM_{it} = {} & \propto_0 + \beta_1 CEO\_INC_{it-1} + \beta_2 CEO\_BONUS_{it} + \beta_3 SIZE_{it} \\ & + \beta_4 ROA_{it} + \beta_5 MTB_{it} \\ & + \beta_6 VOLATILITY_{it} + \beta_7 LEVERAGE_{it} \\ & + \beta_8 CFO_{it} + \beta_9 FINCRISIS \\ & + \beta_{10} INDUSTRY + \varepsilon_{it} \end{aligned} \quad (1)$$

where,

EM = earnings management proxies which take on of three variables: (1) *CDA_ABS* = absolute value of current discretionary accruals; (2) *CDA_INC* = positive values of current discretionary accruals; and (3) *CDA_DEC* = negative values of current discretionary accruals.

CEO_INC = the measure of CEO's equity incentives calculated as the change in CEO's equity wealth for each 1% change in the company's stock price. Equity incentives will be measures at the previous year to that of earnings management.

CEO_BON = CEO's bonus scaled by the sum of salary and bonus.

SIZE = market capitalization of the firm.

ROA = return on assets.

MTB = market to book ratio of firm's shares.

VOLATILITY = the annualized standard deviation of the natural logarithm of stock returns for the last 120 trading days of the fiscal year.

LEVERAGE = the ratio of total debt to total assets.

CFO = cash flow from operating activities.

FINCRISIS = dummy variable takes the value of one if the data from 2007 & 2008 and zero otherwise.

INDUSTRY = dummy variables to control foe industry effect.

The same model will be used for CFO equity incentives with replacing the variable *CEO_INC* and *CEO_BON* with *CFO_INC* and *CFO_BON* respectively. Where, *CFO_INC* is the measure of CFO's equity incentives calculated as the change in CFO's equity wealth for each 1% change in the company's stock price. Whereas *CFO_BON* is the CFO's bonus scaled by the sum of salary and bonus.

The second regression model is designed to examine the moderation effect of corporate governance mechanisms on the relationship between equity incentives and earnings management. This model is detailed on equation (2):

$$\begin{aligned} EM_{it} = {} & \propto_0 + \beta_1 CEO\_INC_{it-1} + \beta_2 CEO\_BON_{it} + \beta_3 BSIZE_{it} \\ & + \beta_4 BIND_{it} + \beta_5 BMEET_{it+} \\ & + \beta_6 DUALITY_{it} + \beta_7 ACMEET_{it} \\ & + \beta_8 ACSIZE_{it} + \beta_9 ACIND_{it} \\ & + \beta_{10} AC\_EXP_{it} + \beta_{11} RCIND_{it} \\ & + \beta_{12} NCIND_{it} + \beta_{13} AF + \beta_{14} NAF_{it} \\ & + \beta_{15} BIGFOUR_{it} \\ & + \beta_{16} INSTITUTIONAL_{it} \\ & + \beta_{17} BLOCK10_{it} + \beta_{18} SIZE_{it} \\ & + \beta_{19} ROA_{it} + \beta_{19} MTB_{it} \\ & + \beta_{20} VOLATILITY_{it} + \beta_{21} LEVERAGE_{it} \\ & + \beta_{22} CFO_{it} + \beta_{23} FINCRISIS \\ & + \beta_{24} INDUSTRY + \varepsilon_{it} \end{aligned} \quad (2)$$

where,

BSIZE = size of the board of directors.

BIND = percentage of independent non-executive directors in the board.

BMEET = no. of board meetings during the year.

DUALITY = dummy variable with a value of 1 if the positions of CEO and chairman are held by the same person and 0 otherwise.

ACMEET = number of audit committee meetings during the year.

ACSIZE = size of audit committee.

ACIND = percentage of independent non-executive members in the audit of committee excluding independent chairman.

AC_EXP = dummy variable takes the value of one if at least one of the audit committee has recent financial or accounting experience and zero otherwise.

RCIND = percentage of independent non-executive members in the remuneration of committee excluding independent chairman.

NCIND = percentage of independent non-executive members in the nomination of committee excluding independent chairman.

AF = audit fees measured in £m.

NAF = ratio of non-audit fees to total fees.

BIGFOUR = dummy variable takes the value of one if the firm has been audited by one of the big four auditors and zero otherwise.

INSTITUTIONAL = percentage of outstanding shares held by institutional shareholders.

BLOCK10 = dummy variable that takes the value of 1 if the firm has outside shareholder owning 10% or more of the firm's outstanding shares.

3.4. Variables measurement

3.4.1. Earnings management

This study will use the discretionary accruals as a proxy for earnings management. The main idea behind this proxy is to isolate the accruals into non-discretionary (normal) accruals and discretionary (abnormal). Many models have been used in the literature to dichotomize accruals into discretionary and non-discretionary accruals. We calculate both total and current discretionary accruals. Total discretionary accruals (TDA) are calculated using a cross-sectional version of the model suggested by Jones (1991) and modified by Dechow, Sloan, and Sweeney (1995). Both methods use the same methodology where they approximate parameters for normal accrual activity by doing a regression for a proxy of accounting accruals on measures for normal business activity. These estimated normal accrual parameters are then merged with event-period data to produce estimated abnormal accrual activity (Peasnell et al., 2005).

Recently, some researchers have claimed that current discretionary accruals are more sensible to earnings manipulation (Ashbaugh, LaFond, & Mayhew, 2003). In addition, Kothari et al. (2005) have argued that firm performance should also be taken into consideration when calculating discretionary accruals. Performance-adjusted current discretionary accruals (PACDA) model is used as a proxy for earnings management in our main analyses, whereas, TDA is used as a proxy for earnings management in the robustness checks. Details of calculating both proxies are explained below.

3.4.1.1. Calculating performance-adjusted current discretionary accruals (PACDA)

The cross-sectional performance-adjusted current discretionary accruals (PACDA) are calculated by including the lagged variable of ROA, as suggested by Kothari et al. (2005). The PACDA are similar to RECDA calculated by Ashbaugh et al. (2003). The parameters for calculation of expected current accruals *ECA* are estimated by using the following equation:

$$\frac{TCA_{it}}{ASS_{it-1}} = \alpha_0\left(\frac{1}{ASS_{it-1}}\right) + \alpha_1\left(\frac{\Delta Sales_{it}}{ASS_{it-1}}\right) + \alpha_2(ROA_{it-1}) + \varepsilon_{it} \quad (3)$$

$$\frac{EAC_{it}}{ASS_{it-1}} = \alpha_0\left(\frac{1}{ASS_{it-1}}\right) + \alpha_1\left(\frac{\Delta Sales_{it} - \Delta REC_{it}}{ASS_{it-1}}\right) + \alpha_2(ROA_{it-1}) \quad (4)$$

where,

TCA = total current accruals is net income (earnings before extraordinary items and discontinued operations) plus depreciation and amortization minus operating cash flows for firm *i* in the year *t*.

ASS = total assets for firm *i* in the year *t-1*.

ΔSales = change in net sales for firm *i* in the year *t*.

ΔREC = change in accounts receivable for firm *i* in the year *t*.

ROA = ratio of net income before extraordinary items to total assets for firm *i* in the year *t-1*.

ε_{it} = error term for firm *i* in year *t*.

According to Kothari et al. (2005) and Ashbaugh et al. (2003) models, current discretionary accruals can be defined as follows:

$$PACDA = \left(\frac{TAC_{it}}{ASS_{it-1}} - \frac{EAC_{it}}{ASS_{it-1}}\right)$$

The model is estimated for each industry and year to obtain industry specific estimates for the coefficients in equation (3). Companies have been classified into homogeneous industry groups using Industry Classification Benchmark (ICB)[3].

3.4.1.2. Calculating total discretionary accruals (TDA)

We will use Jones (1991) model modified by Dechow et al. (1995) to calculate the total discretionary accruals. The first step is to calculate total accruals (*TA*). This study uses the cash flow approach to calculate Thus, *TA* is the difference between income before extraordinary items, discontinued operations (*NI*) and net cash flows from operating activities (*CFO*) as follows:

$$TA_{it} = NI_{it} - CFO_{it}$$

where, NI_{it} is the earnings before extraordinary items of firm *i* in year *t*; CFO_{it} is the net cash flows from operating activities of firm *i* in year *t*.

Then the parameters for calculating non-discretionary accruals are estimated through the following regression equation:

$$\frac{TA_{it}}{ASS_{it-1}} = \alpha_0\left(\frac{1}{ASS_{it-1}}\right) + \alpha_1\left(\frac{\Delta Sales_{it}}{ASS_{it-1}}\right) + \alpha_2\left(\frac{PPE_{it}}{ASS_{it-1}}\right) + \varepsilon_{it} \quad (5)$$

The next step is to use the estimated parameters to calculate non-discretionary accruals through the following equation:

$$\frac{NDA_{it}}{ASS_{it-1}} = \alpha_0\left(\frac{1}{ASS_{it-1}}\right) + \alpha_1\left(\frac{\Delta Sales_{it} - \Delta REC_{it}}{ASS_{it-1}}\right) + \alpha_2\left(\frac{PPE_{it}}{ASS_{it-1}}\right) \quad (6)$$

[3] Although most of capital market studies use Standard Industry Classification (SIC) system, studies that report some problems and limitations of SIC codes include Clarke (1989), Kahle and Walking (1996), Guenther and Rosman (1994), and Fan and Lang (2000). Therefore, other classification methods have been adapted recently such as North American Industry Classification System (NAICS), Global Industry Classifications Standard (GICS) system Bhjoraj, Lee, and Oler (2003).

where,

TA = total accruals, measured as the difference between net income (earnings before extraordinary items and discontinued operations) and operating cash flows for firm *i* in the year *t*.

ΔREV = change in net revenue for firm *i* in the year *t*.

ΔREC = change in accounts receivable for firm *i* in the year *t*.

PPE = property, plant and equipment for firm *i* in the year *t*.

ASS = total assets for firm *i* in the year *t*.

ε_{it} = error term for firm *i* in year *t*.

The model is estimated for each industry and year to obtain industry specific estimates for the coefficients in equation (3). Companies have been classified into homogeneous industry groups using the Industry Classification Benchmark (ICB). We will use both the absolute and signed values of discretionary accruals. Since equity incentives may motivate executives for both income increasing or income decreasing earnings management, we will the absolute value of discretionary accruals, as in most of the previous studies (Bergstresser & Phillipon, 2006; Cornett et al., 2008). On the other hand, we will use signed discretionary accruals because Hribar and Nichols (2007) provide evidence that models based on absolute discretionary accruals are more likely to be affected by correlated omitted variables bias than models based on signed discretionary accrual measures. Noting that we include some control variables to the model when we use the absolute value as a measure for earnings management such cash flow from operations (CFO) and return on assets (ROA) to mitigate the effect of omitted variables as recommended by Hribar and Nichols (2007).

3.4.2. Equity incentives

Consistent with Burns and Kedia (2006), Erickson, Hanlon, and Maydew (2006), Johnson, Ryan, and Tian (2009), and Armstrong, Jagolinzer, and Larcker (2010), we will measure *CEO* and *CFO* equity incentives as portfolio delta. Portfolio delta is the change in executive's wealth for each 1% change in the stock price. Executive's wealth includes value of total equity held, value of *LTIP* held and estimated market value of options held. The value of stock and restricted stock are assumed to change as dollar to dollar value with stock price change. The value of stock option is assumed to change according to the derivative of its Black Scholes (1973) value with regard to the underlying stock (Core & Guay, 2002).

3.4.3. Corporate governance

We will use both, individual corporate governance mechanisms and overall index, as a proxy for corporate governance. Corporate governance mechanisms that will be used include board size, board independence, CEO/Chair duality, board meetings, audit committee meetings, audit committee size, audit committee independence, audit committee expertise, remuneration committee independence, nomination committee independence, institutional shareholders, block holder ownership, big four auditors, audit fees, and non-audit fees. Board size is measured as the number of directors serving on the board (Cornett et al., 2008; Xie, Davidson, & DaDalt, 2003). Board independence is measured as the proportion of independent non-executive directors (Davidson, Goodwin-Stewart, & Kent, 2005; Klein, 2002; Peasnell et al., 2005; Xie et al., 2003). CEO/Chair duality is measured as a dummy variable taking the value of 1 if the positions of CEO and chairman are held by the same person and zero otherwise (Davidson et al., 2005; Peasnell et al., 2005; Xie et al., 2003). Board meetings are measured as the number of board meetings held annually by the board of directors (Beasley, Carcello, Hermanson, & Lapides, 2000; Vafeas, 1999; Xie et al., 2003). Audit committee meetings are measured as the number of audit committee meetings held every year (Bédard, Chtourou, & Courteau, 2004; Davidson et al., 2005; Vafeas, 2005; Xie et al., 2003). Audit committee size is measured as the number of audit committee members (Davidson et al., 2005; Farber, 2005; Xie et al., 2003). Audit committee independence is measured as the percentage of independent outside directors in the audit committee (Agrawal & Chadha, 2005; Klein, 2002; Xie et al., 2003). Audit committee expertise is measured as a dummy variable that takes the value of one if the audit committee includes at least one member with recent financial experience and zero otherwise (Farber, 2005). Remuneration and nomination committees' independence are measured as the percentage of independent nonexecutive directors in each committee (Klein, 2002; Osma & Noguer, 2007). Institutional shareholders' ownership is measured as the total shares held by institutional investors divided by the total shares outstanding (Chung, Firth, & Kim, 2002; Jiambavlo, Rajgopal, & Venkatachalam, 2002; Koh, 2003). Outside block holders ownership is measured by a dummy variable taking the value of one if the company has one or more outside shareholders who own 10% or more of the company's outstanding shares (Peasnell et al., 2005). Big four auditor is measured using dummy variable taking the value of one if the firm has been audited by Big-Four auditor and zero otherwise (Becker et al., 1998; Piot & Janin, 2007). Audit fees will be measured as the natural logarithm of audit fees. Non-audit fees will be measured as the proportion of non-audit fees to total audit fees (Ferguson, Seow, & Young, 2004; Larcker & Richardson, 2004).

3.4.4. Control variables

Theory and previous empirical studies suggest some factors that are associated with earnings management and are likely to be correlated with equity incentives. These factors include cash bonuses, firm size, market to book ratio, leverage, volatility, return on assets, cash flow from operations, financial crisis period, and industry effect. Similar to equity-based compensation; bonus income is based on performance measures. Therefore it might be related to equity incentives. To control for this possible effect, executives' bonus scaled by the sum of salary and bonus will be included in the regression. Watts and Zimmerman (1978, 1990) claim that managers in large size firms are more likely to take advantage of discretion in accounting rules to reduce political attention. Dechow and Dichev (2002) find that larger firms

have larger accruals. Therefore, we will control the firm size as the natural logarithm of market value. Monitoring firms with high growth opportunities is not an easy task for shareholders. Therefore it is more likely that those firms will use more equity incentives (Gaver J. J., & Gaver, K. M., 1993; Smith & Watts, 1992). On the other hand, Warfield, Wild, J. J., and Wild, K. L. (1995) document that high growth firms use more discretionary accruals. Consistent with (Core & Guay, 1999) we will use the market to book ratio as a proxy for growth opportunities. According to the debt covenant hypothesis firms may use aggressive earnings management to avoid debt covenant violations (Watts & Zimmerman, 1986). Our proxy to control for debt covenant incentive to earnings management is the ratio of debt to total assets. Firms working in a more volatile environment have higher monitoring costs and therefore their managers are more likely to commit accounting fraud (Erickson et al., 2006). Therefore, we include stock volatility to control uncertainty. Volatility is measured as the annualized standard deviation of the natural logarithm of stock returns for the last 120 trading days of the fiscal year. In addition, lagged values of return on assets and cash flow from operations are included to control for a firm's previous performance which directly affects both equity incentives and previous accruals that may reverse in the current period. Our sample time horizon is 2004-2011, so it includes the period of the recent financial crisis that hit almost the whole globe in 2007-2008. Due to the economic effects of this crisis, it may lead to a change in firms' earnings management practices as well as their compensation strategy. Therefore, we will try to control for the impact of the financial crisis period (2007-2008) by including a variable named FINCRISIS, which is measured as a dummy variable that takes the value of 1 if the year is 2007 or 2008 and zero otherwise. Finally, we control for industry effect by including nine industry dummies in our regression analysis.

3.5. Testing for endogeneity

We have utilized some research choices to mitigate the effect of endogeneity. Firstly, we used the lagged value of equity incentives instead of current values which reduce the reverse effect of earnings management on equity incentives. Secondly, we include an extensive set of control variables including a large set of corporate governance variables, firm size, leverage, volatility, and market to book value, in addition to controlling for time and industry effects. These extensive set control variables reduce the likelihood that other variables affect the relationship between CEO equity incentives and earnings management. Finally, lagged values of return on assets and cash flow from operations are included among the control variables. The use of these lagged variables controls for a firm's previous performance which directly affects both equity incentives and previous accruals that may reverse in the current period.

Although the above-explained arguments, we will statistically test the effect of endogeneity. We will use the 2SLS instrumental variable approach to test for endogeneity effect on equity incentives. We will use the lagged value of CEO tenure, measured as the number of years the CEO is holding the position, as an instrumental variable for CEO equity incentives. According to the managerial power approach, the power of the CEO increases when he/she stays for a long time on the position and this allows the CEO to intervene on the structure of his/her compensation (Bebchuk & Fried, 2004). Empirically, Core and Guay (1999) report a positive relationship between CEO tenure and the size of their equity holdings. Statistically, we find that CEO tenure is highly and positively correlated with equity incentives (the correlation coefficient is .30 approximately), whereas we find very weak correlation between CEO tenure and earnings management proxies (correlation coefficients between CEO tenure and the absolute, positive, and negative values of discretionary accruals are .0091, .0026, and .0034 respectively).

3.6. Robustness tests

Various robustness tests will be used to examine the consistency of the main results. Firstly, we will use the total discretionary accruals measured by the modified Jones model by Dechow et al. (1995) as a proxy for earnings management. This measurement is different from our main proxy of earnings management in two aspects; first using total discretionary accruals than current discretionary accruals, second, using the modified Jones model instead of Kothari et al. (2005) model. Both absolute and directional values of total discretionary accruals will be used. Secondly, we use the alternative measures for equity incentives. Similar to Harris and Bromiley (2007), we use the proportion of equity compensation to total compensation as an index for executives' equity incentives. In the last robustness check, we construct an index for corporate governance quality from the individual mechanisms that we have collected their data during this study instead of the index created by The Institutional Shareholder Services (ISS).

4. EMPIRICAL RESULTS

4.1. Descriptive statistics

Table 1 shows the descriptive statistics for our variables. The mean absolute value of discretionary accruals is less than what has been reported by some US-based studies. For example, Klein (2002) reports a mean of .077, whereas Bergstresser and Philippon (2006) report a mean of .089 and .062 for small and large companies respectively. Both studies use the Modified Jones model to calculate the values of discretionary accruals. On the other side, our findings are comparable to the recent UK studies. For example, Kuang (2008), using the Dechow and Dichev (2002) model reports a mean (median) of .052 (.030) for the absolute value of discretionary accrual. By contrast, Ferguson et al. (2004) report a mean (median) of .0922 (.0738) of working capital discretionary accruals using the Modified Jones Model which are relatively higher than our findings.

Table 1. Descriptive statistics

Variables	*Observations*	*Mean*	*Median*	*Std. Deviation*	*Min*	*Max*
CDA_ABS	1675	.0465	.0299	.0520	.0001	.492
CDA_INC	740	.0443	.0279	.049	.0001	.3004
CDA_DEC	935	-.048	-.0308	.054	-.492	-.0001
CEO_INC	1675	223.388	47	717.587	0	10029
CEO_EQ	1675	.487	.48	.196	0	.98
CEO_BON	1675	.375	.41	.199	0	.97
CFO_INC	1540	40.90	18	155.118	0	5565
CFO_EQ	1540	.475	.47	.1914	0	.97
CFO_BON	1540	.357	.39	.177	0	.97
BIND	1675	45.83	50	11.066	10	78.57
BMEET	1675	8.793	9	2.7361	2	25
AC_ MEET	1675	4.017	4	1.4416	1	14
DUALITY	1675	.0364	0	.1874	0	1
AC_SIZE	1675	3.5466	3	.88	2	8
ACSIZE_DUM	1675	.9431	1	.2317	0	1
ACIND	1675	94.85	100	11.9863	25	100
ACIND_DUM	1675	.845	1	.3622	0	1
ACEXP	1675	.695	1	.460	0	1
RCIND	1675	87.15	100	18.043	0	100
RCIND_DUM	1675	.581	1	.493	0	1
NCIND	1675	65.67	66.67	17.198	0	100
AF	1675	1.815	.7	3.897	.011	58
NONAF	1675	41.3897	40	20.0017	0	93.48
BIGFOUR	1675	.9662	1	.1808	0	1
INST	1675	24.8074	20.92	18.0324	0	72.63
BLOCK10	1675	.487	0	.5011	0	1
SIZE	1675	5410.78	1009.115	15802.96	36.177	133318.4
VOLATILITY	1675	38.9292	31.117	29.6120	8.739	402.985
LEVERAGE	1675	23.8254	21.4848	18.5206	0	115.946
MTB	1675	5.26	2.67	19.029	-304.65	389.5177
ROA	1675	7.628	6.54	9.434	-78.62	111.02
CFO	1675	.133	.11	.107	-.38	1.16

The mean (median) of CEO's equity incentives is £223.388 (£47) thousand which means that, on average, the CEO's equity wealth increase by £203.48 thousand for every 1% increase in company's stock price. Note that the mean exceeds the median indicating that the EQINCENT variable is right-skewed. This result is significantly less than the equity incentives of American CEOs as reported in recent studies. For example, Boone, Khurana, and Raman (2011) report a mean (median) of £801.54 (£151.65) thousands approximately[4]. The mean (median) values of the proportion of equity compensation to a total compensation for CEOs are .487 (.48). The mean (median) values of the proportion of bonus to a total of cash and bonus are .375 (.41). This result is similar to Ozkan (2009) who reports a mean of .38 approximately.

The average size of the board of directors is 9 members. The average board independence is 45.8% which is close to the corporate governance code (2003) recommendations that at least half of the board members should be independent non-executive directors. The mean of CEO duality is 0.036 which means that 96.4% of the sample firms do separate the positions of CEO and chairman of the board of directors. The average board meetings are approximately 8.79 per year whereas the average audit committee meetings are 4.02 per year. The average audit committee size in our sample is 3.5.

Regarding audit committee independence, we find that the average percentage of independent nonexecutive directors in the audit committee is around 95%. In addition, we find that almost 85% of the sample's companies have an audit committee that is wholly consisting of independent non-executive directors. This result indicates good compliance with (2003) Corporate Governance Code's recommendation of a wholly independent audit committee. We found also that 69.49% of our sample firms have at least one member with financial experience.

In terms of remuneration and nomination committee independence, our sample shows that the average percentages of independent nonexecutive directors in both committees are 87.15 % and 65.67% respectively. In addition, we find that only 58.15% of our sample firms have a remuneration committee that wholly consisting of independent non-executive directors. This percentage is away from the 100% independence level recommended by the corporate governance code.

Regarding auditors' independence and quality, we find that the percentage of non-audit fees to total fees (as an indication for auditor's independence) is 41.39%. Also, for auditor's quality, we find that 96.6% of our sample firm's accounts have been audited by one of the big four auditors. Regarding institutional ownership variables, we find that the average institutional ownership in our sample is 24.8 % with 48.7 % of the study sample having at least one external block holder whose stake exceeds 10%.

Table 1 provides descriptive statistics for control variables as well. The mean (median) values of the proportion of bonus to a total of cash and bonus are .3559 (.38). The mean (median) of firm

[4] The original amounts reported in Boone et al. (2011) study were in dollars. We converted it into GBP using recent exchange rate for the sake of comparability.

size (measured by market capitalization) is 5410.78 (1009.115) £m. The mean (median) for the firm's leverage is 24% (21%). As for the market to book ratio, our sample shows a mean (median) of 5.26 (2.67). Stock return volatility has an average (median) of 39% (31%). Finally, the mean (median) values for ROA and CFO are 7.63% (6.54%) and .133 (.11) respectively.

4.2. Regression analysis

This section provides a detailed discussion of the results of our two regression models. Following Dougherty (2011), we used both, the Hausman test and The Breusch-Pagan Lagrange Multiplier (LM) test to choose the most appropriate panel regression model among the fixed effects model (FEM), random effects mode (REM) and the pooled OLS model. Firstly, the results of the Hausman test show that REM is superior to FEM as we accept the null hypothesis that there is a correlation between unobserved effect u_i and X_{it} variables (P-values are 0.5094 and 0.2166 for the first and the second models respectively). Secondly, the results of LM test show that REM is preferable to pooled OLS as we reject the null hypothesis that the variances of groups are zero; H_0: $\sigma_u^2 = 0$ (P-values are 0.0002 and 0.0009 for the first and second models respectively). Accordingly, we use the random effects regression model (REM) to test the hypotheses of this study.

4.2.1. CEO equity incentives and earnings management

Table 2 shows the results of the regression analysis of the effect of CEO's equity incentives on earnings management. The Wald Chi2 for all models is significant at P-values <.01. The overall R^2 for the three models is 0.1299, 0.1809, and 0.2157 for absolute, income increasing, and income decreasing earnings management respectively. These results are better than reported by Bergstresser and Philippon (2006) who report R^2 values that range from .015 to .083. But they are similar to Jiang et al. (2010) who report adjusted R^2 values that range from .15 to .18.

The results might support hypothesis *H1*. The findings show that CEO equity incentives are positively and significantly associated with absolute and income increasing earnings management. On the other side, we find an insignificant negative relationship between CEO equity incentives and income decreasing earnings management. These results imply that CEO equity incentives lead to high levels of earnings management in general and income increasing earnings management in particular. These results are consistent with the arguments of the managerial power approach which considers equity-based compensation as a way through which executives can get more compensation without causing public anger or what Bebchuk and Fried (2004) call "outrage constraint". The widespread of many negative phenomena that are related to equity compensation like at the money options, option re-pricing, reload options, restricted stock instead of options, and executives' freedom to unwind their equity incentives implies that this kind of pay may lead to undesired actions such as earnings manipulation.

On the other side, these findings are contrary to the optimal contracting approach of agency theory (Jensen & Murphy, 1990b). According to this approach, outcome-based incentives, such as stock options and restricted stock, put a considerable amount of executives' compensation and wealth at risk by attaching them strongly to firm performance. The argument behind the use of equity-based compensation, according to agency theory, is that directly linking managers' wealth to firm performance through equity incentives (e.g. stock options and stock ownership) encourages them to act in line with the interest of shareholders and hence achieving incentive alignment.

In addition, these results are consistent with the results of previous US studies that examine the relationship between equity incentives and earnings management. For example, Bergstresser and Philippon (2006) and Cornett et al. (2008) report a significant positive relationship between CEO equity incentives and earnings management. Similarly, Cheng and Warfield (2005) find that managers with high equity incentives are (i) more likely to report earnings that meet or beat analysts' forecasts and (ii) more likely to take income-increasing abnormal accruals relative to managers with low equity incentives.

Table 2. Current discretionary accruals and CEO's equity incentive

Variables	*CDA_ABS*		*CDA_INC*		*CDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CEO_INC	.0712**	2.14	.1121**	2.51	.0088	0.20
CEO_BON	.0647**	2.25	.0142	0.34	-.0765**	-2.09
SIZE	-.1288***	-3.38	-.1053**	-2.07	.0697	1.46
VOLATILITY	.1194***	3.37	.0929*	1.79	-.1627***	-3.43
LEVERAGE	-.134***	-3.86	-.0821*	-1.74	.1544***	3.63
MTB	.0596*	1.86	.0188	0.42	-.0973**	-2.40
ROA	.0155	0.47	.2181***	4.66	.2288***	4.99
CFO	-.0777**	2.52	-.1838***	-4.29	-.3590***	-7.82
FINCRISIS	.0448	0.71	.0616	0.66	.0182	0.21
Industry Dummies	YES		YES		YES	
Intercept	.1774	1.10	.1324	0.67	-.0633	-0.32
Wald chi2 (Pr>chi2)	140.38	.0000	115.29	.0000	173.68	.0000
R^2	0.1299		0.1809		0.2157	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

Moreover, our findings are consistent with other studies that examine the relationship between equity incentives and other forms of accounting manipulation. For example, Burns and Kedia (2007),

Efendi, Srivastava, and Swanson (2007) find a positive association between equity incentives and misstatements. Johnson et al. (2009) document a positive relationship between incentives related to unrestricted stock and subjection to the Securities and Exchange Commission's Accounting and Auditing Enforcement Release (AAERs).

Regarding control variables, we find a significant positive relationship between CEO bonus and absolute earnings management, insignificant positive association with income increasing earnings management, and significant negative relationship with income decreasing earnings management. These findings are consistent with the results of many prior studies (e.g. Healy, 1985; Holthausen et al., 1995; Guidry et al., 1999). Firm size is negatively and significantly related to absolute and positive discretionary accruals, whereas, it has an insignificant positive relationship with negative discretionary accruals. Our results show a positive significant relationship for *VOLATILITY* with *CDA_ABS*, positive but less significant with *CDA_INC* and a significant negative relationship with *CDA_DEC*. These results suggest that the more volatile the firm's stock is the more earnings management it engages in. With regard to *LEVERAGE*, the results show a significant negative relationship with *CDA_ABS*, moderate negative significant relationship with *CDA_INC*, and a significant positive relationship with *CDA_DEC*. The results of the market to book value (as a proxy for firm's growth) show a significant negative relationship with *CDA_ABS*, an insignificant relationship with *CDA_INC*, and a significant positive relationship with *CDA_DEC*. As for return on assets (*ROA*), we find positive association between *ROA* and all proxies of earnings management but the results are a significant with *CDA_INC* and *CDA_DEC* only. Regarding cash flow from operations (CFO), we find a significant negative relationship with all proxies of earnings management. These results suggest that firms that have strong CFO performance are less likely to engage in earnings management practices. Finally, we did not find a significant effect on the variable *FINCRISIS* which controls for the effect of the financial crisis on earnings management practices. These insignificant results for all earnings management proxies imply that the behaviour of earnings management did not change significantly during the time of the financial crisis in 2007 & 2008.

4.2.2. CFO equity incentives and earnings management

We will use the same model that used to examine the relationship between equity incentives and earnings management by replacing the variables *CEO_INC* and *CEO_BON* with *CFO_INC* and *CFO_BON*. The results of this regression model are presented in Table 3. The Wald Chi2 for all models is significant at P-values < .01. The overall R^2 for the three models is 0.1305, 0.1901, and 0.2047 for absolute, income increasing, and income decreasing earnings management respectively. These values are similar to those for the CEO equity incentives model. The findings show that CFO equity incentives are positively related to the absolute and income increasing earnings management, and negatively related to income decreasing earnings management. However, contrary to CEO equity incentives, none of these relationships is significant. These results suggest that CFOs do not respond directly to their benefit but only to the desires of their CEOs. These findings support the argument of managerial power approach that CEO is the most important position at the firm and that all other executives behave according to the views of him and that CEO has the power to change a CFO who does not work according to CEO's vision (Bebchuk & Fried, 2004; Mian, 2001; Fee & Hadlock, 2004). In addition, these results support the argument of Graham and Harvey (2001) that CFOs are CEO's agents.

Moreover, Feng, Ge, Luo, and Shevlin (2011) find that there is no significant difference between equity incentives provided for CFO of firms that are involved in accounting manipulation and that for matched non-manipulating firms. In contrast, they found that CEOs of manipulating firms have higher equity incentives and more power than CEOs of non-manipulating firms. They explain their findings by arguing that CFOs are involved in material accounting manipulations in response to pressures from CEOs, rather than because they are looking for direct financial gains from their equity incentives. On the other side, our results are not consistent with the findings of Jiang et al. (2010) who find that CFOs equity incentives are more associated with earnings management than CEOs equity incentives.

Table 3. Current discretionary accruals and CFO's equity incentives

Variables	*CDA_ABS*		*CDA_INC*		*CDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CFO_INC	.0425	1.16	.0068	0.13	-.0578	-1.26
CFO_BON	.0415	1.37	-.0309	-0.70	-.0613	-1.59
SIZE	-.0949**	-2.26	-.0166	-0.29	.0892*	1.71
VOLATILITY	.1377***	3.71	.1678***	3.07	-.1512**	-3.05
LEVERAGE	-.1503***	-4.09	-.1036**	-2.04	.1681***	3.82
MTB	.0571*	1.71	.0150	0.31	-.0927**	-2.21
ROA	-.0065	-0.19	.2686***	5.32	.2300***	4.86
CFO	.0752**	2.32	-.1914***	-4.16	-.3323***	-6.99
FINCRISIS	.0416	0.63	.0382	0.39	.0400	0.45
Industry Dummies	YES		YES		YES	
Intercept	.1456	0.87	.0985	0.48	-.0900	-0.45
Wald chi2 (Pr>chi2)	123.71	.0000	105.52	.0000	150.66	.0000
R^2	0.1305		0.1901		0.2047	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

With regard to the CFO bonus, we find that positively related to the absolute value of earnings management, and negatively related to income increasing and income decreasing earnings

management. None of these relationships is significant. This support the above mentioned arguments that CFOs are working as agents to the CEO, and they are working in accordance with the CEO's strategy. The remaining control variables show relatively similar results to that of CEO equity incentives.

Table 4. Joint effect of CEO and CFO equity incentives

Variables	*CDA_ABS*		*CDA_INC*		*CDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CEO_INC	.0793**	2.00	.1101**	2.08	.0218	0.42
CEO_BON	.1071**	2.00	.0886	1.13	-.0825	-1.18
CFO_INC	.0156	0.39	-.0015	-0.03	-.0579	-1.11
CFO_BON	-.0375	-0.72	-.0938	-1.22	.0162	0.814
SIZE	-.1269***	-2.90	-.0714	-1.16	.0621	1.14
VOLATILITY	.1169***	3.12	.1231**	2.18	-.1489***	-2.98
LEVERAGE	-.1157***	-3.04	-.0849	-1.54	.1292***	2.87
MTB	.0455	1.33	.0131	0.26	-.0748*	-1.76
ROA	-.0124	-0.35	.2439***	4.79	.2454***	5.11
CFO	.0881***	2.69	-.1743***	-3.68	-.3786***	-7.80
FINCRISIS	.0358	0.54	.0281	0.28	.0210	0.23
Industry Dummies	YES		YES		YES	
Intercept	-.0206	-0.19	.0712	0.50	.1939	1.57
Wald chi2 (Pr>chi2)	174.38	.0000	150.30	.0000	200.38	.0000
R^2	0.1753		0.2489		0.2575	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

4.2.3. The effect of corporate governance variables on the relationship between CEO equity incentives and earnings management

In this section we investigate the impact of corporate governance variable on the relationship between discretionary accruals and CEO equity incentives. We will shorten this analysis to CEO equity incentives since we did not find significant relationship between CFO equity incentives and earnings management indexes.

Table 5 presents the result of regression analysis for the moderation effect of corporate governance variables on the relationship between CEO equity incentives and earnings management. The Wald Chi2 for all models is significant at P-values < .01. The overall R^2 for the three models are 0.1371, 0.1983, and 0.2287 for absolute, income increasing, and income decreasing earnings management respectively. These values are similar to prior regression models.

Table 5. The effect of corporate governance variables on the relationship between CEO equity incentives and earnings management

Variables	*CDA_ABS*		*CDA_INC*		*CDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CEO_INC	.0703**	2.09	.1120**	2.44	.0110	0.25
CEO_BON	.0617**	2.12	.0282	0.66	-.0672 *	-1.81
BSIZE	-.01036	-0.33	-.0320	-0.62	-.0650*	-1.66
BIND	-.0166	-0.58	-.1072**	-2.27	-.0691*	-1.94
DUALITY	-.0759	-0.57	-.1146	-0.56	-.0299	-0.18
BMEET	.0127	0.45	-.0028	-0.07	-.0097	-0.27
AC_ MEET	-.0303	-0.97	-.0392	-0.88	.0108	0.28
AC_SIZE	-.0551*	-1.72	-.0892*	-1.81	-.0112	-0.28
ACIND	-.0537*	-1.69	-.0964**	-2.03	-.0128	-0.33
ACEXP	-.0124	-0.19	-.0647	-1.13	-.0983	-1.07
RCIND	.0361	0.91	-.0164	-0.32	-.0525	-1.06
NCIND	-.0115	-0.32	-.0007	-0.02	.0258	0.58
INST	-.0286	-0.42	-.1457	-1.44	.0977	1.18
BLOCK10	-.0273	-0.21	.1179	0.59	-.0181	-0.12
BIGFOUR	-.0277	-0.19	-.0164	-0.07	.0921	0.50
AF	-.0098	-0.21	-.1030*	-1.68	-.1064*	-1.82
NONAF	.0023*	1.76	.0023	1.20	-.0015	-0.89
SIZE	-.1079**	-2.52	-.0577	-0.97	.1064**	1.96
VOLATILITY	.1270***	3.55	.1025**	1.96	-.1624***	-3.39
LEVERAGE	-.1333***	-3.79	-.0878*	-1.81	.1452***	3.35
MTB	.0605*	1.87	.0162	0.35	-.0996**	-2.44
ROA	-.0148	-0.44	.2079***	4.41	.2216	4.80
CFO	.0780**	2.52	-.1884***	-4.28	-.3686	-7.95
FINCRISIS	.0401	0.63	.0582	0.62	.0256	0.30
Industry Dummies	YES		YES		YES	
Intercept	.1793	0.79	-.0872	-0.29	-.2795	-0.99
Wald chi2 (Pr>chi2)	149.75	.0000	120.31	.0000	186.10	.0000
R^2	0.1371		0.1983		0.2287	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

Contrary to hypothesis *H2*, the results show that corporate governance mechanisms do not affect either the direction or the significance of the relationship between CEO equity incentives and earnings management. We find that CEO equity incentives have a significant positive relationship with absolute and income increasing earnings management, and insignificant positive relationship with income decreasing earnings management. Although some corporate governance mechanisms such as board independence, audit committee size and independence, and audit fees appear to mitigate earnings management, these mechanisms do not appear to reduce the tendency of high sensitive CEOs to use discretionary accruals.

These results question the effectiveness of corporate governance system in mitigating opportunistic behaviour motivated by executives' compensation structures.

4.2.4. The effect of corporate governance index on CEO's equity incentives-earnings management relationship

In this section we replace individual corporate governance mechanisms with general index that measure the overall strength of corporate governance structure. The use of general index instead of individual corporate governance mechanisms has twofold benefit. First it gives more accurate measurement for the strength of corporate governance system instead of the individual mechanisms that may give contradicting effects. Second, it enables us from measuring the effect of corporate governance system on the equity incentives relationship in two ways, firstly by including this index as additional control variable similar to individual mechanisms, secondly by including a new variable that measures the interaction between equity incentives and corporate governance.

Table 6 below shows the results of regression analysis for the effect of corporate governance index on the relationship between CEO equity incentives and earnings management. The coefficient on *EQINC*INDEX* is consistent with our expectation for a negative value; nevertheless, it is not significant. Contrary to hypothesis *H3*, the results suggest that equity compensation motivations to manage earnings are not influenced by the quality of corporate governance. These results are identical to those of including individual corporate governance mechanisms as additional control variables on the relationship between CEO equity incentives and earnings management. Results of control variables are consistent with the results of prior regressions.

Table 6. The effect of corporate governance index on the relationship between CEO equity incentives and current discretionary accruals

Variables	*CDA_ABS*		*CDA_INC*		*CDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CEO_INC	.1073**	2.46	.2033***	3.17	-.0114	-0.20
CEO_BON	.0792**	2.69	.0205	0.49	-.0913**	-2.43
CGINDEX	-.0123	-0.52	.0033	1.14	.00451	1.56
EQINC*INDEX	-.0600	-0.78	-.0010	-1.24	.0002	0.24
SIZE	-.1463***	-3.57	-.0938*	-1.74	.1107**	2.20
VOLATILITY	.1342***	3.75	.1106**	2.13	-.1822***	-3.81
LEVERAGE	-.1343***	-3.69	-.1140**	-2.33	.1497***	3.43
MTB	.0657**	2.02	.0227	0.50	-.1077**	-2.64
ROA	-.0202	-0.60	.1969***	4.18	.2386***	5.17
CFO	.0737**	2.35	-.1741***	-4.04	-.3549***	-7.60
FINCRISIS	.0360	0.56	.0716	0.76	.0570	0.65
Industry Dummies	YES		YES		YES	
Intercept	.2959	1.26	-.0408	-0.15	-.4503	-1.56
Wald chi2 (Pr>chi2)	149.62	.0000	127.67	.0000	185.08	.0000
R^2	0.1420		0.1948		0.2327	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

4.2.5. Results of endogeneity test

The Hausman test is used initially to examine the existence of endogeneity bias for the independent variables (Greene, 2012). The results of Hausman test show a P-value of 0.3549 (at 95% significance level). This result indicates that we can not reject the null hypotheses that independent variables are exogenous implying that there is no significant evidence for the existence of endogeneity bias. Another important inference of the Hausman test results is that the results of 2SLS should be similar to those of OLS.

Table 7 shows the results of 2SLS regression for the relationship between CEO equity incentives and earnings management. It is clear that the results of 2SLS regression are greatly consistent with those obtained from OLS regression. Accordingly, we can reasonably claim that our results for the relationship between CEO equity incentives and earnings management are robust to the effect of endogeneity.

Table 7. CEO equity incentives and earnings management: 2SLS regression

Variables	*CDA_ABS*		*CDA_INC*		*CDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CEO_INC	.0762**	2.49	.1109**	2.27	-.0012	-0.03
CEO_BON	.0725***	2.63	.0155	0.38	-.08293**	-2.39
SIZE	-.08310**	-1.93	-.1059	-1.56	.0335	0.64
VOLATILITY	.1571***	4.27	.1068*	1.93	-.1822***	-3.74
LEVERAGE	-.1439***	-4.52	-.0808*	-1.67	.1667***	4.11
MTB	.0703**	2.19	.0193	0.41	-.1106***	-2.70
ROA	.0082	0.24	.2335***	4.39	.2224***	4.60
CFO	.0687**	2.14	-.1935***	-4.33	-.3572***	-7.11
FINCRISIS	.0098	0.15	.0427	0.46	.0396	0.46
Industry Dummies	YES		YES		YES	
Intercept	.2212	1.70	.1458	0.72	-.1071	-0.59
Wald chi2 (Pr>chi2)	232.88	0.0000	148.51	0.0000	252.61	0.0000
R^2	0.1313		0.1808		0.2164	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

4.3. Additional analysis & robustness tests

This section presents the results of some additional analysis and robustness tests that will be used to check the consistency and robustness of our main results. These tests will include using the alternative measures for earnings management, equity incentives, corporate governance strength, and finally using alternative regression technique.

4.3.1. Using the modified Jones model

Our first robustness check will be using the total discretionary accruals measured by the modified Jones model by Dechow et al. (1995). This measurement is different from our main proxy of earnings management in two aspects; first using total discretionary accruals than current discretionary accruals, second, using the modified Jones model instead of Kothari et al. (2005) model. Both absolute and directional values of total discretionary accruals will be used.

Table 8 presents the regression analysis result for the relationship between CEO equity incentives and total discretionary accruals measured using the modified Jones model (Dechow et al., 1995). Similar to the main analysis, we find the CEO equity incentives have a significant positive relationship with absolute and positive values of total discretionary accruals. On the other side, we find an insignificant negative association between the CEO equity incentives and negative values of total discretionary accruals. By contrast, the CEO bonus has a positive relationship with all proxies of earnings management, with a moderate significance with positive total discretionary accruals. These results are not similar to those of the main analysis where we find a significant positive (negative) relationship between the CEO bonus and absolute (negative) values of current discretionary accruals, whereas there was an insignificant positive association between the CEO bonus and positive value of current discretionary accruals. The results of the remaining control variables are relatively similar to those of the main analysis.

Similar to the main analysis, we add *CGINDEX* and *INC*INDEX* to the regression model of the CEO equity incentive – total accruals model to investigate the impact of corporate governance quality on this relationship. As it is clear in Table 9, consistent with the main regression, we find that equity incentives motivate managers to earnings management practices. The remaining variables show similar results to those of the main analysis.

To conclude, our findings for using total discretionary accruals measured using the modified Jones model instead of current discretionary accruals measured by Kothari et al. (2005) show that these two measures represent complementary rather than clashing measures for earnings management.

Table 8. Regression results: total discretionary accruals and CEO equity incentives

Variables	*TDA_ABS*		*TDA_INC*		*TDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CEO_INC	.0640**	1.96	.0570*	1.71	-.0154	-0.39
CEO_BON	.0261	0.91	.0861*	1.79	.0172	0.49
SIZE	-.1603***	-4.16	-.1912***	-3.23	.0915*	1.93
VOLATILITY	.1369***	3.90	.1989***	2.99	-.1278***	-3.15
LEVERAGE	-.0636*	-1.81	.0009	0.02	.0586	1.39
MTB	.0526	1.64	.0838	1.51	-.0288	-0.75
ROA	-.1274***	-3.87	.1043*	1.76	.2136***	4.41
CFO	.2309***	7.51	-.0800	-1.48	-.3996***	-4.99
FINCRISIS	-.0473	-0.76	-.3062***	-2.63	-.0614	0.397
Industry Dummies	YES		YES		YES	
Intercept	.0883	0.53	-.3152	-1.22	-.0584	-0.29
Wald chi2 (Pr>chi2)	163.00	.0000	101.29	.0000	170.48	.0000
R^2	0.1358		0.2212		0.1667	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

Table 9. The effect of corporate governance index on the relationship between CEO equity incentives and total discretionary accruals

Variables	TDA_ABS		TDA_INC		TDA_DEC	
	Coef.	T-Stat	Coef.	T-Stat	Coef.	T-Stat
CEO_INC	.1229***	2.84	.1522**	1.98	-.0464	-1.07
CEO_BON	.0368	1.25	-.0647	-1.26	.0316	0.90
CGINDEX	-.0046*	-1.87	-.0020**	-2.24	.0069**	2.33
EQINC*INDEX	-.00152	-0.17	-.0048	-1.35	.0013	0.64
SIZE	-.1433***	-3.59	-.0975	-1.51	.0845*	1.72
VOLATILITY	.1468***	4.13	.2035***	3.05	-.1402***	-3.45
LEVERAGE	-.0622*	-1.69	-.0197	-0.34	.0738*	1.71
MTB	0580*	1.78	.0860	1.52	-.0386	-1.01
ROA	-.1253***	-3.77	.1382**	2.32	.2300***	5.79
CFO	.2309***	7.36	-.0953*	-1.74	-.4042***	-10.10
FINCRISIS	-.0497	-0.79	-.0615	0.84	-.0471	-0.65
Industry Dummies	YES		YES		YES	
Intercept	.5067**	2.10	-.0953	-0.27	-.5506*	-1.91
Wald chi2 (Pr>chi2)	157.85	.0000	103.40	.0000	183.94	.0000
R^2	0.1367		0.2328		0.1824	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

4.3.2. Using alternative measures for equity incentives

In this section, we repeat the main regression model with replacing the measure of equity incentives. Similar to Harris and Bromiley (2007), we use the proportion of equity compensation to total compensation as an index for executives' equity incentives. The results presented in Table 10 above are relatively similar to the main regression analysis. CEO equity incentives have a positive association with all proxies of earnings management. However, the relationships are less significant comparing to the main analysis. The remaining variables have consistent coefficients to those obtained from the main regressions.

The results of regressing current discretionary accruals on the proportion of the CFO equity to total compensation (untabulated) are consistent with those of the main analysis. Also, the results of examining the effect of corporate governance quality on the relationship between earnings management and the proportion of the CEO equity to total compensation (untabulated) are similar to the main regressions.

Table 10. Current discretionary accruals and proportion of CEO equity incentives to total compensation

Variables	CDA_ABS		CDA_INC		CDA_DEC	
	Coef.	T-Stat	Coef.	T-Stat	Coef.	T-Stat
CEO_EQ	.0695*	1.83	.0864*	1.85	.0453	1.21
CEO_BON	.0411	1.30	-.0120	-0.26	-.0512	-1.28
SIZE	-.0864	-2.05	-.0746	-1.28	.0484	0.95
VOLATILITY	.1333***	3.51	.1404***	2.57	-.1431***	-2.77
LEVERAGE	-.1437***	-3.68	-.1298	-2.46	.1617***	3.45
MTB	.0649*	1.86	.0251	0.50	-.0987**	-2.30
ROA	-.0256	-0.70	.2049***	3.86	.2309***	4.74
CFO	.1143***	3.35	-.1548***	-3.20	-.3849***	-7.87
FINCRISIS	.0234	0.35	.0417	0.42	.0319	0.35
Industry Dummies	YES		YES		YES	
Intercept	.1438	0.84	.1561	0.75	-.0559	-0.28
Wald chi2 (Pr>chi2)	110.80	.0000	89.89	.0000	144.80	.0000
R^2	0.1238		0.1772		0.2033	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

4.3.3. Using alternative governance index

We construct an index for corporate governance quality from the individual mechanisms that we have collected their data during this study. The mechanisms we use include board size, board independence, the CEO/Chair duality, board meetings, audit committee meetings, audit committee size, audit committee independence, audit committee expertise, remuneration committee independence, nomination committee independence, audit fees, big four auditors, institutional shareholder, and outside block holders. For each mechanism, the firm gets one point if the mechanism is higher than the sample's median. Similar to our methodology in the main analysis, two variables are added to the regression model of the CEO equity incentives and earnings management. These variables are the new corporate governance index and the interaction between this index and the CEO equity incentives.

The results of this regression are presented in Table 11 below. The results are consistent with those of the main regression analysis. Our new corporate governance index does not affect the direction of the relationship between CEO equity incentives and earnings management proxies. Nevertheless, the relationship between CEO equity incentives and the absolute value of earnings management turn out to be less significant than the main regression. The results of the remaining variables are relatively similar.

Table 11. The effect of alternative corporate governance index on the relationship between CEO equity incentives and current discretionary accruals

Variables	*CDA_ABS*		*CDA_INC*		*CDA_DEC*	
	Coef.	*T-Stat*	*Coef.*	*T-Stat*	*Coef.*	*T-Stat*
CEO_INC	.0739*	1.78	.1195**	1.98	.0032	0.06
CEO_BON	.0151	0.36	.0151	0.36	-.0775**	-2.11
NEW_INDEX	.0161	0.77	.0146	0.52	-.0098	-0.38
EQINC*NEW_INDEX	-.0009	-0.12	-.0018	-0.17	.0015	0.15
SIZE	-.1302***	-3.31	-.1052**	-2.02	.0698	1.43
VOLATILITY	.1166***	3.28	.0918*	1.76	-.1618***	-3.39
LEVERAGE	-.1346***	-3.85	-.0832*	-1.76	.1557***	3.65
MTB	.0603*	1.86	.0197	0.43	-.0992**	-2.42
ROA	-.0149	-0.45	.2204***	4.70	.2284***	4.96
CFO	.0796***	2.57	-.1820***	-4.22	-.3598***	-7.82
FINCRISIS	.0470	0.74	.0619	0.66	.0185	0.21
Industry Dummies	YES		YES		YES	
Intercept	.0966	0.50	.0636	0.27	-.0135	-0.06
Wald chi2 (Pr>chi2)	139.99	.0000	116.73	.0000	175.11	.0000
R^2	0.1303		0.1813		0.2160	

*Note: *, **, *** refer to the significance of P-values at .10, .05, and .01 respectively.*

5. CONCLUSION

This paper examined the relationship between equity incentives of each CEO, CFO and earnings management. It also examined if corporate governance quality can affect the direction or strength of this relationship. Our sample consisted of the 1675 year observations for the CEO equity incentives and 1540 year observations for the CFO. We measure earnings management as the current discretionary accruals calculated using the performance adjusted model developed by Kothari et al. (2005). Executives' equity incentives are measured as the change in the executive's equity wealth for each 1% change in the company's stock price (Core & Guay, 2002). We measure the effect of corporate governance quality in two ways. First, we include individual governance mechanisms as additional control variables. Second, we include the overall index for corporate governance quality in addition to the interaction term between equity incentives and earnings management.

With regard to the relationship between the CEO's equity incentives and earnings management, we find a significant positive relationship between the CEO's equity incentives and the absolute and income increasing earnings management, whereas the relationship between the CEO's equity incentives and income decreasing earnings management was insignificant. These results show that high CEO equity incentives lead to more earnings management practices. Moreover, these incentives are more linked to income increasing than income decreasing earnings management. These findings support the managerial power approach argument that CEOs use their power to get more benefits from equity compensation without violating the outrage constraint (Bebchuck & Fried, 2004). Contrary to the CEO's equity incentives, our results show an insignificant relationship between CFO's equity incentives and earnings management. This result supports the argument that CFO is involved in the accounting manipulation process in response to CEO pressures not to achieve personal benefits.

Regarding the effect of corporate governance quality on the relationship between executive's equity incentives and earnings management, the results show that the quality of the corporate governance system does not play an effective role in mitigating earnings management behaviour that result from CEO wealth sensitivity. The relationship between CEO equity incentives was not affected by including corporate governance mechanisms nor was it affected by including the corporate governance index. This result highlights the need for a more effective corporate governance structure to be able to reduce such undesired practices by the managers. Theoretically, the findings of this study imply that both agency theory and managerial power theory should be taken into consideration for explaining executive compensation strategies. This implication is consistent with visions of many theorists who ask academics not to depend on one theoretical paradigm to explain executive compensation. For example, Eisenhardt (1989) recommends that agency theory should be integrated with other theories because agency theory "presents a partial view of the world that, although it is valid, also ignores a good bit of the complexity of organisations. Additional perspectives can help to capture the greater complexity" (p. 71). More clearly, Jensen and Murphy (1990) suggested that it is important to integrate agency theory with other paradigms or to empirically test the explanatory value of alternative paradigms to agency-based models.

Empirically, the current study sheds some light that the use of equity incentives should be coupled with more effective monitoring mechanisms to get benefit from this tool in aligning the interests of managers and shareholders and at the same time constraining the possible side effects of such mechanism like accounting manipulation.

Although discretionary accruals are the most used proxy for earnings management in the literature, it has its limitations that are related to the way of measuring it. Therefore, to the extent that discretionary accruals are estimated with error, there is a possibility that earnings management results are subject to some sort of bias. To mitigate these possible measurement errors, the current study used two proxies for earnings management. We use the current discretionary accruals measured by the performance adjusted model as developed by Kothari et al. (2005) in addition to total discretionary accruals measured by the modified Jones model as developed by Dechow et al. (1995). Future research could use UK data to examine the effect of equity

incentives on other proxies for accounting manipulation such as Securities and Exchange Commission Accounting and Auditing Enforcement Releases, restatements, and shareholder class action lawsuits can also be used as alternative proxies for earnings management. In addition, there is always the possibility that the models employed in this study remain potential for certain omitted variables bias that is correlated both with equity incentives, corporate governance and earnings management. However, several steps have been taken to reduce the likelihood of correlated variables, including the tests for additional control variables, and testing for endogeneity effect.

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