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# Exploring the Impact of Internal Corporate Governance on the Relation Between Disclosure Quality and Earnings Management in the UK Listed Companies

Nooraisah Katmon[1] · Omar Al Farooque[2]

**Abstract** This study investigates the impact of internal corporate governance on the relation between disclosure quality and earnings management in the UK listed companies, in particular whether governance mechanisms have deterrent effect on earnings management similar to firms' disclosure quality. Unlike prior literature, we measure a number of board and audit committee-related governance instruments, three disclosure quality proxies (i.e. *Investor Relation Magazine Award, Forward-Looking Disclosure and Analyst Forecast Accuracy*) and the Modified Jones Model to test the hypotheses of the study on a matched-pair sample data of Investor Relation Magazine Award winning and non-winning firms. Our findings in the OLS and sensitivity analyses using Heckman Procedure and 2SLS regressions consistently report a significant negative association between earnings management and disclosure quality for all proxies in restraining earnings management. In contrast, corporate governance variables are mostly insignificantly related to earnings management. This provides an emerging trend of the outperformance of disclosure quality over internal governance mechanisms in lessening earnings management. These findings warrant due attention of the policy makers, investors, corporate firms and other stakeholders in shaping a high-quality disclosure and governance regime in corporate settings to mitigate managerial manipulations of earnings across the countries in the world.

## Introduction

In this study, we empirically examine the effect of internal corporate governance on the relation between disclosure quality and earnings management in the United Kingdom (UK) listed companies. Earnings management is the deliberate steps of the managers to mislead stakeholders by exercising their discretion over accounting standards, with or without restriction, or to influence contractual outcomes that depend on reported accounting numbers (Healy and Wahlen 1999; Xie et al. 2003). Both agency theory (Jensen and Meckling 1976) and information asymmetry or signalling theory (Akerlof 1970; Spence 1973) suggest that there are numerous situations or incentives (e.g. to maximise bonus and compensations, to avoid violation of debt covenants or to decrease the cost of debt, to maximise the proceeds of IPOs etc.) that may motivate management to become involved in inappropriate earnings management through several means, such as changing depreciation policy and estimates, provision for bad debts, re-classifying gains and losses, not recognising goodwill impairment etc. Contrary to the business ethics, such manipulative earnings management does occur due to the existence of the firm's explicit and implicit contracts, the firm's relation with capital markets, the need for external financing, the political and regulatory environment or several other specific circumstances (vander Bauwhede 2001). As a result,

✉ Omar Al Farooque
ofarooqu@une.edu.au

Nooraisah Katmon
nooraisah@fpe.upsi.edu.my

[1] Faculty of Business and Economics, Sultan Idris Education University, Proton City, 35900 Tg. Malim, Perak, Malaysia

[2] UNE Business School, University of New England, Armidale, NSW 2351, Australia

earnings quality is compromised as managers distort the usefulness of accounting information and earnings and investors receive false information about real economic performance of companies, causing wrong decision making, resulting in choosing adverse selection and requiring higher returns to compensate for information risk (Bhattacharya et al. 2003; Chen et al. 2010).

In fact, widespread earnings management can have serious and detrimental effects on the investors as well as future prospects of companies as prior studies show such evidence of negative long-run performance of companies (Teoh et al. 1998a; Kao et al. 2009). Over the last decade or so, the high profile corporate collapse worldwide, such as Enron, WorldCom, Parmalat etc. has provided evidence of rising number of cases involving earning manipulations and their catastrophic effect on investors, employees and society at large. These scandal cases have brought strong criticisms and serious public awareness for the need of more transparency and credibility in financial information and earnings quality to protect and restore the confidence of shareholders and stakeholders. However, to restore the quality of earnings it is essential to strive for the absence of opportunistic earnings management or deter it to reflect the firm's true and fair operating performance (current and future) and determine whether current share price reflects intrinsic value of the firm.

To restrain such earnings management, there are different internal and external mechanisms that are widely used as a watch dog to protect shareholders' wealth—some of them are complementary while others are substitutive. Extant literature argues that the quality of internal corporate governance and quality of disclosure of listed companies can inhibit earnings management. For example, the primary role of the board of directors is to provide monitoring of companies' management on behalf of shareholders, with the intention of reducing the information asymmetry between managers and shareholders so that the interest of shareholders is protected (Cornett et al. 2008). While a number of studies have investigated the disclosure quality and earnings management relationship (Lapointe-Antunes et al. 2006; Jo and Kim 2007; Iatridis and Kadorinis 2009), prior research has mostly failed to consider the joint effect of internal corporate governance instruments and disclosure quality on earnings management, as acknowledged in corporate governance and earnings management literature (Xie et al. 2003; Chang and Sun 2009; Kent et al. 2010). Given that both components are expected to provide monitoring services to the firms (Jensen and Smith 1985; Weir et al. 2002; Brown et al. 2011) in reducing earnings management, information asymmetry and cost of capital, it is more plausible to observe the joint effect of corporate governance and disclosure quality on earnings management. Current study fills this gap in the literature. Distinctly, such a study could suggest that disclosure quality might be outperformed by other corporate governance variables in the system in deterring earnings management and vice versa (Holm and Schøler 2010).[1]

This study contributes to the literature by addressing the above limitation and employing three analyst-related alternative proxies for disclosure quality [i.e. *Investor Relation Magazine Award (IRAWARD), Forward-Looking Disclosure (FLSCORE) and Analyst Forecast Accuracy (AFA)*] as the first to examining the joint effect of disclosure quality and internal corporate governance on earnings management behaviour in less regulated UK settings. None of the prior literature in this area has employed all three proxies for disclosure quality when examining the link between disclosure and earnings management. We measure earnings management following the Modified Jones Model (Dechow et al. 1995) and use 145 matched-pair sample data based on Investor Relation Magazine Award winning and non-winning firms between 2004 and 2008. Applying both the OLS and three steps Heckman Procedure as well as 2SLS regression approaches, we find that all disclosure quality proxies are significant negatively related to earnings management, as opposed to corporate governance mechanisms, in combating earnings management. This suggests that the quality of disclosure of listed companies in the UK is a much stronger inhibitor of earnings management than the quality of internal corporate governance. These findings have significant implications in the corporate sector across the countries of the world in mitigating earnings management in firms' distinct governance settings.

The remainder of this paper is divided into four sections. Section 2 provides a literature review and hypotheses development; Sect. 3 describes data, research design and model specification; Sect. 4 shows findings of the study, while Sect. 5 discussion on findings; and Sect. 6 provides a conclusion of the study.

## Literature Review and Hypotheses Development

### Literature Review

Accounting numbers are seen as value relevant (Barth et al. 2001) and investors use accounting earnings to estimate

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[1] Arcot and Bruno (2011) claim that disclosure and corporate governance are substitutive; hence the adherence to either one of these two components is basically effective in enhancing corporate performance. Opposing this view, Holm and Schøler (2010) point out that, corporate governance mechanisms are not perfectly substitutive for each other because the variation in corporate governance practices by firms is largely dependent on the unique needs and specific agenda of each firm.

future returns (Lev 1989; Beaver 1998). However, a weak earnings–returns association is linked with low information content of reported earnings due to management manipulation activities (Easton et al. 1992). This shortcoming is inherent in the separation of ownership and control that is embedded in the agency relationship, which leads to a conflict of interest and information asymmetry (Jensen and Meckling 1976). Since manager's interests do not coincide with those of owners as agents are entrenched in an asymmetric information environment (Jensen and Meckling 1976; Fama and Jensen 1983), managerial incentives to manipulate or distort reported earnings are multifaceted and mainly driven by personal motives, such as compensation and bonuses or stock options, meeting or beating analyst/management forecasts, avoiding the reporting of disappointing losses, bypassing breaching debt covenants, hyping of the share price during initial public offerings (IPOs) or seasonal equity offerings (SEOs), circumvent industry and other regulations. (Healy 1985; Watts and Zimmerman 1986; Defond and Jiambalvo 1994; Teoh et al. 1998b; Kasznik 1999; Dutta and Gigler 2002; Abarbanell and Lehavy 2003; Holland and Ramsay 2003; Bartov and Monaharam 2004; Gill-de-Albornoz and Illueca 2005; Iatridis and Kadorinis 2009). The incentives for managers to commit to earnings management also derive from information asymmetry as indicated in the signalling theory that the management team (signaller, insider), who know the real economic performance and the products or services of the company have the opportunity to convey (signal) or not convey this information to investors (receiver, outsider) (Allen and Faulhaber 1989; Akerlof 1970; Spence 1973; Connelly et al. 2011). It also occurs when informed investors have better information than uninformed investors and often, when the signaller's incentive is tied to the market value of the company, managers may be motivated to signal the information with a view to increasing their own interests.

Prior studies argue that earnings management is dependent on the extent of a firm's disclosure transparency (Jo and Kim 2007) and corporate governance (Shen and Chih 2007). Disclosure and corporate governance are monitoring tools that operate within a firm's governance system, and which are potentially useful for reducing information asymmetry and reducing agency cost (Hope and Thomas 2008; Holm and Schøler 2010; Arcot and Bruno 2011). Agency theory views disclosure as one form of an external monitoring mechanism that is potentially useful in reducing information asymmetry and hence reducing agency cost (Shleifer and Vishny 1997). Agency theory also views corporate governance mechanism(s) as one of the classic antidotes in reducing conflict of interest and information asymmetry (Shleifer and Vishny 1997; Ingley and Van der Walt 2004; Brennan 2006). An

indication of sound internal governance includes a well-governed board and audit committee, which will potentially encourage the reduction of agency costs in a firm by means of monitoring activities (Maher and Andersson 2000; Mueller 2006; Adam and Ferreira 2007; Ronen and Yaari 2008; Kent et al. 2010).

Literature on disclosure quality and earnings management proxies for disclosure quality ranges to AIMR ratings (Zhou and Lobo 2001), disclosure index and compliance to accounting standards (Lapointe-Antunes et al. 2006; Shen and Chih 2007), voluntary disclosure (Iatridis and Kadorinis 2009) and press releases by the firms (Jo and Kim 2007; Riahi and Arab 2011) etc. These studies in the US, Switzerland, Tunisia and the UK capital market have consistently documented a negative relationship between disclosure quality and earnings management. In addition, Zhou and Lobo (2001) demonstrate that there is a negative bi-directional relationship between disclosure and earnings management in the US, while Lapointe-Antunes et al. (2006) fail to find such two-way relationship in Switzerland. However, as mentioned before, none of these studies provides proper control for internal corporate governance variables in their models. The current study has extended the literature by filling this gap.

Previous studies on earnings management and corporate governance are extensive. Although they reveal competing views with regard to the effectiveness of corporate governance in constraining earnings management, they generally provide supporting evidence for the relationship between corporate governance and earnings management, both in developed and emerging markets. Liu and Lu (2007), Jiang et al. (2008) and Kang and Kim (2011) find an inverse relationship between governance score/index and earnings management. In regards to specific governance variables, Xie et al. (2003) show that board independence, audit committee expertise and a higher frequency of both board and audit committee meetings create less incentive for managers to manipulate earnings. Bédard et al. (2004) report that audit committee independence, board independence and audit committee expertise reduce upward earnings management while board size, non-executive directors' ownership and more experienced members on the board reduce downward earnings management. Davidson et al. (2005) and Benkel et al. (2006) also reveal a stronger deterrent effect of board and audit committee independence on earnings management than that of audit quality and internal control factors. Board independence is found negatively correlated with discretionary accrual/earnings management in other studies as well (e.g. Peasnell et al. 2000; Kao and Chen 2004; Osma 2008; Jaggi et al. 2009; Dimitropoulos and Asteriou 2010; Lo et al. 2010). However, Kent et al. (2010) find that audit committee characteristics (i.e. audit committee independence,

frequency of audit committee meetings and the number of audit committee members) outperform board independence in constraining innate and/or discretionary accrual. Chang and Sun (2009) demonstrate that audit committee independence is significant in constraining earnings management in the post-Sarbanes–Oxley Act (SOX), but insignificant in the pre-SOX (during the year 2002–2003). However, Piot and Janin (2007) and Osma and Noguer (2007) find no significant relationship between audit committee independence and earnings management. Baxter and Cotter (2009) find that the existence of an audit committee is essential in reducing earnings management, although they also document that other audit committee characteristics (such as audit committee independence, audit committee size and audit committee meeting frequency) are insignificant in reducing the propensity of managers to manipulate earnings. Chtourou et al. (2001) reveal that audit committees that consist of (1) independent directors and with at least one financial expert or (2) independent directors and met at least two times a year are associated with lower earnings management; they find no relationship for audit committee independence as suggested by the Blue Ribbon Committee (1999) or the percentage of independent members on the board with earnings management. As such, firms with sound corporate governance practices are also to some extent prone to earnings management problems.

## Hypotheses Development

### Disclosure Quality

High quality of disclosure is expected to increase investors monitoring and understanding in linking managerial actions and firm's outcomes (Lombardo and Pagano 2002, as cited in Hope and Thomas 2008). Jo and Kim (2007) point out that when disclosure quality is high, investors are well informed about a company's activities and thus, better able to detect earnings management. In other words, a high disclosure quality environment will limit the propensity of managers to manipulate earnings (Fields et al. 2001; Lapointe-Antunes et al. 2006; Jo and Kim 2007), because well-informed investors are able to detect earnings management (McKee 2005). Hunton et al. (2006) demonstrate that greater comprehensive income disclosure reduces the propensity of managers to manipulate earnings. Prior studies report that the link between disclosure quality and earnings management is negative (Lapointe-Antunes et al. 2006; Jo and Kim 2007; Iatridis and Kadorinis 2009). In other words, high disclosure quality can improve investors and analysts capability to identify earnings management; hence reducing manager's incentives to manipulate reported earnings. Thus, our first hypothesis is as follows:

**H₁** Ceteris paribus, there is a negative relationship between disclosure quality (DISQ) and earnings management.

### Audit Committee Independence and Board Independence

Independent directors on the board and audit committee are viewed as the investor's most important stronghold for the protection of their value (Jensen and Meckling 1976; Rosenstein and Wyatt 1990). Within agency theory, independent directors are considerably more credible than non-independent directors when it comes to monitoring firms (Fama and Jensen 1983). Moreover, independent directors are expected to create a sense of balance in the board, and to make credible judgements on a firm's financial decisions. In the UK, the importance of independent boards and audit committees has been stressed by the Cadbury Report (1992) and the Higgs Report on the Combined Code on Corporate Governance (2003). An independent director's role on the board and in the audit committee is expected to mitigate any conflict of interest (Klein 2002a, b; Bédard et al. 2004) and be an effective monitoring agent (Armstrong et al. 2010), resulting in lower earnings management opportunistic behaviours. Beasley (1996) reveals that firms with a high proportion of outside directors are less likely to be involved in fraud. Another strand of research shows that board independence and audit committee independence are statistically significant in preventing opportunistic behaviour by managers (Carcello and Neal 2003; Xie et al. 2003; Bédard et al. 2004; Kao and Chen 2004; Kent et al. 2010). Therefore, we hypothesise that

**H₂ₐ** Ceteris paribus, there is a negative relationship between audit committee independence (ACINDEPEND) and earnings management.

**H₂ᵦ** Ceteris paribus, there is a negative relationship between board independence (BODINDEPEND) and earnings management.

### Audit Committee Size and Board Size

The UK's *Corporate Governance Code* (2010) suggests that audit committee members must be comprised of at least three independent directors.[2] Given that the *Corporate Governance Code* is an expression of an agency theory overview, it indicates that a satisfactory number of board members and a large number of audit committee members

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[2] Nonetheless, the *Code* does not suggest a specific number of board members. Paragraph B.1 the UK *Corporate Governance Code* (2010, p. 12) states that:. The board should be of sufficient size that the requirements of the business can be met and that changes to the board's composition and that of its committees can be managed without undue disruption, and should not be so large as to be unwieldy.

are favourable as this may enable them to offer greater monitoring functions; hence constraining earnings management behaviour (Kiel and Nicholson 2003; Xie et al. 2003). Braiotta (2000) explains that the audit committee should be large enough to have members with a range of professional judgment and experience but not so large as to be unwieldy. Bédard et al. (2004) argue that the larger the audit committee, the more likely it is to uncover and resolve potential problems in the financial reporting process because it is more able to provide the necessary strength and diversity of views and expertise to ensure effective monitoring. Lin et al. (2006) find that audit committee size is negatively related to earnings management, implying that a certain minimum number of audit committee members may be relevant to the quality of financial reporting. On the other hand, Xie et al. (2003) and Bédard et al. (2004) find no significant association between audit committee size and earnings management.

There has been continued debate on the role of board size, although agency theory conceives that larger boards support effective monitoring. From an agency perspective, larger boards are more likely to respond to agency problems because a substantial number of experienced directors can be deployed to monitor and review managerial actions (Kiel and Nicholson 2003). A greater number of board members will likely lead to more independent directors with a wider range of valuable experience and knowledge; hence they are able to delegate more responsibilities to board committees than smaller boards (Dalton et al. 1999; Xie et al. 2003; Linck et al. 2008). This also can increase a board's capacity to prevent or limit managerial opportunistic earnings management behaviour (Menon and Williams 1994; Xie et al. 2003). Larger boards are likely to provide more expertise and diversity and to increase the board's monitoring capacity (Pearce and Zahra 1992; Dalton et al. 1998; John and Senbet 1998; Klein 2002a, b).

Nevertheless, it is widely held that a small board is more effective in monitoring a firm's activity (Coles et al. 2008). Prior studies suggest that a smaller board is favourable to an increase in a firm's governance processes (Yermack 1996; Core et al. 1999; Hoitash et al. 2009). The smaller board is not subject to coordination and free-rider problems (Lipton and Lorsch 1992), so it is not surprising to find that smaller boards are effective in increasing a firm's performance (Yermack 1996; Loderer and Peyer 2002). Others suggest that smaller boards may result in enhancing reporting quality (Alonso et al. 2000; Nguyen and Faff 2007). Lipton and Lorsh (1992) and Jensen (1993) argue that large boards face difficulties in coordination and communication and this hinders the board's ability to advise and take decisions. A report based on 1097 Taiwanese firms found that large board size is associated with higher earnings management and vice versa (Kao and Chen 2004).

Given that there is a competing view with regard to the relationship between board size and earnings management, following Xie et al. (2003), we make no prediction on the direction of the relationship for audit committee and board size with earnings management. In other words, audit committee size and board size can influence earnings management either in a positive or a negative direction. Therefore, we predict that

**H$_{3a}$**  Ceteris paribus, there is a relationship (either positive or negative) between audit committee size (ACSIZE) and earnings management.

**H$_{3b}$**  Ceteris paribus, there is a relationship (either positive or negative) between board size (BODSIZE) and earnings management.

### Audit Committee Meetings and Board Meetings

One essential measure of the effectiveness of a board and audit committee is how often members meet to discuss various issues facing a firm. The Smith Report (2003) recommends that audit committee meetings 'be held not less than three times in a year and coinciding with key dates within the financial reporting and audit cycle' (the *Combined Code*, 2003, p. 48).[3] This indicates that audit committees should devote adequate time to the discussion of matters concerning a firm's financial affairs and auditing. The frequency of meetings indicates an active audit committee rectifying any immediate issues and offering a better oversight, resulting in improved financial reporting quality which, in turn, may assist in detecting earnings management. Xie et al. (2003) argue that audit committee meeting frequency is associated with reduced levels of discretionary current accruals and an expectation that more active audit committees will prove more effective monitors. Chtourou et al. (2001) find that audit committees that are comprised entirely of independent directors, and that are engaged in more than two meetings in a year, are negatively associated with earnings management. Beasley et al. (2000) also find that having fewer audit committee meetings leads to an increase in the number of fraud cases in US firms.

With regard to board activity, diligent boards enhance the level of oversight resulting in improved financial reporting quality. Conger et al. (1998) and Vafeas (1999) view board meetings as an essential resource in improving the effectiveness of the board and they use this to represent the intensity of board activity. Chen et al. (2006) reveal that fraud is less likely to occur in firms with a greater number of board meetings, because they have sufficient time to solve a

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[3] In a similar vein, the US Blue Ribbon Committee (1999) recommended that audit committee meetings should be conducted not less than four times in a year.

firm's financial problems. In the same way, Vafeas (1999) claims that a higher number of board meetings provides sufficient time for directors to exercise their duty and responsibility in line with shareholder interests, and subsequently improve a firm's performance. Xie et al. (2003) point out that audit committees and boards that spend more hours on meeting are able to exercise greater monitoring functions, so they are more likely to be able to curb earnings management. They report that audit and board meeting frequency are inversely related to earnings management. Thus, our next hypotheses are as follows:

**H4a** Ceteris paribus, there is a negative relationship between audit committee meetings (ACMEET) and earnings management.

**H4b** Ceteris paribus, there is a negative relationship between board meetings (BODMEET) and earnings management.

### Audit Committee Financial Expertise

Audit committee expertise helps to evaluate the competence of the committee, as financial sophistication is often required to identify financial irregularities, such as earnings management. These experts can be used by the other independent members of the board to help them make judgements on professional issues. Xie et al. (2003) contend that an independent director with a corporate or financial background is likely to be more familiar with the different forms of earnings manipulations. With paragraph C.3.1 of *The UK Corporate Governance Code* (2010) stating that "at least one member of the audit committee has recent and relevant financial experience", it can be seen that the *Code* takes the view that financial expertise is essential in the detection of irregularities and in maintaining vigilance over a firm's financial accounting and reporting. Prior literature suggests that the presence of at least one member with financial expertise on an audit committee is helpful in mitigating financial irregularities (Abbott et al. 2004). An audit committee with relevant financial expertise is able to constrain managerial behaviour by reducing earnings management (Chtourou et al. 2001; Xie et al. 2003), is effective in promoting higher accrual quality (Dhaliwal et al. 2010) and enables more vigilance with respect to preventing the dismissal of an auditor who has issued a going concern report (Carcello and Neal 2003). Therefore, we hypothesise that:

**H5** Ceteris paribus, there is a negative relationship between audit committee financial expertise (ACEXP) and earnings management.

### Summary of hypotheses

In Table 1 below, we summarise the hypotheses discussed above to better understand the direction of relationship of

**Table 1** Summary of Hypotheses

| Dependent variable: earnings management (MJONES) | Independent variables |
|---|---|
| H1 | Negative relation is predicted with disclosure quality proxies (IRAWARD, FLSCORE, AFA) |
| H2a | Negative relation is predicted with audit committee independence (ACIND) |
| H2b | Negative relation is predicted with board independence (BODIND) |
| H3a | Either positive or negative relation is predicted with audit committee size (ACSIZE) |
| H3b | Either positive or negative relation is predicted with board size (BODSIZE) |
| H4a | Negative relation is predicted with audit committee meeting (ACMEET) |
| H4b | Negative relation is predicted with board meeting (BODMEET) |
| H5 | Negative relation is predicted with audit committee expertise (ACEXP) |

earnings management with disclosure quality proxies and internal governance variables. It is noted that most of these independent variables are expected to have negative effect to inhibit inappropriate earnings management except the size of board and audit committee which may go either way in constraining earnings management.

## Data, Research Design and Model

### Sample Selection and Data

We selected firms who were either winners or first runners-up for the *Investor Relations Magazine Award (IRAWARD)* in the year 2005, 2006, 2007 and 2008, in order to represent firms with high-quality disclosure.[4] The selection of years was primarily influenced by the introduction of the *Combined Code* (2003), which was largely based on the Higgs Report (2003) and Smith Report (2003). We selected 2004 as a starting point for the data collection process following the introduction of the *Combined Code* (2003), due to the requirement of certain governance information for the sample firms (e.g. the number of board meetings and audit committee meetings).

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[4] We excluded companies ranked third (i.e. second runners-up) from our sample because a selection of control sample with multiple criteria might be problematic when the main sample is large; therefore, by using the winners and first runners-up, the selection of the control sample is more feasible and realistic.

Our initial sample comprises 170 winners and first runners-up of *IRAWARD*.[5] Consistent with Lapointe-Antunes et al. (2006), we exclude firms operating in financial and highly regulated industries due to the different nature of reporting accruals in their reporting. Our final sample composes of 145 matched-pair sample (290 observations). We matched our sample firms using the following criteria: (1) same year under observation; (2) same industry; (3) closest total assets and (4) not nominated as a winner or runners-up in the years under observation (i.e. during 2005–2008) consistent with Boesso and Kumar (2007) that used *IRAWARD* in the US.[6] We utilised lagged data in our study, based on analyst's evaluation of a firm's investor relations activities in the previous year. We present the selection of the sample in Table 2.

Data on the *IRAWARD* was collected from the event organiser, the Cross Border Group Ltd. We used DataStream to obtain financial data relating to control variables. disclosure information and corporate governance data was collected manually from annual reports. Since some companies appear more than once in our sample, the standard errors were clustered at the firm level in order "to account for serial correlation of the error term within the same firm" (Landier et al. 2013) using *"vce (cluster clustvar)"* command in 'Stata' (data analysis and statistical software). Again, in order to reduce the effect of outliers, we winsorized all continuous variables at the top and bottom 1 % (except market capitalisation), following Cornett et al. (2009). The analysis of residuals confirms that all residuals are normally distributed and fully comply with parametric assumptions, and there is no heteroskedasticity and serial correlation problem.

## Model

We develop the model below in order to examine the effect of disclosure quality and corporate governance on earnings management. Using the data analysis and statistical software 'Stata', we first employ OLS regressions for each of the three disclosure quality proxies (variables of interest) and check potential endogeneity/simultaneity/causality of these proxies with earnings management (dependent variable). We then run three steps Heckman Procedure and 2SLS regressions (Heckman 1976, 1979) for one of the proxies (i.e. AFA) and test the same model for endogeneity as well as sample selection bias for reduced sample, and conformity of 2SLS results with OLS findings. Our regression model is as follows:

$$
\begin{aligned}
DACC = {} & \beta0 + \beta1 DISQ + \beta2 ACIND + \beta3 ACSIZE + \beta4 ACMEET + \beta5 ACEXP \\
& + \beta6 BODIND + \beta7 BODSIZE + \beta8 BODMEET + \beta9 BIG4 + \beta10 ANALYST \\
& + \beta11 SIZE + \beta12 PROFIT + \beta13 LOSS + \beta14 LEV + \beta15 CHGEINSALES \\
& + \beta16 PPE/LTA + \beta17 NCF/LTA + \beta18 TACF/LTA + \beta19 YEAR + \beta20 INDUSTRY + e
\end{aligned}
$$

where DACC Discretionary accruals estimated using cross-sectional Modified Jones Model (MJONES), DISQ Investor Relation Magazine Award (IRAWARD) (1 = Winner or first runner-ups, 0 = non-winner); Forward-Looking Score (FLSCORE) (the number of forward-looking disclosure information in the annual report); the analyst forecast accuracy (AFA), ACIND 1 = if the percentage of independent directors in audit committee is 100 %, 0 = if otherwise, ACSIZE 1 = if the number of audit committee member =/>3, 0 = if otherwise, ACMEET 1 = if the number of board meetings in a year is =/>3, 0 = if otherwise, ACEXP 1 = if the number of audit committee expertise is =/>1, 0 = if otherwise,[7] BODIND Percentage of independent directors in the board (excluding the chairman), BODSIZE Total number of board members,

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[5] Given that the awards covered multiple categories, a company could have received more than one award. The figure for our initial sample (see Table 2) refers to the number of non-unique companies receiving either the winner or the first runners-up award.

[6] We conducted t-testing to check the mean differences of total assets in both winner and non-winner groups. Results show that there is a significant difference between the means of these two groups at $p < 0.01$. Nonetheless, it is argued that finding a perfect match is nearly impossible. Our finding is consistent with those of Peasnell et al. (2007) who used *IRAWARD* in the US as a proxy for investor relation activities. Specifically, in their match-paired sample, they acknowledge that there is a huge significant difference in firm size in the winner and non-winner groups (at $p < 0.01$). However, it is also worth noting that other criteria, such as industry and year, are used in determining the control sample. At least this helps to alleviate the weaknesses in the sample selection choice to a certain extent.

[7] We traced the information on audit committee expertise in the directors' profile section in the annual report. Following Hoitash et al. (2009, p. 848), we determined audit committee expertise if the audit committee member is holding any of the following (similar) qualification/position, namely: "certified public accountant; chief financial office;, principal financial officer; chief accounting officer; principal accounting officer; treasurer; auditor; vice president of finance". Note that Hoitash et al. (2009) depend on the Securities and Exchange Commission (SEC) Final Rule when defining audit committee expertise in their research. We believe that our definition of audit committee expertise is in line with The UK *Corporate Governance Code* (2010) (Para 3.C.1) that "at least one member of the audit committee has recent and relevant financial experience" (p. 19).

**Table 2** The sample selection process

|  | IR 2008 | IR 2007 | IR 2006 | IR 2005 |
|---|---|---|---|---|
| Total winners and 1st runner-ups | 57 | 57 | 57 | 63 |
| Financial and highly regulated industries (e.g. Banking industry, investment company, investment entity, life assurance, off shore investment companies and funds, real estate, specialty and other finance, other financial and Mining) | (15) | (11) | (11) | (16) |
| Annual report not available[a] | (0) | (4) | (3) | (4) |
| Identified winners | 42 | 42 | 43 | 43 |
| Match with non-winners (control sample) | 42 | 42 | 43 | 43 |
| Total firms (Pool = 340) | 84 | 84 | 86 | 86 |
| *Exclude* | | | | |
| Industries <6 firms[b] | (14)[c] | (12)[c] | (14)[c] | (10)[c] |
| Total firms (Pool = 290)[d] | 70 | 72 | 72 | 76 |
| Missing data for analyst forecast accuracy | (4)[c] | (2)[c] | (18)[c] | (12)[c] |
| Total firms (Pool = 254)[e] | 66 | 70 | 54 | 64 |

Out of 145 match-paired firms, 8 firms (2008 = 2 firms, 2007 = 3 firms, 2006 = 1 firms, 2005 = 2 firms) were matched with firms from (a) same year of observations, (b) nearest total assets, (c) not nominated as winners during the year under observation (d) different group of industries (due to limited options in the selection of the best match-paired firms from the same industry)

[a] The annual reports of these companies are not available due to (1) merger and acquisitions or (2)the annual report is unavailable/not found although several trials have been undertaken

[b] Industries with less than six firms represented will be deleted from the sample because it is necessary to calculate the coefficient for the earnings management calculation based on industries with six or more firms

[c] Including the respective match-paired firms

[d] When no data for analyst forecast accuracy is employed in the model, a pool data comprise 290 firms was used in the regression

[e] When analyst forecast accuracy is used in the model, the pool data comprise 254 firms were used in the regression

BODMEET Total number of board meetings, BIG4 Auditor, a Big4 firm (Big4 = 1, Non-Big4 = 0), ANALYST Number of analyst following, SIZE Natural log of market capitalization, PROFIT Return on assets, LOSS Dummy. 1 = firms with negative earnings 0 = firms with positive earnings, LEV Debt to asset ratio, CHGEINSALES Change in sales. This is a proxy for change in performance, PPE/LTA Gross property, plant and equipment divided by lagged total assets. This is a proxy for investment opportunity, NCF/LTA Net cash flow from operation activities divided by lagged total assets, TACF/LTA Absolute value of total accruals, where total accruals is calculated as follows: net income—net cash flow from operation/ lagged total assets, YEAR Year Dummies (2007, 2006, 2005). Year 2004 dummy is excluded from the model, INDUSTRY Industry Dummies (Consumer goods, consumer services, oil and gas, healthcare, telecommunication, technology, and utilities). The industrial dummy is excluded from the model, $\varepsilon$ Error term.

### Discretionary Accruals (DACC)

We relied on the Modified Jones Model of Dechow et al. (1995) in estimating discretionary accruals in line with Rajgopal and Venkatachalam (2011), Cornett et al. (2008), Yu (2008) and Mouselli et al. (2012), as this model incorporates the potential discretionary factors of revenue and reduces the measurement error that had been ignored in the Jones (1991) model (Dechow et al. 1995, p.199).[8] We utilise an 'absolute' value of discretionary accruals estimated using Modified Jones Model in line with Mouselli et al. (2012) and Yu (2008), because Becker et al. (1998)

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[8] We estimate non-discretionary accruals using Modified Jones Model suggested by Dechow et al. (1995), using the following formula: $NDA_t = \alpha_1(1/LTA) + \alpha_2(\Delta REV_t - \Delta REC_t/LTA) + \alpha_3(-PPE_t/LTA)$, where $NDA_t$ is the non-discretionary accrual in the year $t$ divided by lagged total assets, $\Delta REV_t$ represent change in revenue in the year $t$ (current year revenue minus last year revenue), $\Delta REC_t$ represent change in receivables in the year $t$ (current year receivables minus previous year receivables) and $PPE_t$ is the gross property, plant and equipment at the end of $t$. All components in the equations are divided by lagged total assets in order to reduce heteroskedacity (Jones, 1991). We obtained the coefficient parameters ($\alpha_1$, $\alpha_2$ and $\alpha_3$) by performing OLS Regression on at least 6 firms in each industry in consistent with Athanasakou et al. (2009), using this equation: $TA/LTA = b_1(1/LTA) + b_2(\Delta REV_t/LTA) + b_3(PPE_t/LTA) + e_t$, where TA is total accrual and e is error term. We calculate the total accrual using cash flow approach following Jo and Kim (2007), where we subtract operating cash flow from earnings before extraordinary items and discontinued operations. According to Hribar and Collins (2002), the cash flow approach is superior to the balance sheet approach since the later suffers from serious measurement errors. After calculating the NDA, we then calculate the discretionary accrual (DA) by subtracting total accrual (TA/LTA) with DTA using the following equation: $DA = TA - NDA$.

claim that the use of the absolute value of discretionary accruals is effective in capturing both income-increasing and income-decreasing effects in earnings management.

### Disclosure Quality (DISQ)

We concentrated on the analyst-related proxies for disclosure quality including *IRAWARD*, the number of *Forward-Looking Disclosure* information in the annual report (*FLSCORE*) and the *Analyst Forecast Accuracy (AFA)*, given that analysts are (1) the sophisticated users of company's disclosure (Balsam et al. 2002); (2) the key player in the capital markets understanding the value of the information (Barker 1998); (3) able to detect earnings management (Liu 2005; Gavious 2007; Yu 2008); (4) expert in evaluating firms disclosure (Lang and Lundholm 1993; Healy and Palepu 2001; Gavious 2007) and (5) effective disseminator of the company's information (Roulstone 2003; Gavious 2007).[9]

The *IRAWARD* is an annual event organised by the Cross Border Group Ltd. to acknowledge firms with best investor relationship throughout the year. The winners are determined according to analyst perceptions of firm's investor relation activities, including a firm's narrative reporting, annual reports, disclosure practices, internet reporting, analysts meeting and briefings on corporate social responsibility practices and others. In line with Boesso and Kumar (2007), we consider that *IRAWARD* is a reliable proxy for disclosure quality, because it is based on analyst judgement in nominating those firms with the best investor relation activities, providing a wider scope for assessing the quality of a firm's disclosure.

With regard to the *FLSCORE*, we detect the total number of forward-looking disclosure information in the annual report following Hussainey et al. (2003) and using N6 Software.[10] The utilisation of *FLSCORE* as the second proxy for disclosure quality is justified, as it is value relevant to the firm's share price (Lundholm and Myers 2002); also prior studies demonstrate that analysts favour forward-looking information in order to predict future earnings (Deegan and Rankin 1997; Barker 1998).

With respect to the third proxy for disclosure quality, we estimate *AFA* following Hope and Kang (2005) and Hope (2003).[11] Prior studies show that a firm's disclosure carries a predictable value to analyst forecast (Lang and Lundholm 1996; McEwen and Hunton 1999; Hope 2003; Bhat et al. 2006; Ertimur et al. 2007) and analysts are able to predict earnings accurately in the presence of high disclosure quality settings (Byard et al. 2006). This suggests that *AFA* is a reflection of a firm's disclosure environment (Ernstberger et al. 2008).

### Audit Committee Characteristics

We employed several audit committee variables including *ACSIZE*, *ACIND*, *ACMEET* and *ACEXP*, following Zaman et al. (2011).

*Board characteristics* We included several board variables in our model including *BODSIZE* (Nelson et al. 2010), *BODMEET* (Xie et al. 2003) and *BODIND* (Kent et al. 2010; Nelson et al. 2010).

### Control Variables

We controlled for variables that are important in capturing the effect of earnings management, such as *SIZE* (Lobo and Zhou 2006; Jo and Kim 2007; Kent et al. 2010); this is because high scrutiny from investors in large firms will likely reduce managerial tendency to manipulate earnings (Zhou and Elder 2001; Lobo and Zhou 2006); *PROFIT* (Skinner 2003; Jo and Kim 2007); *NCF/LTA* (Becker et al. 1998; Lobo and Zhou 2006; Gul et al. 2009) and *TACF/LTA* (Becker et al. 1998; Velury 2003; Jo and Kim 2007). We also incorporated *ANALYST* since managers are reluctant to manipulate earnings in the presence of high analyst following (Ke 2001; Yu 2008); investment opportunity using *PPE/LTA* (Jo and Kim 2007; Riahi and Arab 2011); *LOSS* (Moreira and Pope 2007; Kent et al. 2010); *CHGEINSALES* (Jo and Kim 2007); *LEV* (Ke 2001; Richardson et al. 2002; Jo and Kim 2007) and *BIG4* (Velury 2003; Kent et al. 2010). Further, we controlled for *INDUSTRY* given that firms in the same industry are normally homogenous in terms of firm's characteristics, including assets and liability. Finally, we included *YEAR* in the model to control for year effects consistent with Lapointe-Antunes et al. (2006).

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[9] The *Investor Relation Magazine Award (IRAWARD)* is an external measure for disclosure quality, as it depends on the analyst's perceptions of a firm's investor relations activities in a year. By contrast, the forward-looking information is mainly based on information from the annual report, so can be classified as an internal proxy for disclosure quality. The analyst forecast accuracy, which is the third proxy for disclosure quality, is indirectly related to the first and second proxy, given that an analyst is expected to refer to both the firm's investor relations activities and forward-looking information when projecting a firm's earnings per share.

[10] Some of the forward-looking keywords used in Hussainey et al. (2003) include "accelerate, anticipate, await, envisage, estimate, eventual, expect, forecast, forthcoming, outlook and predict".

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[11] The AFA is estimated as $= (-1) |EPS_t - MEPS_t|/PRICE_t$, where $EPS_t$ is earnings per share, $MEPS_t$ is the median forecast of earnings per share and $PRICE_t$ is the share price in period $t$, (share price at the beginning of the year).

**Table 3** Descriptive statistics

| Variables | Mean | SD | Min | Max | 25 % PERC | 50 % PERC | 75 % PERC |
| --- | --- | --- | --- | --- | --- | --- | --- |
| MJONES | 0.0601 | 0.0699 | 0.0005 | 0.4775 | 0.0173 | 0.044 | 0.08257 |
| IRAWARD | 0.5 | 0.5 | 0 | 1 | 0 | 0.5 | 1 |
| FLSCORE | 99.16 | 64.95 | 9 | 423 | 55 | 87 | 130 |
| AFA | −0.0112 | 0.0181 | −0.123 | −0.00002 | −0.0123 | −0.0053 | −0.00213 |
| ACIND | 0.896 | 0.305 | 0 | 1 | 1 | 1 | 1 |
| ACSIZE | 0.9517 | 0.214 | 0 | 1 | 1 | 1 | 1 |
| ACMEET | 0.9517 | 0.214 | 0 | 1 | 1 | 1 | 1 |
| ACEXP | 0.9068 | 0.2911 | 0 | 1 | 1 | 1 | 1 |
| BODIND | 56.86 | 10.345 | 33.33 | 80 | 50 | 57.14 | 63.63 |
| BODSIZE | 9.49 | 2.67 | 5 | 18 | 8 | 9 | 11 |
| BODMEET | 8.710 | 2.921 | 4 | 21 | 7 | 8 | 10 |
| BIG4 | 0.968 | 0.174 | 0 | 1 | 1 | 1 | 1 |
| ANALYST | 14.32 | 7.57 | 0 | 37 | 9.92 | 13.29 | 19 |
| MCAP | £7082,128,000 | £17,500,000,000 | £17,240,000 | £122,000,000,000 | £823,089,000 | £1,740,657,000 | £6,907,299,000 |
| SIZE (LMCAP) | 14.574 | 1.462 | 9.755 | 18.603 | 13.621 | 14.374 | 15.747 |
| PROFIT | 7.21 | 6.64 | −17.72 | 32.87 | 3.61 | 6.8 | 10.23 |
| LOSS | 0.075 | 0.265 | 0 | 1 | 0 | 0 | 0 |
| LEV | 24.745 | 15.292 | 0.05 | 74.14 | 15.5 | 22.55 | 31.28 |
| CHGEINSALES | 0.219 | 0.866 | −0.563 | 8.129 | 0.010 | 0.072 | 0.218 |
| PPE/LTA | 0.539 | 0.504 | 0.0136 | 3.301 | 0.196 | 0.371 | 0.866 |
| NCF/LTA | 0.132 | 0.131 | −0.3081 | 0.675 | 0.068 | 0.115 | 0.177 |
| TACF/LTA | 0.0788 | 0.0797 | 0.0013 | 0.4044 | 0.0266 | 0.056 | 0.104 |
| MTBV | 3.74 | 6.12 | −44.7 | 21.59 | 2.23 | 3.37 | 4.4 |
| PORTFOLIO AFA | 2.49 | 1.12 | 1 | 4 | 1 | 2.5 | 3 |

# Findings

## Descriptive Statistics

Table 3 shows the mean, standard deviation, minimum, maximum and percentiles of the variables. Our descriptive statistics reveal that the mean absolute value of discretionary accruals estimated using the *MJONES* is 0.0601 and ranges from 0.0005 to 0.4775. This is comparable to that of prior literature in earnings management, for instance, 0.046 in Rajgopal et al. (1999) and 0.049 in Yu (2008). Given that the *IRAWARD* variable is dichotomous (1 = winner, 0 = non-winner), the mean is 0.5. In regards to the *FLSCORE* proxy for disclosure quality, the average number of forward-looking sentences in the firm's annual report is 99.16, while the lowest number is 9 and the highest is 423. These scores are much higher than Hussainey et al. (2003)'s study on the UK firm's annual reports between 1996 and 1999, in which the number of forward-looking sentences ranges from 0 to 168. This discrepancy indicates that companies in the UK have become more vigorous in providing forward-looking information in their annual reports in recent years. With respect to the *AFA* proxy for disclosure quality, the average value is -0.0112; this is qualitatively same as in Bhat et al. (2006), who report a mean *AFA* −0.0190 in their UK sample. The lower *AFA* in this study signifies that the analyst's prediction of earnings per share (EPS) is more accurate than ever before.

The means of *ACSIZE*, *ACIND*, *ACEXP* and *ACMEET* are 0.9517, 0.896, 0.9068 and 0.9517, respectively, suggesting that the firm's compliance to the recommended benchmark drawn from the *UK Corporate Governance Code* (2010) and the *Smith Report* (2003) is satisfactory and improved over time. As compared to our study, Zaman et al. (2011) report lower mean values for the UK firms between 2001 and 2004 (such as *ACSIZE* 0.34, *ACEXP* 0.71 and *ACMEET* 0.21) except ACIND 0.97.

The average *BODSIZE* in our sample is 9.49, which is lower than the average board size (11.33) in the US as documented by Laksmana (2008). Similarly, *BODMEET* average frequently per year is 8.71 times, which is more than their US counterparts as reported in Laksmana (2008) 7.26 times per year. Concerning board independence, the mean *BODIND* is 56.86 %, confirming that independent directors on the board exceed the 50 % cut-off criteria laid by the *UK Corporate Governance Code* (2010), where the number of independent directors must be equal to the number of dependent directors (excluding the chairman). It is also consistent with Zaman et al. (2011) who reported the proportion of non-executive directors on the UK board (i.e. FTSE firms) is 53 %. Other firm-specific characteristics also show consistent values as found in the prior UK-based studies.

## Pair-wise Correlation

In Table 4 we present the pair-wise correlation for all dependent and independent variables. Observations for all variables in the correlation matrix show that most of the correlation coefficients are below 80 %. A correlation coefficient of more than 80 % indicates serious multicollinearity (Hair et al. 2006). The maximum correlation coefficient is recorded at 58 %, which is between *ANALYST* and *IRAWARD*. A variance inflation factor (VIF) check of the model shows maximum VIF is 2.91 for *SIZE*, which is below the 10-point benchmark (Hair et al. 2006). As such, it can be concluded that the multicollinearity is not detrimental to the results of the multivariate analysis. Again, it is interesting to highlight that there are negative correlations between all disclosure quality measures (i.e. *IRAWARD*, *FLSCORE* and *AFA*) and *MJONES*. These results suggest that firms with high disclosure quality are less involved in earnings management activities, a finding consistent with Iatridis and Kadorinis (2009) that showed a negative correlation between voluntary disclosure and earnings management in the UK.

## Findings on Multivariate Regression Tests

In Table 5, we present the OLS regression results on the relationship between disclosure quality, corporate governance and earnings management. While we have shown a total of 7 different models in Table 5, Model 1 to Model 4 show the relationship between earnings management and, respectively, control variables, board characteristics variables, audit committee characteristics variables and both board and audit characteristics variables. However, our main models of interest are Model 5, Model 6 and Model 7 where distinct proxies of disclosure quality are incorporated along with all internal governance and control variables.

Model 1 reveals positive effect of *SIZE* (natural log of market capitalisation) and *TACF/LTA* (total accruals) on *MJONES* as expected (Lobo and Zhou 2006; Riahi and Arab 2011), while contrary to prediction a negative effect of *PPE/LTA* (investment opportunity) on *MJONES*. That is, in large firms, the propensity of managers to manipulate earnings is high for their complexity of operations; while total accruals lead to higher manipulation of earnings, investment opportunity appears to restrain it.

In Model 2, when board characteristics (i.e. *BODIND*, *BODMEET* and *BODSIZE*) are added our results show that none of these variables indicate any significant effect on constraining earnings management, as found in Chtourou et al. (2001), Park and Shin (2004) and Kent et al. (2010) for *BODIND*. In Model 3, when board characteristics are

**Table 4** Pair-wise correlation

|  |  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | IRAWARD | 1.000 | | | | | | | | | |
| 2 | FLSCORE | 0.29 | 1.000 | | | | | | | | |
|  |  | (0.00) | | | | | | | | | |
| 3 | AFA | 0.17 | 0.06 | 1.000 | | | | | | | |
|  |  | (0.00) | (0.33) | | | | | | | | |
| 4 | MJONES | −0.14 | −0.02 | −0.14 | 1.000 | | | | | | |
|  |  | (0.02) | (0.7) | (0.02) | | | | | | | |
| 5 | BIG4 | 0.02 | 0.17 | −0.03 | −0.14 | 1.000 | | | | | |
|  |  | (0.74) | (0.00) | (0.84) | (0.017) | | | | | | |
| 6 | LEV | −0.11 | −0.04 | −0.15 | −0.02 | −0.23 | 1.000 | | | | |
|  |  | (0.09) | (0.47) | (0.01) | (0.7) | (0.00) | | | | | |
| 7 | ACSIZE | 0.06 | 0.14 | −0.05 | −0.10 | 0.24 | 0.05 | 1.000 | | | |
|  |  | (0.27) | (0.02) | (0.41) | (0.08) | (0.00) | (0.42) | | | | |
| 8 | ACIND | 0.09 | 0.18 | 0.04 | −0.07 | 0.20 | −0.02 | −0.07 | 1.000 | | |
|  |  | (0.12) | (0.00) | (0.49) | (0.22) | (0.00) | (0.76) | (0.19) | | | |
| 9 | SIZE (LMCAP) | 0.48 | 0.33 | 0.21 | −0.01 | −0.04 | 0.12 | 0.11 | 0.1 | 1.000 | |
|  |  | (0.00) | (0.00) | (0.00) | (0.89) | (0.50) | (0.06) | (0.07) | (0.12) | | |
| 10 | CHGEINSALES | 0.06 | −0.07 | −0.02 | 0.078 | −0.22 | 0.038 | −0.03 | −0.07 | 0.00 | 1.000 |
|  |  | (0.34) | (0.21) | (0.81) | (0.18) | (0.00) | (0.52) | (0.58) | (0.24) | (0.94) | |
| 11 | PROFIT | 0.103 | 0.04 | 0.13 | 0.124 | 0.02 | −0.12 | −0.07 | 0.09 | 0.19 | 0.05 |
|  |  | (0.07) | (0.49) | (0.04) | (0.03) | (0.71) | (0.05) | (0.22) | (0.12) | (0.00) | (0.43) |
| 12 | LOSS | −0.17 | −0.01 | −0.19 | 0.04 | 0.06 | 0.03 | −0.00 | 0.04 | −0.17 | 0.05 |
|  |  | (0.00) | (0.93) | (0.00) | (0.51) | (0.36) | (0.62) | (0.98) | (0.58) | (0.00) | (0.42) |
| 13 | PPE/LTA | −0.07 | 0.05 | −0.03 | 0.03 | −0.04 | 0.38 | 0.33 | 0.33 | 0.10 | 0.26 |
|  |  | (0.26) | (0.37) | (0.61) | (0.62) | (0.51) | (0.00) | (0.00) | (0.00) | (0.12) | (0.00) |
| 14 | NCF/LTA | −0.03 | −0.06 | 0.11 | 0.10 | −0.08 | 0.04 | 0.01 | 0.05 | 0.01 | 0.37 |
|  |  | (0.65) | (0.31) | (0.09) | (0.11) | (0.21) | (0.49) | (0.92) | (0.41) | (0.82) | (0.00) |
| 15 | ACMEET | 0.19 | 0.18 | −0.03 | 0.01 | 0.24 | −0.04 | 0.17 | 0.19 | 0.04 | 0.01 |
|  |  | (0.00) | (0.00) | (0.60) | (0.91) | (0.00) | (0.46) | (0.00) | (0.00) | (0.54) | (0.91) |
| 16 | TACF/LTA | −0.18 | −0.14 | −0.14 | 0.33 | −0.06 | 0.06 | −0.00 | 0.06 | −0.24 | 0.35 |
|  |  | (0.00) | (0.02) | (0.03) | (0.00) | (0.37) | (0.36) | (0.99) | (0.35) | (0.00) | (0.00) |
| 17 | ANALYST | 0.58 | 0.32 | 0.13 | −0.07 | −0.01 | 0.07 | 0.04 | 0.06 | 0.66 | −0.08 |
|  |  | (0.00) | (0.00) | (0.04) | (0.27) | (0.82) | (0.27) | (0.48) | (0.35) | (0.00) | (0.20) |
| 18 | ACEXP | 0.04 | 0.19 | −0.09 | −0.03 | 0.01 | 0.02 | 0.37 | 0.01 | 0.11 | 0.03 |
|  |  | (0.55) | (0.00) | (0.12) | (0.61) | (0.85) | (0.78) | (0.00) | (0.89) | (0.07) | (0.67) |
| 19 | BODIND | 0.11 | 0.21 | −0.11 | −0.03 | 0.14 | 0.06 | 0.2 | 0.17 | 0.279 | −0.14 |
|  |  | (0.06) | (0.00) | (0.07) | (0.57) | (0.02) | (0.31) | (0.00) | (0.00) | (0.00) | (0.02) |
| 20 | BODSIZE | 0.31 | 0.37 | 0.09 | −0.08 | 0.18 | −0.06 | 0.2 | 0.15 | 0.56 | −0.12 |
|  |  | (0.00) | (0.00) | (0.14) | (0.17) | (0.00) | (0.29) | (0.00) | (0.01) | (0.00) | (0.04) |
| 21 | BODMEET | 0.05 | 0.12 | −0.04 | 0.03 | 0.00 | 0.01 | 0.05 | −0.07 | −0.03 | 0.067 |
|  |  | (0.45) | (0.04) | (0.58) | (0.57) | (0.96) | (0.83) | (0.4) | (0.19) | (0.63) | (0.25) |

|  |  | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | PROFIT | 1.000 | | | | | | | | | | |
| 12 | LOSS | −0.52 | 1.000 | | | | | | | | | |
|  |  | (0.00) | | | | | | | | | | |
| 13 | PPE/LTA | −0.09 | 0.06 | 1.000 | | | | | | | | |
|  |  | (0.1) | (0.37) | | | | | | | | | |

**Table 4** continued

| | | (11) | (12) | (13) | (14) | (15) | (16) | (17) | (18) | (19) | (20) | (21) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | NCF/LTA | 0.49 | −0.16 | 0.27 | 1.000 | | | | | | | |
| | | (0.00) | (0.01) | (0.00) | | | | | | | | |
| 15 | ACMEET | 0.03 | −0.06 | 0.07 | 0.08 | 1.000 | | | | | | |
| | | (0.58) | (0.33) | (0.21) | (0.15) | | | | | | | |
| 16 | TACF/LTA | 0.003 | 0.24 | 0.15 | 0.46 | 0.08 | 1.000 | | | | | |
| | | (0.06) | (0.00) | (0.02) | (0.00) | (0.18) | | | | | | |
| 17 | ANALYST | 0.07 | −0.16 | 0.05 | −0.00 | −0.17 | −0.22 | 1.000 | | | | |
| | | (0.94) | (0.01) | (0.47) | (0.96) | (0.01) | (0.00) | | | | | |
| 18 | ACEXP | −0.07 | 0.05 | −0.02 | −0.04 | 0.20 | −0.07 | 0.11 | 1.000 | | | |
| | | (0.17) | (0.43) | (0.76) | (0.46) | (0.00) | (0.23) | (0.05) | | | | |
| 19 | BODIND | 0.1 | −0.08 | −0.07 | −0.06 | 0.08 | −0.25 | 0.27 | 0.04 | 1.000 | | |
| | | (0.08) | (0.13) | (0.22) | (0.25) | (0.17) | (0.00) | (0.00) | (0.47) | | | |
| 20 | BODSIZE | −0.01 | −0.16 | −0.01 | −0.06 | 0.21 | −0.27 | 0.53 | 0.12 | 0.06 | 1.000 | |
| | | (0.85) | (0.01) | (0.85) | (0.28) | (0.00) | (0.00) | (0.00) | (0.04) | (0.27) | | |
| 21 | BODMEET | −0.09 | 0.13 | 0.06 | −0.01 | 0.16 | 0.16 | −0.04 | 0.03 | 0.08 | −0.13 | 1.000 |
| | | (0.11) | (0.03) | (0.31) | (0.92) | (0.01) | (0.01) | (0.45) | (0.57) | (0.17) | (0.03) | |

replaced by audit committee characteristics (*ACIND*, *ACSIZE, ACMEET* and *ACEXP*), our results again show that none of these variables have significant effect on earnings management, other than *ACMEET* which shows a positive association (coef = 5.28, p < 0.01) with earnings management, contrary to expectation. However, *ANALYST* and *PROFIT* display, respectively, a negative and positive significant influence on earnings management, indicating an alignment of profit increase with the increase in earnings management while analyst tends to constrain it. In Model 4, when both audit committee and board characteristics are combined, we observe no change in findings as found in Model 3 except *PROFIT* disappearing its impact. These findings in Model 2, Model 3 and Model 4 exhibit that our results failed to find support hypotheses 2a, 2b, 3a, 3b, 4a, 4b and 5. The only change is seen in Model 3 and Model 4 as compared to Model 2 is for *ANALYST* showing some weak explanatory power in constraining earnings management. This implies that analyst following has a stronger influence in curbing earnings management in the presence of a credible audit committee, as analysts might have access to more private information. These findings demonstrate that compliance with the recommended norms in the *UK Corporate Governance Code* (2010) and Smith Report (2003) in relation to *ACMEET* has an adverse effect on constraining managerial propensity to manipulate earnings.[12]

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[12] This finding contradicts some earlier studies (e.g. Kent et al. 2010), but could be explained in several ways: (1) Some of the literature argues that high compliance with the UK *Corporate Governance Code* is merely due to "ticking the box" activities, while at the same time highlighting the importance of considering the various unique needs of each firm's governance system (Arcot and Bruno, 2006;

As mentioned earlier, our main models of interest in Table 5 are Model 5, Model 6 and Model 7, where 3 distinct proxies are used in each model along with internal governance and other control variables. In Model 5, *Investor Relation Magazine Award* (*IRAWARD*) is used as the proxy for disclosure quality. Our result reveals that *IRAWARD* is negative significantly related to *MJONES* (earnings management) at $p < 0.01$ (coef = −2.158, t-stat = −2.85), as expected, implying that high disclosure

Footnote 12 continued

Siregar and Utama 2008; Arcot et al. 2010); (2) The effectiveness of an audit committee primarily depends on the effectiveness of the board of directors. Given that BOD characteristics (e.g. *BODIND*, *BODSIZE, BODMEET*) are insignificant in curbing earnings management ($R^2$ increases only 0.0016 %), it is suggested that audit committees are not able to offer effective monitoring in the absence of the serious roles of the BOD in constraining earnings management; even though their composition, number of meetings, expertise and size are in compliance with the Smith Report (2003) and the *UK Corporate Governance Code* (2010). In other words, when monitoring by a board of directors is not helpful in reducing earnings management, it is not surprising to see that audit committees also fail to carry out effective monitoring functions, given that the latter is a subset to the former; and (3) Audit committees (where the majority of them are entirely comprised of external directors) mainly rely on the information prepared for them in order to provide necessary monitoring. They therefore have less information advantage as compared to internal directors (Adam and Ferreira 2007). It is very unlikely that internal directors will let external directors know that they have been engaged in earnings management (Armstrong et al., 2010), making it nearly impossible for external directors to detect such activity. For that reason, the compliance with audit committee characteristics as recommended by the Smith Report (2003) and the *UK Corporate Governance Code* (2010) might be, to some extent, useful in helping companies to structure their internal governance system; however, it is only marginally beneficial in constraining earnings management.

**Table 5** OLS regression for the effect of disclosure quality and internal corporate governance on earnings management

| DV = MJONES | Predicted sign | Model 1 Coef. (*t*-statistics) | Model 2 Coef. (*t*-statistics) | Model 3 Coef. (*t*-statistics) | Model 4 Coef. (*t*-statistics) | Model 5 Coef. (*t*-statistics) | Model 6 Coef. (*t*-statistics) | Model 7 Coef. (*t*-statistics) |
|---|---|---|---|---|---|---|---|---|
| *Disclosure quality* | | | | | | | | |
| IRAWARD | − | | | | | −2.209*** | | |
| | | | | | | (−2.96) | | |
| FLSCORE | − | | | | | | −0.014** | |
| | | | | | | | (−2.28) | |
| AFA | − | | | | | | | −0.475** |
| | | | | | | | | (−2.34) |
| *Governance variables* | | | | | | | | |
| ACIND | − | | | −0.28 | −0.413 | −0.47 | −0.17 | −0.47 |
| | | | | (−0.25) | (−0.37) | (−0.42) | (−0.16) | (−0.44) |
| ACSIZE | ± | | | −0.44 | −0.58 | −0.98 | −0.76 | −2.22 |
| | | | | (−0.24) | (−0.32) | (−0.57) | (−0.41) | (−1.26) |
| ACMEET | − | | | 5.09*** | 5.04*** | 5.81*** | 5.24*** | 5.27*** |
| | | | | (2.89) | (2.76) | (3.08) | (2.88) | (2.49) |
| ACEXP | − | | | 0.574 | 0.559 | 0.378 | 0.79 | −0.132 |
| | | | | (0.58) | (0.56) | (0.38) | (0.78) | (−0.11) |
| BODIND | − | | 0.023 | | 0.018 | 0.015 | 0.028 | −0.023 |
| | | | (0.75) | | (0.67) | (0.58) | (1.02) | (−0.88) |
| BODSIZE | ± | | 0.155 | | 0.052 | 0.065 | 0.133 | −0.079 |
| | | | (0.97) | | (0.34) | (0.45) | (0.83) | (−0.55) |
| BODMEET | − | | 0.041 | | −0.019 | 0.009 | 0.008 | −0.09 |
| | | | (0.36) | | (−0.18) | (0.09) | (0.07) | (−0.84) |
| *Firm-specific variables* | | | | | | | | |
| BIG4 | − | 0.483 | 0.128 | −0.37 | −0.45 | −1.23 | −0.48 | −0.63 |
| | | (0.17) | (0.05) | (−0.15) | (−0.17) | (−0.45) | (−0.19) | (−0.19) |
| ANALYST | ± | −0.09 | −0.112 | −0.14* | −0.14* | −0.083 | −0.115 | −0.103 |
| | | (−1.3) | (−1.49) | (−1.85) | (−1.91) | (−1.1) | (−1.52) | (−1.52) |
| SIZE (LMCAP) | ± | 0.845* | 0.698 | 0.97** | 0.915** | 1.08** | 0.942** | 0.748* |
| | | (2.02) | (1.6) | (2.47) | (2.18) | (2.59) | (2.25) | (1.98) |
| PROFIT | ± | 0.176 | 0.184 | 0.184* | 0.184 | 0.178 | 0.179 | 0.29*** |
| | | (1.68) | (1.75) | (1.75) | (1.77) | (1.60) | (1.71) | (3.58) |
| LOSS | +/ | −0.204 | −0.262 | −0.522 | −0.516 | −0.84 | −0.53 | 0.384 |
| | | (−0.11) | (−0.15) | (−0.28) | (−0.28) | (−0.46) | (−0.29) | (0.25) |
| LEV | + | −0.001 | 0.001 | 0.003 | 0.003 | 0.000 | 0.003 | 0.019 |
| | | (−0.04) | (0.05) | (0.09) | (0.11) | (0.00) | (0.11) | (0.79) |
| CHGEINSALES | − | −0.53 | −0.49 | −0.57 | −0.545 | −0.392 | −0.57 | 0.657 |
| | | (−0.83) | (−0.82) | (−0.85) | (−0.83) | (−0.62) | (−0.87) | (1.25) |
| PPE/LTA | + | −1.36* | −1.42 | −1.52* | −1.57* | −1.63* | −1.71* | −0.73* |
| | | (−1.5) | (−1.54) | (−1.69) | (−1.71) | (−1.87) | (−1.88) | (−0.89) |
| NCF/LTA | − | −2.98 | −2.71 | −3.68 | −3.59 | −4.42 | −3.25 | −16.47* |
| | | (−0.45) | (−0.41) | (−0.55) | (−0.54) | (−0.66) | (−0.5) | (−3.07) |
| TACF/LTA | + | 43.83*** | 44.48*** | 44.18*** | 44.87*** | 44.64*** | 46.07*** | 36.67*** |
| | | (4.12) | (3.94) | (4.16) | (4.00) | (4.01) | (4.17) | (4.42) |
| _cons | | −9.43 | −9.96 | −14.69* | −14.74** | −16.12** | −16.23*** | −6.82 |
| | | (−1.38) | (−1.41) | (−2.06) | (−2.00) | (−2.17) | (−2.18) | (−0.93) |
| Year dummies | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

**Table 5** continued

| DV = MJONES | Predicted sign | Model 1 Coef. (t-statistics) | Model 2 Coef. (t-statistics) | Model 3 Coef. (t-statistics) | Model 4 Coef. (t-statistics) | Model 5 Coef. (t-statistics) | Model 6 Coef. (t-statistics) | Model 7 Coef. (t-statistics) |
|---|---|---|---|---|---|---|---|---|
| Industry dummies | | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| N | | 290 | 290 | 290 | 290 | 290 | 290 | 254 |
| $F_{(28, 262)}$ | | 5.4 | 4.87 | 5.2 | 4.75 | 5.29 | 4.88 | 3.39 |
| PROB > F | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| R-SQUARED | | 0.4825 | 0.4850 | 0.5038 | 0.5045 | 0.5207 | 0.5149 | 0.5353 |

***, ** and * indicate that the variable is significant at 0.01, 0.05 and 0.10 levels, respectively. The t-statistics is reported in the parentheses

quality can constrain earnings management and vice versa. In Model 6, we find similar results to those for in Model 5, when *FLSCORE* is employed as a proxy for disclosure quality showing an inverse relation between *FLSCORE* and *MJONES* at $p < 0.05$ (coef = − 0.014 and t-stat = − 2.04). This reaffirms the explanatory power of disclosure quality in mitigating earnings management. Consistent with the findings of Models 5 and Model 6, Model 7 also reveals identical finding when *AFA* is used as the proxy for disclosure quality. That means increases in *AFA* result in decreasing earnings management. This finding implies that firms with high analyst forecast accuracy engage less in earnings management. Therefore, hypothesis 1 is supported. However, results for internal governance variables remain unchanged in Model 5 and Model 6 as found in Model 4, implying failure to find support of other four hypotheses relating to board and audit committee characteristics. As for control variables, results remain qualitatively same as well between Models 4, 5 and 6, except for *ANALYST* which disappears in Models 5 and 6 when disclosure quality is controlled for, signalling that disclosure quality has stronger effect in deterring earnings management than analyst following. Further, Model 7 reveals additional findings for certain controls as opposed to Models 5 and 6, such as *PROFIT* and *NCF/LTA*, respectively, in aggravating and contracting earnings management.

### Findings on Endogeneity Test and Sample Selection Bias

Zhou and Lobo (2001) document the potential for endogeneity bias between disclosure quality and earnings management, suggesting the need to carry out an endogeneity test. Although high disclosure quality might increase analyst and investor capability to detect earnings management, hence reducing manager's incentives to manipulate earnings, we acknowledge that firms with high earnings management might have a propensity to provide less information in order to make earnings management less visible. In addition to potential endogeneity issue, we also admit that the exclusion of firms with missing data in analyst forecast accuracy (AFA) might pose bias to our sample selection parameters and warrants a through checking.

In order to detect the presence of endogeneity, we perform a Durbin and Wu-Hausman test (Durbin 1954; Wu 1973; Hausman 1978) in line with Cornett et al. (2009).

The test result is presented in Table 6 above for each of the disclosure quality proxy. The results show that we rejected null hypothesis of no endogeneity for *AFA* while accepted for *IRAWARD* and *FLSCORE*. This signifies that *IRAWARD* and *FLSCORE* are as exogenous to earnings management (*MJONES*), while *AFA* is endogenous,[13] though not very strongly. Hence, we confirm that the findings of Table 5 for *IRAWARD* and *FLSCORE* (i.e. Model 5 and Model 6) are reliable and unbiased while for *AFA* (i.e. Model 7) the findings may be biased and misleading.

In order to solve both endogeneity and sample selection bias in AFA sample, consistent with Renders and Gaeremynck (2006), we use 'Heckman Procedure' and 'Two-stage Least Square Regression (2SLS)' in our study and it is carried out in three steps regressions where the first step is Heckman Procedure and the second- and third-step regressions are 2SLS regressions using 'instrumental variable (IV)'. We present our Heckman Procedure and 2SLS regression results in Table 7.

According to Renders and Gaeremynck (2006), the first step regression is performed in order to obtain the 'Inverse Mill Ratio (IMR)' that can be used in controlling the sample selection bias in our dataset. In the first step regression (refer Table 7), we run the 'Probit model equation' using *"probit"* command in 'Stata' [*AFADummy = internal corporate governance + control variables + GROWTH + e*], where AFADummy is 1[if firm's AFA data is available] or 0 [if firm's AFA data is not

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[13] We did not employ lagged data *AFA* as instrumental variables, given that disclosure quality data are normally subject to stickiness issues; hence it can be highly endogenous to current data.

**Table 6** The Durbin–Wu–Hausman test for endogeneity

| Disclosure quality | IRAWARD | FLSCORE | AFA |
|---|---|---|---|
| Durbin (test of endogeneity) | 1.47513 ($p = 0.2245$) | 0.4513 ($p = 0.5017$) | 3.557* ($p = 0.0593$) |
| Wu–Hausman $F$ (test of endogeneity) | 1.3344 ($p = 0.2491$) | 0.4068 ($p = 0.5241$) | 3.196* ($p = 0.0752$) |

***, ** and * represent statistical significance at 0.01, 0.05 and 0.10 levels, respectively

available] and GROWTH is market-to-book value ratio. GROWTH is an additional variable that we include in this first step regression in order to mitigate high collinearity (Puhani 2000, as cited in Renders and Gaeremynck 2006). Next, we generate the 'fitted value' for AFADummy by using *"predict n, xb"* command. Later, we generate inverse mill ratio (IMR) by using the command *"generate $IMR = normalden(n)/normal(n)$"*.

The second-step and the third-step regressions (refer Table 7) are 2SLS regressions [where second step means first-stage regression and third step means second-stage regression] using instrumental variable (IV) to identify whether our OLS regression findings for AFA are biased due to an endogeneity problem between earnings management and AFA (i.e. the endogenous disclosure quality proxy). The utilisation of 2SLS using instrumental variable is consistent with Li (2011), Brown et al. (2011), Roberts and Whited (2012) and Renders and Gaeremynck (2006). In the second-step regression (refer Table 7), we run our AFA equation, that is, $AFA = Internal corporate governance + control variables + Portfolio rank AFA + IMR + e$, where the 'Portfolio rank' for AFA is an instrumental variable (IV) associated with AFA, following Sun and Liu (2013) and Frankel et al. (2006). We rank AFA based on the quartile into four equal-size portfolios by categorising them into "1", "2", "3" or "4" based on the lowest to the highest value. We believe that portfolio rank data for AFA is suitable to be an instrumental variable, as it is highly correlated to the endogenous variable (AFA) but not correlated to the dependent variable (MJONES) and error terms. In this instance, similar to AFA, portfolio rank data is a market-oriented data which varies depending on market condition, while earnings management (MJONES) is a accounting-based outcome of accrual quality. Therefore, it is hardly possible to have any association between the portfolio rank and earnings management. In addition, the inverse mill ratio (IMR) is included in the second-step regression in order to mitigate the sample selection bias.

Our second-step regression (i.e. first-stage 2SLS regression) reveals that inverse mill ratio (IMR) is insignificant (coef $= 1.248$, $t = 1.57$), thus, following Irfan (2011), our result suggests that the sample selection bias does not plague in our AFA model. In Table 7, the second-stage model (i.e. first-stage 2SLS regression) also

reveals that the instrumental variable 'portfolio rank' for AFA is high positively associated with AFA at 1 % level of significance, indicating a perfect fit for IV. We then derive the 'fitted value' for AFA from the second-step regression (i.e. first-stage 2SLS regression) using *"predict"* command in Stata. The fitted value of AFA is then used to replace the disclosure quality proxy (AFA) in the third-step regression (i.e. second-stage 2SLS regression) where we run the following model: $MJONES = Fitted value for AFA + IMR + internal corporate governance + control variables + e$.

In the third-step regression (i.e. second-stage 2SLS regression), we document a negative significant coefficient between AFA and MJONES ($p < 0.01$), which is similar to the finding in the OLS regression for AFA (Model 7 in Table 5). As such, we conclude that the 2SLS result is qualitatively similar to the OLS regression, suggesting that our primary OLS regression results in Table 5 are robust to endogeneity testing. We also check the strength of our instrumental variable (IV) using the F-statistics for the first-stage 2SLS regression (i.e. second-step regression), following Staiger and Stock (1997). Our F-statistics in the first-stage 2SLS regression model (i.e. second-step regression) is 11.20, which is higher than 10 (cut-off point). Furthermore, we also notice that the t-statistics for our instrumental variable is 10.10, which is higher than 3 (cut-off point) set by Adkins and Hill (2008). We therefore conclude that our instrumental variable is valid, reliable and sufficiently strong to run the 2SLS regressions and mitigate endogeneity problem lies with AFA disclosure quality proxy while reconfirming our main findings in the OLS regressions. We also report that our IMR is insignificant in the second-stage 2SLS regression (i.e. third-step regression) (coef $= -0.361$, $t = -0.11$), hence suggesting that the sample selection bias does not pose an issue in our dataset.

## Discussion on Empirical Findings

The results of hypotheses testing are summarised in Table 8 below. Overall, based on the results in Tables 5 and 7, we can conclude that high disclosure quality (i.e. IRAWARD, FLSCORE and AFA as proxies) is very effective in deterring the propensity of managerial

**Table 7** Three Step regressions under 'Heckman Procedure' (first step) and 2SLS regressions (second and third steps, respectively, as the first and second stages 2SLS regressions) for the effect of disclosure quality (AFA) and internal corporate governance on earnings management

| Variables | First step DV = AFADUMMY Coef. (z-statistics) | Second step DV = AFA Coef. (t-statistics) | Third step DV = MJONES Coef. (t-statistics) |
|---|---|---|---|
| *Disclosure quality* | | | |
| AFA (fitted values) | | | −1.074*** |
| | | | (−3.41) |
| *Internal Governance* | | | |
| ACIND | 0.167 (0.40) | −0.091 (−0.27) | −0.45 (−0.46) |
| ACSIZE | 0.286 (0.61) | 0.221 (0.87) | −2.30 (−1.41) |
| ACMEET | −1.046 (−1.93) | −0.49 (−1.36) | 5.099*** (2.44) |
| ACEXP | 0.154 (0.37) | −0.17 (-0.71) | −0.508 (−0.4) |
| BODIND | 0.012 (0.87) | −0.017 (−1.24) | −0.039 (−1.47) |
| BODSIZE | 0.081 (1.46) | −0.039 (−1.19) | −0.113 (−0.76) |
| BODMEET | −0.04 (−0.91) | 0.0018 (0.04) | −0.099 (−0.92) |
| *Firm-specific variables* | | | |
| BIG4 | 0.501 (0.37) | 0.507 (0.90) | −0.418 (−0.12) |
| ANALYST | 0.036* (1.93) | 0.028 (1.24) | −0.086 (−1.19) |
| Size (LMCAP) | −0.151 (−1.25) | 0.207* (1.79) | 0.956** (2.5) |
| PROFIT | 0.025 (1.11) | 0.001 (0.07) | 0.291*** (3.53) |
| LOSS | 0.317 (0.72) | 0.436 (0.86) | 0.535 (0.34) |
| LEV | 0.022 (2.97) | −0.004 (−0.51) | 0.01 (0.41) |
| CHGEINSALES | 0.052 (0.39) | −0.066 (−0.95) | 0.689 (1.35) |
| PPE/LTA | 0.415 (1.44) | −0.154 (−0.4) | −0.98 (−1.05) |
| NCF/LTA | 0.739 (0.66) | 0.029 (0.03) | −16.11*** (−3.13) |
| TACF/LTA | −2.704 (−1.45) | −0.242 (−0.18) | 36.06*** (4.3) |
| GROWTH | −0.044 (−1.53) | | |
| PORTFOLIO RANK AFA (IV) | | 0.848*** (10.10) | |
| Inverse mill ratio (IMR) | | 1.248 (1.57) | −0.361 (−0.11) |
| _cons | 2.37 (1.46) | −5.38 (−3.29) | −8.70 (−1.21) |
| Year dummies | Yes | Yes | Yes |
| Industry dummies | Yes | Yes | Yes |
| N | 290 | 254 | 254 |
| Wald chi$^2$/F-Stat | 104.24 | 11.20 | 5.49 |
| $p <$ chi$^2$/F | 0.000 | 0.000 | 0.000 |
| Pseudo *R*-squared/*R*-Squared | 0.4198 | 0.4766 | 0.5443 |

***, ** and * indicate that the variable is significant at 0.01, 0.05 and 0.10 levels, respectively. The *z*-statistics is reported in the parentheses for the first step regression and the *t*-statistics is reported in the parentheses for the second- and third-step regressions

propensity to manipulate earnings than internal governance mechanisms. These findings indicate that disclosure quality provides stronger monitoring roles than internal governance in restraining earnings management. That is, in the strong presence of high-quality disclosure regime, there is minimum need for internal governance mechanisms, especially in a weak regulatory and governance environment. Our findings imply that disclosure quality proxies carry a greater predictive ability for improving earnings management condition. Accordingly, Table 8

summarises support for the first hypothesis only and the rests are not supported. Therefore, we document that the quality of disclosure of listed companies is a much stronger inhibitor of inappropriate earnings management than the quality of internal corporate governance mechanisms. The above findings are, by and large, consistent with Lapointe-Antunes et al. (2006) and Jo and Kim (2007), who report an inverse relationship between disclosure and earnings management in the US and Swiss contexts.

**Table 8** Summary of regressions results for the effect of disclosure quality and internal corporate governance on earnings management

| Independent variable | Dependent variable: earnings management (MJONES) | Findings |
| --- | --- | --- |
| Disclosure quality (3 proxies: IRAWARD, FLSCORE, AFA) | Negative ($H_1$) | Negative significant (support for $H_1$) |
| Audit committee independence (ACIND) | Negative ($H_{2a}$) | Negative insignificant (no support for $H_{2a}$) |
| Board independence (BODIND) | Negative ($H_{2b}$) | Positive/Negative insignificant (no support for $H_{2b}$) |
| Audit committee size (ACSIZE) | Positive/Negative ($H_{3a}$) | Negative insignificant (no support for $H_{3a}$) |
| Board size (BODSIZE) | Negative/Positive ($H_{3b}$) | Positive/Negative insignificant (no support for $H_{3b}$) |
| Audit committee meeting (ACMEET) | Negative ($H_{4a}$) | Positive significant (no support for $H_{4a}$) |
| Board meeting (BODMEET) | Negative ($H_{4b}$) | Positive/Negative insignificant (no support for $H_{4b}$) |
| Audit committee expertise (ACEXP) | Negative ($H_5$) | Positive/Negative insignificant (no support for $H_5$) |

A core contribution of this study is to empirically document the importance of having high-quality disclosure environment in a firm setting, in addition to internal governance mechanisms, to deal with manipulative managerial activities. Theoretically, both internal governance instruments and disclosure quality prospectively reduce information asymmetry to mitigate agency costs as well as providing signal to the market. It is important to note that a good governance system in a firm's setting can lead to have a high quality of disclosure in accounting information and earnings. That is, the underlying condition of high disclosure quality regime, in fact, depends of appropriate roles of board of directors and audit committee. While good governance system is designed to reduce agency cost (both direct and indirect) by aligning the interests between managers, dominating and minority shareholders and protecting investors' rights, disclosure quality as part of the broader system is more focused on handling information asymmetry problem and reduces the effect of moral hazard and adverse selection.

Both agency theory and signalling theory suggest that promoting disclosure quality is critical in reducing information asymmetry (Álvarez et al. 2008). Since the credibility of information is crucial, by achieving high disclosure quality firms can signal a credible commitment to continuously providing more open and transparent information and get benefit of lowering their cost of capital. High disclosure quality ensures lower information asymmetry where managers disclose information to signal to outsiders that a firm is performing better than its peers. Therefore, once high disclosure quality is achieved, there would be less need for internal governance mechanisms to directly involved in deterring earnings management. It is rather the high-quality disclosure regime that is sufficient as a primary tool to constrain inappropriate earnings management behaviour. The findings of our research confirm this new emerging phenomenon. The theoretical contribution of the study highlights that to tackle earnings management problem firms need to focus more on strengthening disclosure quality rather than internal

governance. This could lead to overcoming information asymmetry and signalling the quality of the information in place. High disclosure quality regime can be a perfect substitute of internal governance in reducing earnings management, widely regarded as an indirect agency cost. However, we are not discarding the importance of internal governance system, which is probably more effective in reducing other forms of direct agency costs.

The empirical and practical contribution of our study relates to the challenge of attaining high-quality disclosure environment in a firm's governance settings. It supports the implementation and/or convergence to the International Financial Reporting System (IFRS) as the core to quality disclosure in the corporate sector across the board. We therefore argue for rigorous use of IFRS and its full compliance in firms' financial reporting system to achieve high-quality disclosure. Strengthening firms' internal control as well as both internal and external audit mechanisms is essential to promote high-quality disclosure environment. Some other external governance mechanisms are also applicable from a broader spectrum. Moreover, ethical orientation and professional code of conduct in the corporate sector can also play a key role here. While these are beyond the scope of the current study, further research is needed on these issues to broaden our understanding of the practical implications of these factors in achieving high-quality disclosure environment. Our study findings also raise a new research question, i.e. whether or not governance mechanisms can plausibly shape high disclosure quality regime in a firm's setting. It is highly expected that future research will focus on this direction to determine the interactions between them.

## Conclusions

This study examines whether disclosure quality and internal governance mechanisms can reduce earnings management practice. Using 145 matched-pair sample of the

winners and non-winners (with clustering standard errors) of *Investor Relation Magazine Award (IRAWARD)* in the UK between 2004 and 2008, our findings constantly demonstrate that disclosure quality proxies (i.e. *IRAWARD*, *FLSCORE* and *AFA*) are significant negatively related to earnings management, as opposed to corporate governance mechanisms, in combating earnings management practices. It also outweighs other internal governance mechanisms in deterring earnings management. Except for audit committee meeting variable which shows contrary to expected finding, we document that board and audit committee characteristics have no influence in reducing earnings management when high disclosure quality exists in firms' governance settings. Our finding suggests that disclosure quality can be more effective in performing monitoring roles than internal governance variables to constrain earnings management. Given that both internal governance and disclosure quality prospectively reduce information asymmetry, we demonstrate that both internal governance and disclosure quality contribute to deterring earnings management to a 'different' extent where disclosure quality appears more effective than governance mechanisms. Internal governance is probably more effective in reducing other forms of agency cost but not earnings management. Our findings provide a better understanding of the implications of flexibility in disclosure choice and regulatory concerns regarding corporate governance system for earnings management.

We note that our findings should be interpreted in the light of several limitations. First, our sample might not be so large as to represent the whole population, even though it is among the highest in research to date on disclosure quality. Second, similar to other researches on disclosure quality, our proxies for disclosure quality might be subject to bias. The forward-looking disclosure (*FLSCORE*) proxy that we replicated from Hussainey et al. (2003) failed to anticipate the tone of good or bad forward-looking disclosure. In this instance, Schleicher and Walker (2010) argue that it is crucial to consider the effect of different tone of forward-looking disclosure, because it is largely subject to manipulation by managers and as each of them contribute to the economic consequences of their firms to a different extent. Third, the unresolved issue of endogeneity in corporate governance studies might affect the credibility of our instrumental variable, although post-estimation testing revealed that our instrumental variable is sufficiently strong and valid.

Despite the above apparent limitations, we argue that our findings properly reflect some insightful emerging trends in the UK listed companies in an ongoing corporate governance improvement environment. It deserves due attention on the part of the policy makers, investors, corporate firms and other stakeholders, in particular the

outperformance of disclosure quality over the internal governance mechanisms in alleviating inappropriate earnings management behaviour. Thus, the need for establishing a high-quality disclosure regime in corporate settings appears to be crucial to deal with managerial malpractices and the manipulations of earnings across the countries. We expect that future research will look into disclosure quality issues more intensely while examining the link between corporate governance and earnings management.

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