

# Corporate Governance Quality and Premature Revenue

## Recognition: Evidence from the UK

### Abstract

**Purpose** - Since 2005, wide-ranging concerns have been raised about misleading revenue recognition practices, especially during and after the 2008–2009 global financial crisis. There is a lack of research into the relationship between corporate governance (CG) mechanisms and premature revenue recognition (PRR).

**Design/methodology/approach** – This paper uses a Generalised Least Squares (GLS) regression analysis of a sample of 854 FTSE 350 firm-year observations. Stubben (2010) discretionary revenue (DR) model is used to measure PRR as it is considered less biased, better specified and more likely to reduce measurement error than accrual models.

**Findings** – The results suggest that the size of audit committees plays an effective role in constraining PRR. Moreover, PRR is more likely to be curbed in the presence of small boards comprising a higher proportion of non-executive directors. Additional tests reveal that the relationship between board size and PRR is non-linear.

**Research limitations/implications** - The findings address the concerns of corporate firms, capital providers, UK regulators and standard-setters regarding misleading revenue recognition practices and should be considered while setting new governance reform recommendations in response to changing economic conditions.

**Originality/value** - This is the first study that adopts the DR model of Stubben (2010) to capture PRR and examines its association with CG internal mechanisms. Moreover, the paper considers an important period –2005 to 2013 – in which many significant developments took place.

**Keywords:** Corporate governance; Discretionary revenues; Earnings management; Premature revenue recognition; UK-listed companies

## 1. Introduction

This study examines the impact of board and audit committee characteristics on PRR practices for a sample of the UK's largest listed firms by market capitalisation between 2005 and 2013. Conducting this study is important as UK standard setters and practitioners raised wide-ranging concerns about misleading revenue recognition practices during our sample period. These concerns are derived from the belief that firms will be more inclined to manipulate revenues during and after a recession to improve earnings quality (FRRP, 2008; Christodoulou, 2009).

Undoubtedly, the ethical concerns of financial reporting (FR), and related severely broken confidence and respectability, in the past few years, from the perspectives of stakeholders, have never been greater (Noriaki, 2011). This has been fuelled by several large corporate scandals in the US (e.g. Enron, WorldCom, Tyco and Arthur Andersen) that resulted from lapses in ethical accounting behaviour and poor corporate governance practices.

Questions have been raised by the investing community, regulators, the media, and the general public, about the role of boards of directors and audit committees in monitoring FR (Srinivasan, 2005; Lin et al., 2006). Significant accounting and CG reforms (e.g. The Sarbanes–Oxley Act of 2002, Higgs Report (2003) and Smith Report (2003) which were combined in The Code) have been introduced in an effort to reinforce ethical behaviour and prevent a recurrence of Enron and similar cases. In line with global reforms, the EU's Council of Ministers required all listed European Union companies to adopt IFRS starting in 2005 (European Commission, 2002).

Post-Enron scandals arose recently throughout Western Europe and showed that such scandals were not just a US phenomenon (Carnegie and Napier, 2010). Although such failures were not expected to happen in the UK<sup>1</sup> (Hayward, 2002), and despite the increasing attention paid

to related regulatory reforms, it became clear that the questionable CG practices were not merely issues within the US context, but were also of primary concern in the UK.

The financial media was once again awash with news about British scandals. In 2006, iSoft Group Plc (acquired by CSC's Healthcare Group in 2011) launched an investigation into 'possible accounting irregularities' affecting 'revenue recognition' under its former accounting policy in the financial years prior to and including the year ending 30<sup>th</sup> April 2005 (The Gaurdian, 2006). The company was in talks with its banks over its revenue recognition policies and had delayed reporting its final results (Citywire Money, 2006). In the period between 2009 and 2011, Hewlett-Packard (HP) revealed a fraud case against the founder of Autonomy Corporation Plc, now known as HP Autonomy, claiming that Autonomy inflated its revenues by US \$700m, which misled Autonomy's shareholders and later HP when it acquired Autonomy (Independent, 2015). AssetCo Plc announced it had restated its financial accounts for 2010 after the company discovered significant overstatement of profits and assets (Reuters, 2012). More recently, Tesco Plc, a large UK supermarket chain, has been found to have overstated earnings by £263m after revenue recognition irregularities were identified in its first half-year results of 2013 and 2014 (ACCA, 2015).

According to the former SEC Chairman, Chairman Arthur Levitt, PRR is the most common form of revenue management and is a widespread example of 'accounting hocus-pocus' that could be used to create illusionary earnings (Magrath and Weld, 2002). Consistent with firms utilising discretion in revenue recognition to manipulate earnings, revenue misstatements are one of the most common causes of restatements and SEC enforcement actions (Dechow et al., 1996; Durnev and Mangen, 2009). As such, discretionary revenues (DR) can be used to measure financial reporting quality (FRQ) because although the revenue account is frequently subject to managerial

discretion regarding accounting standards to provide positive signals about future prospects, auditing standards (e.g., AICPA, PCAOB) “contain a presumption that there is at least one fraud risk associated with revenue recognition” (Levy, 2015, p.8).

Little research has been conducted in the area of DR (Stubben, 2010), and there has been a lack of study regarding the role of effective CG monitoring mechanisms in curtailing improper revenue recognition. We, therefore, contribute to the literature by extending the existing research related to the impact of effective CG mechanisms on FRQ in a number of ways. First, it is noteworthy that prior research has used external indicators of earnings misstatements or properties of earnings as surrogates for EM. To our knowledge, this is the first study that adopts the DR model of Stubben (2010) to capture PRR and examines its association with the board of directors (BoD) and AC characteristics. Second, the vast majority of studies that examine FRQ and CG are conducted in the US where a mandatory governance system exists (e.g., Xie et al., 2003; Bedard et al., 2004; Ghosh et al., 2010). This study provides evidence from a less regulated environment of the UK where a voluntary “comply or explain” governance system exists. Moreover, the paper presents evidence from an important period –2005 to 2013 – which reflects the significant changes that were made to the UK Corporate Governance Code in 2003 through the incorporation of the Higgs and Smith reports pertaining to the effectiveness of non-executive directors and audit committees respectively. Third, the paper uses corporate governance data manually collected from annual reports. This allow us to measure audit committee members’ financial expertise by their relevant financial experience (as defined by the UK Corporate Governance Code), unlike extent research which used financial literacy and qualifications as a measure for financial expertise.

Using a GLS random-effect regression analysis of a sample of 854 FTSE 350 firm-year observations, we find that the size of the AC plays an effective role in constraining PRR. Moreover,

our results reveal that PRR is more likely to be curbed in the presence of a small BoD comprising a higher proportion of non-executive directors (NEDs) and in which the roles of the Chief Executive Officer (CEO) and Chairman are separated. The UK regulators and standard-setters should consider these findings while setting new governance reform recommendations. The remainder of this study is structured as follows: the next section reviews the literature and formulates a hypothesis suitable for answering the research question. This is followed in Section three by a discussion of the method and the sample. Descriptive analyses and findings are reported in Section four, and finally, in Section five, conclusions are drawn.

## **2. Literature Review and Hypothesis**

### *2.1. Literature Review*

There are two main streams in the existing literature that have tackled the relationship between CG effectiveness and FRQ.

The first set of studies uses external indicators of earnings misstatements as a direct measure for FRQ. Using the SEC's Accounting and Auditing Enforcement Releases (AAERs) and the Wall Street Journal Index as proxies for FRQ, Beasley (1996) finds evidence that non-fraudulent firms have boards with a significantly higher percentage of outside members than those of fraudulent businesses. Interestingly, the results indicate that the presence of an audit committee does not significantly affect the likelihood of financial statement fraud. Similarly, Dechow et al. (1996) find that firms that manipulated earnings are more likely to have boards with a lower presence of independent members, more likely to have CEO duality, less likely to have an audit committee and are less likely to have outside block-holders. Farber (2005) examines firms committing fraud according to the SEC's AAERs between 1982 and 2000 and finds that fraudulent

firms have poor CG relative to a control sample in the year before a fraud is detected. The matched comparisons indicate that fraudulent firms have a significantly lower percentage of outside directors, fewer audit committee meetings, a smaller number of financial experts on the audit committee and a higher proportion of CEO duality. Audit committee size was not statistically different between fraudulent and non-fraudulent firms.

In the context of enforcement in the UK, Peasnell et al. (2001) examine the characteristics of companies judged by the Financial Reporting Review Panel (FRRP) during 1990–1998 to have had inaccurate financial statements and show that these firms were less likely to have an AC and a high proportion of outside directors. Song and Windram (2004) document that companies with effective AC, smaller BoD and a large proportion of outside directors are more likely to have a lower incidence of adverse rulings by the FRRP than the selected control firms. They find a negative relationship between the AC size and financial expertise and an adverse ruling by the FRRP. They also report that firms sanctioned for inaccurate financial statements are more likely to have an AC that meets less frequently.

Although SEC and FRRP Enforcement Actions can be claimed to be salient indicators of poor FRQ, it is reasonable to suppose that not being accused of fraudulent reporting does not mean that a firm adheres to FR ethics and is not manipulating its reported earnings. Even if there is compliance with accounting standards, there would still be room for managers to manage reported earnings because alternative treatments for accounting events are permitted (Teoh et al., 1998, p.1969). For example, a firm can manipulate revenues through using an accounting method that either delays or advances revenue recognition yet still comply with the related accounting standards (Teoh et al., 1998; Park and Shin, 2004). Accordingly, results of this line of research

cannot be generalised to an exemplary population of firms that utilise less aggressive financial reporting practices and “more subtle cases of earnings management” (Dechow et al., 1996, p.31).

The second stream of literature to which our paper is related uses properties of earnings as a measure for FRQ. Vafeas (2005) examines the impact of CG characteristics on FRQ between 1994 and 2000. Poor earnings quality was surrogated by small earning increases and negative earnings avoidance. The results indicate that independent ACs have a constraining effect on managerial behaviour in EM. Krishnan and Visvanathan (2008) conclude that ACs with accounting financial expertise can efficiently assess the nature and the appropriateness of accounting choices, constrain the aggressiveness of accounting policies and provide incentives to avoid the risk of litigation. Klein (2002), Xie et al. (2003), Bedard et al. (2004) and Osma and Nogue (2007) all use abnormal discretionary accruals (DACC) as a proxy for FRQ, but the results are mixed. More recently, Ghosh et al. (2010, p.1145) argued that BoDs and ACs are the “ultimate guardians of financial reporting” and examine how earnings quality – measured by DACC, special items and deferred tax – might be influenced by such monitoring mechanisms pre- and post-SOX. They show that “[EM] does not vary with board composition and structure, or with audit committee composition, expertise, and ownership. In contrast, board size and audit committee size, activity, and tenure are associated with [EM]. The strength of this association is considerably weaker for the post-SOX years compared to the pre-SOX years. There was no evidence to suggest that the overall level of [EM] declined following SOX” (Ghosh et al., 2010, p.1145). González and García-Meca (2014) examine the relationship between CG mechanisms and DACC in listed Latin American firms from 2006 to 2009. They conclude that board independence is limited in curbing EM and that BoDs that meet more frequently increase the monitoring of managers.

In the UK context, Peasnell et al. (2000) find no evidence of an association between the degree of accrual management and the proportion of NEDs in the pre-Cadbury period. In the post-Cadbury period, however, the results of Peasnell et al. (2000) show that there is less income-increasing accrual management when the proportion of outside directors on the board is high. Similarly, Peasnell et al. (2005) suggest that NEDs who are senior executive managers in other firms in which they are acutely aware of FR issues have the potential to detect EM activities. They conclude that the likelihood that managers record income-increasing abnormal accruals is less likely to occur when there are NEDs on the board. No evidence was found that the presence of an AC directly affects upward or downward income manipulation among UK companies. In a more recent UK study, Katmon and Al Farooque (2015) conclude that – except for the AC meeting variable, which is found to be positively and significantly related to EM – CG mechanisms had no influence in reducing opportunistic managerial behaviour between 2004 and 2008.

Collectively, the literature's findings on the relationship between CG characteristics and FRQ are mixed. As the bulk of studies examine FRQ through EM, the most commonly used proxy was DACC (Pomeroy and Thornton, 2008). The results of such studies, however, are questionable because accrual models are subject to the criticism that they provide biased and noisy estimates (Bernard and Skinner, 1996; Thomas and Zhang, 2001; Hribar and Collins, 2002; Stubben, 2010). Thomas and Zhang (2001) examine the ability of various accrual models to forecast accruals and find that all models have low forecasting ability and are less accurate in detecting EM than they appear. Despite their finding that the Jones Model – one of the most commonly used accrual models – exhibits some forecasting ability, Bernard and Skinner (1996, p.313) assert that this model “systematically mismeasures discretionary accruals” by classifying non-discretionary accruals as discretionary. Hribar and Collins (2002) find that using the balance sheet approach to



measure accruals can lead to erroneous conclusions that companies are manipulating earnings when no such practice exists. Stubben (2010, p.711) examines the ability of both DR and DACC models to detect simulated and actual manipulations and finds that revenue models are “less biased and better specified than accrual models”. Unlike DR models, which focus on the revenue component of earnings, DACC models do not provide information on the component of accruals being managed or whether it is revenues or a particular expense account (Stubben, 2010).

## *2.2. Hypothesis Development*

### *2.2.1. Board of Directors and PRR*

As the body that governs the corporation, the BoD is the ‘professional referee’ (Fama, 1980, p.293) that serves as one of the monitoring agents with a legal and moral obligation to align managers' and shareholders' interests (Fama and Jensen, 1983) and to ensure that a company is run in the best interests of shareholders (Monks and Minow, 2011). However, the BoD will not have effective control unless it is capable of curtailing discretionary managerial decisions (Beasley, 1996). As a development in the post-Enron period, the recommendations of the UK Higgs report of 2003, which were subsequently enacted in The Code, aimed at improving and strengthening the existing ‘comply or explain’ regulatory governance model. They further focus on the composition of boards and their operation and review the role and effectiveness of NEDs. Given that the effectiveness of the BoD’s monitoring role depends on its structure and organisation (Peasnell et al., 2005), our board variables are as follows:

*Non-executive Directors (NEDs)*. NEDs are board members who have no business ties to the firm aside from their directorship and serve as the real monitors on the board on behalf of capital

providers (Fama and Jensen, 1983). Therefore, they are held accountable for FR failures, bear reputation costs and are more likely to leave the boards of companies experiencing restatements and to subsequently lose directorships at other firms (Srinivasan, 2005). Within agency theory, NEDs are expected to mitigate agency conflicts between managers and shareholders (Jensen and Meckling, 1976; Fama and Jensen, 1983). They will also lead to a reduction in information asymmetry, i.e. “imbalance in the information available to the market participants” (Mikołajek-Gocejna, 2014, p.147), which is a necessary condition for effective boardroom accountability (Brennan et al., 2016), resulting in lower PRR. The literature is rich with empirical tests of the relationship between NEDs and EM opportunistic behaviour. Beasley (1996) and Dechow et al. (1996) find that NEDs are effective in constraining fraudulent FR. Peasnell et al. (2000) also find that NEDs became more effective post-Cadbury. Similarly, Klein (2002) finds a negative association between NEDs and EM. Therefore, our hypothesis is as follows:

**Hypothesis 1a (H1a):** There is a negative relationship between NEDs and PRR.

*CEO Duality (DUAL).* There are differences between the UK voluntary CG system that operates on a ‘comply or explain’ basis and the mandatory system adopted in the US under SOX. An area of divergence is the constraints on the exercise of board leadership (Aguilera et al., 2006). Most UK-listed companies separate the role of Chairman and the CEO while most of the American CEOs are also Chairmen of the Board (Higgs, 2003). From an agency perspective, the positions of Chairman and CEO should be separated because the same person holding both positions creates a conflict of interest, impairs the BoD’s objectivity, makes the board’s role dysfunctional, and may adversely affect shareholders’ interests (Jensen, 1993). Collier and Gregory (1999) find reduced audit committee activity when the roles of the CEO and the Chairman are not separated. Bowen et al. (2002) indicate that the separation of roles is necessary to prevent EM activities, and they find

that earnings-smoothing activities are higher in firms with CEO duality. Davidson et al. (2004) also conclude that EM occurs more frequently following duality-creating successions than otherwise because dual CEO/Chairmen have greater control of the impression created by their firm's financial reports and are operating under higher expectations of positive results. This suggests that separating the two roles will enhance the board's monitoring activity and improve FRQ practices. Therefore, our hypothesis is as follows:

**Hypothesis 1b (H1b):** There is a positive relationship between DUAL and PRR.

*Board Size (BODSIZE).* The relationship between the board size and firm performance, in general, and FRQ, in particular, is not straightforward and the literature provides no consensus about the direction of that relationship (Xie et al., 2003; Katmon and Al Farooque, 2015). On the one hand, consistent with the resource dependence theory, a larger board is “a provider of resources, such as legitimacy, advice and council links to other organisations, etc.” (Hillman and Dalziel, 2003, p.383) and, therefore, enhances the skills, expertise and knowledge needed to exert effective monitoring of FRQ (Ghosh et al., 2010). On the other hand, smaller boards are more effective in discharging their oversight role (e.g., Lipton and Lorsch, 1992). They minimise the incremental costs of poor communication associated with larger groups (Jensen, 1993) and are less likely to be controlled by management (Dechow et al., 1996). Given the fact that UK corporate boards constitute both executive and non-executive directors who presumably possess relevant financial reporting knowledge and experience, we argue that such boards include the necessary knowledge and skills required for exerting an effective oversight role and increasing their size would lead to

communication problems that would have a negative impact on FRQ. Therefore, our hypothesis is as follows:

**Hypothesis 1c (H1c):** There is a positive relationship between BODSIZE and PRR.

### 2.2.2. *Audit Committees and PRR*

According to KPMG's Audit Committee Institute (ACI) guidance, "[AC] must remain alert to various inappropriate [EM] practices, including improper revenue recognition, and ask management and/or the external auditor to describe and explain recent developments in [FR]" (ACI, 2006, p.6). Moreover, the KPMG's ACI survey (2008) concludes that recession-related risks, including increased risk of EM during an economic downturn, are a major concern for ACs. The AC should be paying close attention to such risks while they continue to focus on refining their oversight of FR, internal controls and risk management (ACI, 2008). In the same vein, the FRC issued a report in 2009 arguing that as companies suffered from insolvency problems after the recession, managers would face more difficulties, which might boost the risk of non-transparent financial reports with manipulations, errors and omissions (FRC, 2009). ACs are found to be associated with error reduction and regulatory compliance (Barako et al., 2006), as well as oversight of risk management and internal control systems (Chambers, 2008). Given that the effectiveness of the AC monitoring role depends on their structure and organisation, our AC variables are as follows:

*Audit Committee Meetings (ACMEET)*. The number of meetings can be seen as an indicator of the activity level exercised by the AC in monitoring FRQ (Collier and Gregory, 1999). Many studies suggest that firms with a higher value of *ACMEET* experience fewer financial restatements (Abbott et al., 2004), are less likely to be sanctioned for fraud and aggressive accounting practices

(Farber, 2005) and are associated with a lower incidence of EM (Xie et al., 2003; Vafeas, 2005; Kent et al., 2010). However, while Bedard et al. (2004) and Krishnan and Visvanathan (2008) find no association, Katmon and Al Farooque (2015) report that the frequency of ACMEET was the only governance variable that is positively and significantly related to EM. We argue that the more frequently ACs meet, the more efficiently they discharge their oversight responsibilities and constrain PRR. Hence, we hypothesise the following:

**Hypothesis 2a (H2a):** There is a negative relationship between ACMEET and PRR.

*Audit Committee Financial Expertise (ACEXP).* DeZoort (1997) highlights the importance of selecting AC members with adequate relevant expertise, proper training and continuing education. Defond et al. (2005) find that there is a significantly positive stock market reaction to the announcement of the appointment of accounting and financial experts to an AC but no significant response to the appointment of non-accounting and non-financial experts. Agency theorists assert that ACs are employed in environments plagued with high agency costs to alleviate agency problems and to ensure the flow of transparent information between managers and shareholders (Pincus et al., 1989). This leads to the importance of ACEXP as a means of reducing agency costs by overseeing the effectiveness of the management's FR policies, which should result in higher FRQ. Prior empirical research suggests that ACEXP mitigates financial misstatement (Abbott et al., 2004) and constrains EM activities (Xie et al., 2003; Abbott et al., 2004; Bedard et al., 2004; Krishnan and Visvanathan, 2008; Sun, Lan, & Liu, 2014). Given the concerns raised about firms manipulating revenues during our sample period and that revenue recognition is industry-specific, we conjecture that AC members with relevant financial experience are effective monitors of a firm's revenue recognition processes. Therefore, our hypothesis is as follows:

**Hypothesis 2b (H2b):** There is a negative relationship between ACEXP and PRR.

*Audit Committee Size (ACSIZE)*. Jensen (1993, p.865) criticises oversized BoDs and claims that “keeping boards small can help improve their performance. When boards get beyond seven or eight people, they are less likely to function effectively and are easier for the CEO to control”. Nevertheless, it is also widely believed that the large size of an AC can be seen as an indication of varied expertise within the committee that can be used to monitor FR practices effectively (Baxter and Cotter, 2009). Beasley and Salterio (2001) claim that the extent that AC composition voluntarily exceeds minimum mandated levels and includes more outside directors with relevant accounting knowledge and experience will strengthen the AC, lead to improved monitoring and, therefore, decrease the likelihood of FR risks. Inconsistent results in prior studies also exist for the relationship between ACSIZE and FRQ. While Xie et al. (2003), Abbott et al. (2004), Bedard et al. (2004), Vafeas (2005), Krishnan and Visvanathan (2008) and Baxter and Cotter (2009) find no relationship, Ghosh et al. (2010) report that larger ACs are more effective in overseeing the financial reporting process. Given the UK Governance Code requirement that all audit committee members are independent and the need for directors with relevant financial experience to deal with firm-specific revenue recognition practices, we contend that large-sized audit committees will increase the breadth of knowledge needed in the absence of executive directors who are more knowledgeable of the firm-specific information. Therefore, we hypothesise that:

**Hypothesis 2c (H2c):** There is a negative relationship between ACSIZE and PRR.

### 3. Research Design

#### 3.1. Data and Variables

The initial sample contains all firm–years listed in the UK FTSE 350 in the period 2005 to 2013. We exclude firms operating in financial and highly regulated industries because of their particular accounting practices (Klein, 2002; Stubben, 2010; González and García-Meca, 2014; Katmon and Al Farooque, 2015). Following Katmon and Al Farooque (2015), we also exclude industries consisting of fewer than six firms to minimise the possibility of biased estimates in calculating earnings management. Since we focus on PRR that leads to an increase in revenues (i.e. income-increasing firms), we exclude firms with negative DR (i.e. income-decreasing firms) (Koh, 2003). The final sample consists of 854 firm-year observations after removing firms with missing data. Table one summarises the final sample (Panel A) and presents the distribution of firms by industry and year (Panel B).

[Table one here]

Data about boards and audit committees were hand-collected from Annual Reports. Data for financial variables were obtained from *DataStream*. We adopt the DR model of Stubben (2010) in estimating PRR and model annual receivables as a linear function of the “change in revenues of the first three quarters, [and] the change in fourth quarter revenues” (p. 696), “to allow the estimated portion of revenues that are uncollected at year-end to vary in the fourth quarter” (p. 701). As Stubben (2010) concludes, this model is considered as less biased, better specified and more likely to reduce measurement error than accrual models. We estimate DR separately for each firm-year group including at least six firms with the same two-digit International Classification Benchmark (ICB) code.

The prior literature (e.g., Klein, 2002; Bedard et al., 2004; Katmon and Al Farooque, 2015) indicates the potential importance of further variables in capturing the effects of EM and, therefore, these variables are added as controls. Managerial ownership (MANOWN) is included because it is expected to lower agency costs (Jensen and Meckling, 1976) and align managers' and shareholders' incentives through curtailing the management's opportunistic behaviour. Substantial ownership (BLOCK) is included because block-holders have a strong incentive to monitor managers' behaviour (Shleifer and Vishny, 1986), which could be associated with curtailing EM (Jensen and Meckling, 1976; Koh, 2003). Financial leverage (LEV) is also included. The association between debt financing and EM is ambiguous (Alsharairi and Salama, 2012). On the one hand, there is evidence suggesting that firms with high leverage will have incentives to manage their earnings aggressively (e.g., Watts and Zimmerman, 1990). On the other hand, high leverage may restrict managers' ability to manipulate income-increasing accruals (e.g., Jelinek, 2007). The market-to-book ratio, as a measure of a firm's growth opportunities (GROWTH), is included as managers of high-growth firms are inclined to avoid missing earnings targets and may manipulate earnings upward (Matsumoto, 2002). Cash flow from operating activities (CFO) is included as managers of firms facing economic shocks and lower cash flows may utilise accelerated revenue recognition practices to hide poor performance (Leuz et al., 2003). Firm size (SIZE) is included as large firms are associated with higher political costs, and thus, are more likely to be involved in accounting discretion to reduce political attention (Watts and Zimmerman, 1990; Koh, 2003). Finally, we include loss in either or both of the previous two years (LOSS), as firms with slightly negative earnings are inclined to exercise discretion to report positive earnings (Burgstahler and Dichev, 1997).



### 3.2. Model Tested

To test our hypotheses, the empirical model is set out below.

$$\begin{aligned} \text{PRR} = & \beta_0 + \beta_1 \text{NEDs} + \beta_2 \text{DUAL} + \beta_3 \text{BODSIZE} + \beta_4 \text{ACMEET} + \beta_5 \text{ACEXP} + \beta_6 \text{ACSIZE} + \\ & \beta_7 \text{MANOWN} + \beta_8 \text{BLOCK} + \beta_9 \text{LEV} + \beta_{10} \text{GROWTH} + \beta_{11} \text{CFO} + \beta_{12} \text{SIZE} + \beta_{13} \text{LOSS} + \varepsilon \end{aligned} \quad (1)$$

where the dependent variable PRR, measured by  $DR^+$ , is the estimated positive value of the residuals in the following industry-year regression:

$$\Delta \text{AR}_{i,t} = \alpha_0 + \beta_1 \Delta \text{R1}_{-3i,t} + \beta_2 \Delta \text{R4}_{i,t} + \varepsilon_{i,t} \quad (2)$$

where  $\Delta \text{AR}_{i,t}$  represents the annual change in accounts receivable,  $\Delta \text{R}_{1-3i,t}$  represents the change in revenues in the first three quarters, and  $\Delta \text{R}_{4i,t}$  represents the change in revenues in the fourth quarter, and each is scaled by lagged total assets.

The independent variables in (1) are as follows:

*NEDs* = The percentage of non-executive directors on the board.

*DUAL* = Indicator variable with a value of 1 if the CEO also serves as a chair of the board and 0 otherwise.

*BODSIZE* = Number of directors on the board.

*ACMEET* = Number of audit committee meetings held in a given year.

*ACEXP* = The percentage of audit committee directors with relevant financial expertise on the audit committee.

*ACSIZE* = Total number of audit committee members.

*MANOWN* = Percentage of total shares held by executive directors to total number of shares.

- BLOCK* = Percentage ownership of block-holders who hold at least 5% of outstanding common shares and are unaffiliated with management.
- LEV* = Total long-term debt to total assets.
- GROWTH* = Market-to-book ratio.
- CFO* = Cash flow from operating activities scaled by lagged total assets.
- SIZE* = Natural logarithm of total assets at year-end.
- LOSS* = Indicator variable with a value of 1 if a firm incurred losses in either one or both of the previous two years and 0 otherwise.
- $\varepsilon$  = Error term.

## 4. Results and Analysis

### 4.1. Descriptive Statistics

Descriptive statistics are shown in Table two. Mean and distributional characteristics are reported for each variable. Discretionary revenues ( $DR^+$ ) are reported after Winsorisation at the 1% level. On average, 3.6% of shares are held by executive directors. Block-holders who are unaffiliated with management own 25.4% of the stock. The mean (median) of a firm's *GROWTH* is 3.8 (2.62).

[Table two here]

Table three reports the Spearman and Pearson correlations among all the variables in our model. As the Table illustrates, both correlations indicate a significant negative correlation between  $DR^+$  on the one hand and *ACSIZE* and *NEDs* on the other. There is also a significant positive correlation between  $DR^+$  and *DUAL*, *GROWTH* and *CFO*, suggesting that non-separation of the roles of the CEO and the Chairman along with high-growth firms and firms with large cash

flows from operations are more likely to use PRR practices. *SIZE* is positively correlated with *ACMEET*, *NEDs* and *BODSIZE*, suggesting that audit committee meetings along with board size and independence increase as firm size increases. Overall, cross-correlation coefficients between the key variables are reasonable and do not indicate multicollinearity problems. This is evidenced by the Variance Inflation Factor (VIF) values of the explanatory variables, which are fairly small (the highest value is 2.31) and below the cut-off value of 10.

[Table three here]

#### 4.2. Empirical Tests of PRR

We decide to test our hypotheses using a GLS random-effect regression after conducting the Breusch–Pagan Lagrange Multiplier (LM) test and Hausman test. The null hypothesis in the LM test is that there is no panel effect while the null hypothesis in the Hausman test is that the difference in coefficients of the fixed-effect model and the random-effect model is not systematic. The estimated results of the LM test reveal that we should reject the null hypothesis and that the random-effect model is appropriate. Additionally, the results of the Hausman test fail to reject the null hypothesis, thus indicating that the random-effect model is the best estimator. The random-effect regression is based on firm-level-clustered robust standard errors to adjust for possible heteroscedasticity and autocorrelation (Petersen, 2009; Zang, 2011). The advantage of using a panel effects estimator is that it allows us to control for any possible unobserved heterogeneity in our models (González and García-Meca, 2014). The results are reported in Table four. Model (1) incorporates the audit committee characteristics and controls. Model (2) integrates the board

characteristics and controls, and Model (3) amalgamates both governance characteristics with the controls. Models (4) and (5) are the same as Model (3) except for the fact that they present the results for the sample firms divided into large (Model 4) and small (Model 5) firms based on the median of total assets as a surrogate for size (See, for example, Zaman et al., 2011).

Tests of Model (1) show that none of the audit committee characteristics is associated with PRR. A significant negative relationship ( $t = -2.18$ ), however, is found with *ACSIZE* after combining both sets of audit committee and board variables in the same regression (Model 3). This suggests that the size of the audit committee does play an effective role in constraining PRR when controlling for board characteristics. *ACEXP*, however, is not associated with positive discretionary revenues. This result is ambiguous and contributes to the controversy over the definition and kind of financial expertise to be included in audit committees (See, for example, Defond et al., 2005). It implies that audit committee members with only relevant financial experience may lack the sufficient knowledge required to deal with specific accounting practices that require professional judgements. As Defond et al. (2005, p.155) conclude, “accounting-specific expertise may be [more] important for audit committee members because best practices suggest that audit committees are responsible for numerous duties that require a relatively high degree of accounting sophistication”.

All board variables are significantly related to positive discretionary revenues regardless of whether or not we separate audit committee and board variables. The tests of Model (3) show that, as predicted in H1a,  $DR^+$  has a significant negative relationship with *NEDs* ( $t = -3.10$ ), suggesting that PRR is more likely to be curbed in the presence of a higher proportion of non-executive directors.  $DR^+$  has a significant positive relationship with *BODSIZE* ( $t = 2.68$ ), suggesting that PRR is more likely to be curbed in the presence of smaller boards. Moreover, in

line with our prediction in H1b, *DUAL* is positively related to discretionary revenues ( $t = 1.73$ ) indicating that firms in which the CEO and the Chairman positions are not separated are more likely to recognise their revenues prematurely.

Finally, the tests of Model (3) show a positive significant coefficient for *GROWTH* at the 1% level ( $t = 2.68$ ), indicating that high-growth firms are more inclined to manipulate earnings upward (Matsumoto, 2002) through PRR, and a negative significant coefficient for *SIZE* at the 1% level ( $t = -3.90$ ), indicating that large firms are less likely to recognise revenues prematurely. The results for large firms in Model (4) are the same as those reported in Model (3) except for *DUAL*, which is not statistically significantly correlated with  $DR^+$ . However, for small firms in Model (5), only *NEDs* and *DUAL* are associated with  $DR^+$ . These results suggest that internal governance mechanisms of small firms are less stringent in adhering to the recommendations of The Code to assure a proper recognition of revenues and enhance FRQ.

[Table four here]

#### 4.3. Additional Tests

To check the robustness of the primary results, we conduct a number of additional tests. First, we examine the impact of AC and BoD characteristics on the absolute value of DR (*ABSDR*), which measures the level of opportunistic revenue management activities and focuses on the magnitude, rather than the direction, of revenue management. The AC and BoD variables are regressed both together and separately. The results in Models (6), (7) and (8) in Table five are consistent with those reported in Table four, except for *DUAL*, which is not associated with *ABSDR*. This indicates that in the presence of an effective board, large-sized ACs are more likely to constrain revenue

management. These results also suggest that small-sized boards comprising a higher proportion of non-executive directors are more likely to curb revenue management.

Second, it has been argued that the same CG choices and mechanisms that might be optimal in non-crisis periods might be unsuitable during crisis periods (Essen et al., 2013). Essen et al. (2013) find that the performance of CG mechanisms is different in crisis periods compared with non-crisis periods. As such and given that the year 2008 is considered as the year of the global financial crisis, we exclude the year 2008 from the sample to check the robustness of the results. Table five reports the findings of *ABS DR* (Model 9) and positive discretionary revenue (Model 10) models, which are qualitatively similar to those obtained from the original models.

Third, we test our models for potential endogeneity by conducting the Durbin-Wu-Hausman test. This test is used to determine whether the Instrumental Variables (IV) or the Ordinary Least Squares (OLS) estimators is the appropriate estimation technique for our data (Baum, 2006)<sup>2</sup>. Failing to reject the null hypothesis that variables are exogenous indicates the use of the OLS instead of the IV estimation techniques (Baum, 2006). The result was statistically insignificant and favours the use of OLS estimator.

Fourth, we measure PRR in our main tests as the positive residuals from the Stubben (2010) revenue model. As an additional test to provide some understanding of the association between corporate governance mechanisms and revenue deferrals, we further examined the impact of our corporate governance characteristics on the negative residuals from the Stubben (2010) model. Un-tabulated results reveal that none of the audit committee variables (*ACMEET*, *ACSIZE*, and *ACEXP*) is associated with negative discretionary revenues. These results suggest that audit committees do not affect revenue deferrals. However, among the board variables, *DUAL* has a

positive relationship with negative discretionary revenues ( $z=1.80$ ) indicating that revenue deferrals are more likely to exist in the presence of CEO duality. *BODSIZE* is negatively associated with negative discretionary revenues ( $z=-2.54$ ) suggesting that large boards are more likely to constrain revenue deferrals.

Fifth, the prior research argues that the relationship between AC size and committee performance is non-linear (Vafeas, 2005). This implies that initially increasing the size of the committee would enhance its performance because there are more members on whom to draw; however, after the AC grows too large, performance would decline because of communication problems and the diffusion of responsibility (Vafeas, 2005). As such, we further examine the possibility of non-linearity between *ACSIZE* and *BODSIZE* and  $DR^+$  by incorporating the squared values of *ACSIZE* ( $ACSIZE^2$ ) and *BODSIZE* ( $BODSIZE^2$ ) into our main models. The results in Table five Model (11) reveal that  $DR^+$  is not significantly associated with  $ACSIZE^2$  indicating that the relationship between  $DR^+$  and  $ACSIZE^2$  is linear<sup>3</sup>. However, Model (12) in Table five shows that the relationship between  $DR^+$  and *BODSIZE* is non-linear; *BODSIZE* is initially negative but then turns at an inflection point of approximately eight. This suggests that restricting the board size to fewer than eight members would lead to a decrease in PRR; however, larger boards comprising of eight or more members would lead to the communication problems that are associated with larger groups (Jensen, 1993).

Finally, we find in our main tests that *ACSIZE* is negatively associated with PRR. To further provide insights into how corporate governance mechanisms can curb PRR and enhance FRQ we interacted *ACSIZE* with each of the board's variables and tested their impact on PRR. Un-tabulated results show that the coefficients of the interaction terms *ACSIZE*\**BODSIZE* and *ACSIZE*\**NEDs* are insignificant. Interestingly, however, we find that the interaction term

ACSIZE\*DUAL has a negative coefficient significant at the 1% level. This finding suggests that ACSIZE moderates the positive relationship between DUAL and PRR and leads to higher FRQ.

[Table five here]

## 5. Conclusion

This paper is motivated by recent British accounting failures that occurred between 2005 and 2013, as well as related stakeholders' and regulatory concerns regarding misleading revenue recognition practices and the role that effective CG may play in fulfilling legal and moral obligations in constraining such practices to ensure FRQ. In doing so, we contribute to the literature by empirically examining how effective boards and audit committees are in constraining PRR. We also aim to contribute to the debate regarding the relationship between specific governance characteristics (board size and audit committee size) and FRQ. Although the earnings management literature is well developed, to our knowledge, this is the first study of its kind to adopt the discretionary revenue model of Stubben (2010) to capture prematurely recognised revenues and to examine its association with CG characteristics.

We find that *BODSIZE* and *DUAL* have significant positive coefficients while *NEDs* has a significant negative relationship with  $DR^+$  suggesting that small boards that are comprised of a higher proportion of non-executive directors and in which the roles of the CEO and Chairman are separated are more likely to curb PRR. The results hold after excluding the year of the global financial crisis (2008) and also when using absolute discretionary revenues. Additional analyses, however, reveal that the relationship between *BODSIZE* and PRR is non-linear. This implies that PRR practices decrease with the increase in *BODSIZE* until the latter reaches eight members beyond which PRR begins to increase. This is consistent with Jensen (1993, p.865) argument that



“when boards get beyond seven or eight people they are less likely to function effectively and are easier for the CEO to control”. Contrary to the belief that ACs improve corporate accountability, strengthen governance, reduce opportunistic managerial behaviour and, therefore, ensure high standards in FR, we do not find any of the AC variables to be significantly related to PRR. This is consistent with evidence from Katmon and Al Farooque (2015). Interestingly, however, when BoD variables are inserted with AC variables in the same empirical model, *ACSIZE* provides significant explanatory power in explaining PRR. This indicates that after controlling for board characteristics, large-sized audit committees play an effective role in constraining firms’ PRR practices. The additional analyses also reveal that large-sized audit committees are effective in constraining general revenue manipulations.

These findings could be of interest to policy-makers seeking governance reforms and shareholders who are concerned with curbing opportunistic management behaviours. For instance, our empirical tests provide evidence that audit committee members with relevant financial experience are not associated with PRR or revenue manipulation in general. This finding is inconsistent with recommendations of The Code that describe AC-specific desirable features to assist BoDs in their monitoring role to promote FRQ. Overall, our results provide empirical evidence that supports the practitioners' and standard-setters' calls for a strengthened role for boards and audit committees within the oversight of firms’ financial reporting processes. As such, UK corporate governance authorities should consider our results while setting new governance reform recommendations. As Wolnizer (1995, p.45) notes, “unless accounting practices are reformed so that financial statements can be authenticated by recourse to reliable commercial evidence, audit committees are red herrings”. Special consideration should also be given to the way audit committees are structured and the types of financial expertise of their members. In a

similar vein, attention should be paid to ACs' agendas and workloads. The ACI Executive Director claims that “the resounding message is that the audit committee can't do it all” (McCollum, 2015). The results of KPMG’s 2015 Global Audit Committee Survey also revealed that it is increasingly difficult, given the audit committee’s time and expertise, to oversee major risks and challenges in FR. An active development, however, is that more boards are reallocating oversight responsibilities among their committees and the full board to better balance the workload to allow more time for quality discussions and a deeper understanding of the business to improve the effectiveness of audit committees (ACI, 2015). This is a possible direction for future research to examine the other board’s committees, in a complementary fashion with the ACs and BoDs, to effectively oversee FRQ.

**Notes:**

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<sup>1</sup> Because the accounting system is ‘principles-based’ (as opposed to the US ‘rules-based’ system) and the UK was exposed to similar failures (e.g. BCCI, Maxwell) in the latter half of the 1980s and during the early 1990s where corrective recovery actions had been taken (Kershaw, 2005).

<sup>2</sup> Baum (2006, p 212) denotes that the Durbin-Wu-Hausman test is ‘a test of the consequence of using different estimation methods on the same equation’.

<sup>3</sup> The descriptive statistics indicate little dispersion in the ACSIZE variable, which may be a source of limitation for this test.

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**Table One**

## Panel A: Sample Selection Procedures

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total Sample
Total firms in FTSE 350 at year-end	352	352	353	358	355	356	356	354	354	<b>3190</b>
Companies in financial and insurance industries (ICB 8000)	-101	-108	-104	-113	-112	-116	-113	-116	-116	<b>-999</b>
Companies in utilities industry (ICB 7000)	-13	-12	-11	-10	-9	-9	-8	-7	-7	<b>-86</b>
Companies with missing corporate governance and financial values	-59	-40	-35	-18	-14	-18	-25	-13	-14	<b>-236</b>
Industries having fewer than six firms	-7	-10	-9	-13	-11	-4	-5	-5	-6	<b>-70</b>
Firms with negative discretionary revenues	-87	-99	-93	-105	-100	-107	-108	-118	-128	<b>-945</b>
<b>Total sample</b>	<b>85</b>	<b>83</b>	<b>101</b>	<b>99</b>	<b>109</b>	<b>102</b>	<b>97</b>	<b>95</b>	<b>83</b>	<b>854</b>

## Panel B: Distribution of Sample Firms by Industry and Year

ICB code	Industry	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total Sample
0001	Oil and gas	6	6	4	5	10	8	7	9	0	55
1000	Basic materials	8	6	3	6	9	12	15	12	7	78
2000	Industrials	25	27	45	39	27	32	27	28	15	265
3000	Consumer goods	12	8	12	14	17	14	9	14	12	112
4000	Healthcare	3	3	4	3	6	4	4	2	4	33
5000	Consumer services	27	28	30	24	32	21	26	19	30	237
6000	Telecommunications	0	0	0	0	0	2	4	4	3	13
9000	Technology	4	5	3	8	8	9	5	7	3	52
<b>Total sample</b>		<b>85</b>	<b>83</b>	<b>101</b>	<b>99</b>	<b>109</b>	<b>102</b>	<b>97</b>	<b>95</b>	<b>83</b>	<b>854</b>

**Table Two**  
Descriptive Statistics

Variable	N	Mean	Std. Dev.	Q1	Median	Q3
<i>DR<sup>+</sup></i>	854	0.023	0.027	0.005	0.013	0.030
<i>NEDs</i>	854	0.663	0.431	0.571	0.667	0.727
<i>DUAL</i>	854	0.047	0.211	0.000	0.000	0.000
<i>BODSIZE</i>	854	9.172	2.359	7.000	9.000	10.000
<i>ACMEET</i>	854	4.191	1.596	3.000	4.000	5.000
<i>ACEXP</i>	854	0.310	0.241	0.200	0.333	0.333
<i>ACSIZE</i>	854	3.603	0.897	3.000	3.000	4.000
<i>MANOWN</i>	854	0.036	0.104	0.001	0.002	0.009
<i>BLOCK</i>	854	0.254	0.168	0.123	0.222	0.353
<i>LEV</i>	854	0.196	0.168	0.050	0.175	0.298
<i>GROWTH</i>	854	3.792	21.357	1.540	2.615	4.420
<i>CFO</i>	854	0.134	0.149	0.070	0.112	0.172
<i>SIZE</i>	854	5,329,723	14,900,000	580,300	1,350,655	3,212,300
<i>LOSS</i>	854	0.150	0.357	0.000	0.000	0.000

$DR^+$  is the estimated positive values of the residuals from the following industry-year regression:

$$\Delta AR_{i,t} = \alpha_0 + \beta_1 \Delta RI\_3_{i,t} + \beta_2 \Delta R4_{i,t} + \varepsilon_{i,t}$$

*NEDs* is the proportion of non-executive directors to total board's size; *DUAL* is a dummy variable with a value of 1 if the CEO also serves as a chair of the board, 0 otherwise; *BODSIZE* is the total number of directors sitting on the board; *ACMEET* is the number of audit committee meetings held during the financial year; *ACEXP* is the percentage of audit committee directors with relevant financial expertise on the audit committee; *ACSIZE* is the total number of audit committee members; *MANOWN* is the percentage of total shares held by executive directors to total number of shares; *BLOCK* is the percentage ownership of blockholders who hold at least 5% of outstanding common shares and are unaffiliated with management; *LEV* is total long-term debt to total assets; *GROWTH* is market-to-book ratio; *CFO* is cash flow from operating activities scaled by lagged total assets; *SIZE* is the natural logarithm of total assets at year-end; *LOSS* is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years and 0 otherwise.

**Table Three**

Spearman (Lower Triangle) and Pearson (Upper Triangle) Correlations\*

	<i>DR<sup>+</sup></i>	<i>ACMEET</i>	<i>ACSIZE</i>	<i>ACEXP</i>	<i>NEDs</i>	<i>DUAL</i>	<i>BODSIZE</i>	<i>MANOWN</i>	<i>BLOCK</i>	<i>LEV</i>	<i>GROWTH</i>	<i>CFO</i>	<i>SIZE</i>	<i>LOSS</i>
<i>DR<sup>+</sup></i>	1	-0.0218	<b>-0.0962</b>	-0.013	<b>-0.0686</b>	<b>0.0847</b>	0.0295	0.0278	-0.0038	<b>-0.121</b>	<b>0.0578</b>	<b>0.0694</b>	<b>-0.1702</b>	0.0041
<i>ACMEET</i>	-0.0023	1	<b>0.2168</b>	-0.0293	<b>0.115</b>	<b>0.0603</b>	<b>0.346</b>	-0.0558	-0.0477	-0.0212	0.0377	0.0213	<b>0.3624</b>	-0.0173
<i>ACSIZE</i>	<b>-0.0987</b>	<b>0.1804</b>	1	<b>-0.1954</b>	<b>0.1025</b>	-0.0255	<b>0.4058</b>	<b>-0.1002</b>	<b>-0.133</b>	<b>0.0636</b>	-0.0308	-0.0361	<b>0.3543</b>	-0.0556
<i>ACEXP</i>	0.0238	-0.0333	<b>-0.3287</b>	1	0.0082	0.0246	<b>-0.0633</b>	-0.0124	-0.0092	-0.0094	-0.0026	0.0175	0.0069	0.0253
<i>NEDs</i>	<b>-0.1088</b>	<b>0.2906</b>	<b>0.2199</b>	0.0163	1	-0.0466	<b>0.0828</b>	-0.0561	0.0299	-0.0014	-0.005	-0.0009	<b>0.1839</b>	0.0264
<i>DUAL</i>	0.0532	-0.0428	-0.0356	0.0183	<b>-0.1232</b>	1	<b>-0.0609</b>	<b>0.2336</b>	0.0219	-0.038	-0.0289	0.0038	<b>-0.1222</b>	0.0001
<i>BODSIZE</i>	-0.0351	<b>0.3151</b>	<b>0.4183</b>	<b>-0.1266</b>	<b>0.1226</b>	<b>-0.0697</b>	1	-0.0436	<b>-0.0884</b>	0.042	0.033	0.0078	<b>0.5289</b>	-0.0293
<i>MANOWN</i>	<b>0.1617</b>	<b>-0.1979</b>	<b>-0.2288</b>	0.0099	<b>-0.3734</b>	<b>0.1698</b>	<b>-0.1625</b>	1	0.0413	<b>-0.1046</b>	-0.0027	0.0006	<b>-0.1508</b>	<b>0.0745</b>
<i>BLOCK</i>	0.0186	<b>-0.0798</b>	<b>-0.1283</b>	0.0232	0.0313	0.0267	<b>-0.1871</b>	<b>0.1263</b>	1	<b>-0.0666</b>	0.0062	0.0283	<b>-0.2041</b>	<b>0.0968</b>
<i>LEV</i>	<b>-0.1575</b>	-0.0026	<b>0.0776</b>	<b>-0.0568</b>	<b>0.112</b>	-0.0364	<b>0.0774</b>	<b>-0.1993</b>	<b>-0.0739</b>	1	-0.0068	<b>-0.134</b>	<b>0.2269</b>	0.029
<i>GROWTH</i>	<b>0.0893</b>	0.0501	<b>0.0592</b>	<b>-0.0692</b>	-0.0277	0.0337	<b>0.0707</b>	-0.0136	<b>-0.1187</b>	<b>-0.0772</b>	1	<b>0.4577</b>	<b>-0.0713</b>	-0.0249
<i>CFO</i>	<b>0.0958</b>	0.0305	-0.0012	0.0029	-0.0316	0.0104	0.0113	<b>0.0613</b>	<b>-0.0569</b>	<b>-0.135</b>	<b>0.4639</b>	1	<b>-0.2504</b>	<b>-0.1412</b>
<i>SIZE</i>	<b>-0.2058</b>	<b>0.3132</b>	0.306	-0.0275	<b>0.3834</b>	<b>-0.1526</b>	<b>0.4984</b>	<b>-0.4500</b>	<b>-0.2502</b>	<b>0.3272</b>	<b>-0.2018</b>	<b>-0.2327</b>	1	-0.0407
<i>LOSS</i>	-0.0184	0.0336	<b>-0.0436</b>	0.0266	-0.0076	0.0001	-0.0157	0.0495	<b>0.1164</b>	0.0226	<b>-0.1406</b>	<b>-0.2079</b>	-0.028	1

*DR<sup>+</sup>* is the estimated positive values of the residuals from the following industry-year regression:

$$\Delta AR_{i,t} = \alpha_0 + \beta_1 \Delta RI_{3,i,t} + \beta_2 \Delta R4_{i,t} + \varepsilon_{i,t}$$

*NEDs* is the proportion of non-executive directors to total board's size; *DUAL* is a dummy variable with a value of 1 if the CEO also serves as a chair of the board, 0 otherwise; *BODSIZE* is the total number of directors sitting on the board; *ACMEET* is the number of audit committee meetings held during the financial year; *ACEXP* is the percentage of audit committee directors with relevant financial expertise on the audit committee; *ACSIZE* is the total number of audit committee members; *MANOWN* is the percentage of total shares held by executive directors to total number of shares; *BLOCK* is the percentage ownership of block-holders who hold at least 5% of outstanding common shares and are unaffiliated with management; *LEV* is total long-term debt to total assets; *GROWTH* is market-to-book ratio; *CFO* is cash flow from operating activities scaled by lagged total assets; *SIZE* is the natural logarithm of total assets at year-end; *LOSS* is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years and 0 otherwise.

\*Bolded coefficients are statistically significant at the 10% level.

**Table Four**

Results: Discretionary Revenues and Board and Audit Committee Characteristics

Variables	Model 1 Coeff. (z-stat)	Model 2 Coeff. (z-stat)	Model 3 Coeff. (z-stat)	Model 4 Coeff. (z-stat)	Model 5 Coeff. (z-stat)
<i>Intercept</i>	<b>0.073***</b> (5.91)	<b>0.073***</b> (5.85)	<b>0.077***</b> (6.17)	<b>0.042***</b> (2.72)	0.039 (1.06)
<i>NEDs</i>		<b>-0.003**</b> (-2.48)	<b>-0.002***</b> (-3.10)	<b>-0.002***</b> (-3.91)	<b>-0.028*</b> (-1.83)
<i>DUAL</i>		<b>0.013*</b> (1.65)	<b>0.014*</b> (1.73)	-0.003 (-0.53)	<b>0.021**</b> (2.12)
<i>BODSIZE</i>		<b>0.002**</b> (2.26)	<b>0.002***</b> (2.68)	<b>0.002***</b> (2.69)	0.001 (1.00)
<i>ACMEET</i>	0.000 (0.32)		0.000 (-0.35)	0.000 (-0.12)	0.000 (-0.36)
<i>ACEXP</i>	-0.003 (-0.62)		-0.003 (-0.58)	-0.001 (-0.23)	-0.004 (-0.40)
<i>ACSIZE</i>	-0.002 (-1.30)		<b>-0.003**</b> (-2.18)	<b>-0.003**</b> (-1.96)	-0.001 (-0.50)
<i>MANOWN</i>	0.003 (0.20)	-0.001 (-0.08)	-0.003 (-0.20)	0.028 (0.93)	<b>-0.029***</b> (-3.18)
<i>BLOCK</i>	-0.008 (-1.27)	-0.007 (-1.24)	-0.008 (-1.34)	<b>-0.014**</b> (-2.28)	0.000 (-0.02)
<i>LEV</i>	-0.009 (-1.40)	-0.009 (-1.42)	-0.009 (-1.51)	<b>-0.014*</b> (-1.89)	-0.005 (-0.57)
<i>GROWTH</i>	<b>0.000***</b> (2.63)	<b>0.000***</b> (2.92)	<b>0.000***</b> (2.68)	-0.000 (-0.13)	<b>0.000***</b> (2.99)
<i>CFO</i>	0.000 (-0.04)	-0.003 (-0.42)	-0.002 (-0.35)	0.001 (0.06)	-0.002 (-0.30)
<i>SIZE</i>	<b>-0.0029***</b> (-3.27)	<b>-0.004***</b> (-4.10)	<b>-0.004***</b> (-3.90)	-0.002 (-1.45)	0.000 (0.16)
<i>LOSS</i>	0.001 (0.24)	0.001 (0.24)	0.001 (0.22)	0.002 (0.51)	-0.001 (-0.24)
N	854	854	854	427	427
R2	4.15%	6.04%	6.75%	7.09%	4.88%

\*\*\*, \*\*, \* = Significant at the 1%, 5% and 10% level respectively.

The dependent variable is DR<sup>+</sup>. It is the estimated positive values of the residuals from the following industry-year regression:

$$\Delta AR_{i,t} = \alpha_0 + \beta_1 \Delta R1_{i,t} + \beta_2 \Delta R4_{i,t} + \varepsilon_{i,t}$$

NEDs is the proportion of non-executive directors to total board's size; DUAL is a dummy variable with a value of 1 if the CEO also serves as a chair of the board, 0 otherwise; BODSIZE is the total number of directors sitting on the board; ACMEET is the number of audit committee meetings held during the financial year; ACEXP is the percentage of audit committee directors with relevant financial expertise on the audit committee; ACSIZE is the total number of audit committee members; MANOWN is the percentage of total shares held by executive directors to total number of shares; BLOCK is the percentage ownership of blockholders who hold at least 5% of outstanding common shares and are unaffiliated with management; LEV is total long-term debt to total assets; GROWTH is market-to-book ratio; CFO is cash flow from operating activities scaled by lagged total assets; SIZE is the natural logarithm of total assets at year-end; LOSS is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years and 0 otherwise.

**Table Five**

**Additional Tests: Discretionary Revenues and Board and Audit Committee Characteristics**

Variables	Model 6 Coeff. (z-stat)	Model 7 Coeff. (z-stat)	Model 8 Coeff. (z-stat)	Model 9 Coeff. (z-stat)	Model 10 Coeff. (z-stat)	Model 11 Coeff. (z-stat)	Model 12 Coeff. (z-stat)
<i>Intercept</i>	<b>0.075***</b> (7.66)	<b>0.077***</b> (7.76)	<b>0.078***</b> (8.01)	<b>0.080***</b> (8.08)	<b>0.084***</b> (6.30)	<b>0.091***</b> (5.40)	<b>0.115***</b> (5.87)
<i>NEDs</i>		<b>-0.002***</b> (-2.66)	<b>-0.002***</b> (-3.21)	<b>-0.002***</b> (-3.03)	<b>-0.002***</b> (-3.35)	<b>-0.002***</b> (-2.98)	<b>-0.002***</b> (-3.30)
<i>DUAL</i>		0.004 (0.73)	0.005 (0.79)	0.007 (1.14)	0.016 (1.81)	<b>0.014*</b> (1.74)	0.013 (1.61)
<i>BODSIZE</i>		<b>0.001**</b> (2.37)	<b>0.002***</b> (2.80)	<b>0.002***</b> (3.00)	<b>0.002***</b> (3.19)	<b>0.002***</b> (2.77)	<b>-0.006**</b> (-2.02)
<i>BODSIZE<sup>2</sup></i>							<b>0.000**</b> (2.52)
<i>ACMEET</i>	0.000 (-0.38)		0.000 (-0.99)	0.000 (-0.64)	0.000 (-0.11)	-0.000 (-0.36)	-0.000 (-0.56)
<i>ACEXP</i>	-0.002 (-0.81)		-0.002 (-0.67)	-0.003 (-1.09)	-0.004 (-0.79)	-0.003 (-0.55)	-0.002 (-0.41)
<i>ACSIZE</i>	-0.001 (-1.33)		<b>-0.002**</b> (-2.31)	<b>-0.002**</b> (-2.30)	<b>-0.003**</b> (-2.12)	<b>-0.010*</b> (-1.77)	<b>-0.002*</b> (-1.84)
<i>ACSIZE<sup>2</sup></i>						0.001 (1.44)	
<i>MANOWN</i>	0.002 (0.40)	0.002 (0.33)	0.001 (0.24)	0.000 (-0.07)	-0.003 (-0.16)	-0.003 (-0.18)	-0.002 (-0.14)
<i>BLOCK</i>	0.000 (-0.00)	0.000 (0.08)	0.000 (-0.06)	-0.002 (-0.59)	-0.010 (-1.55)	-0.008 (-1.34)	<b>-0.010*</b> (-1.70)
<i>LEV</i>	-0.001 (-0.24)	-0.002 (-0.39)	-0.002 (-0.46)	-0.003 (-0.58)	-0.007 (-1.04)	-0.009 (-1.55)	-0.008 (-1.27)
<i>GROWTH</i>	0.000 (1.52)	0.000 (1.46)	0.000 (1.39)	0.000 (1.59)	0.000 (1.54)	<b>0.000***</b> (2.62)	<b>0.000**</b> (2.57)
<i>CFO</i>	<b>0.011*</b> (1.87)	0.010 (1.60)	<b>0.010*</b> (1.67)	0.009 (1.35)	-0.002 (-0.28)	-0.002 (-0.38)	-0.003 (-0.39)
<i>SIZE</i>	<b>-0.003***</b> (-4.97)	<b>-0.005***</b> (-5.76)	<b>-0.004***</b> (-5.52)	<b>-0.004***</b> (-5.54)	<b>-0.004***</b> (-4.39)	<b>-0.004***</b> (-3.97)	<b>-0.004***</b> (-4.15)
<i>LOSS</i>	0.001 (0.64)	0.001 (0.67)	0.001 (0.64)	0.001 (0.61)	0.000 (0.13)	0.001 (0.24)	0.001 (0.33)
N	1799	1799	1799	1595	755	854	854
R2	4.13%	5.81%	6.20%	6.51%	6.68%	6.81%	7.71%
Inflection point							7.89

\*\*\*, \*\*, \* = Significant at the 1%, 5% and 10% level respectively.

The dependent variable is DR. It is the estimated positive values of the residuals from the following industry-year regression:

$$\Delta AR_{i,t} = \alpha_0 + \beta_1 \Delta R1_{i,t} + \beta_2 \Delta R4_{i,t} + \varepsilon_{i,t}$$

NEDs is the proportion of non-executive directors to total board's size; DUAL is a dummy variable with a value of 1 if the CEO also serves as a chair of the board, zero otherwise; BODSIZE is the total number of directors sitting on the board; ACMEET is the number of audit committee meetings held during the financial year; ACEXP is the percentage of audit committee directors with relevant financial expertise on the audit committee; ACSIZE is the total number of audit committee members; MANOWN is the percentage of total shares held by executive directors to total number of shares; BLOCK is the percentage ownership of block-holders who hold at least 5% of outstanding common shares and are unaffiliated with management; LEV is total long-term debt to total assets; GROWTH is market-to-book ratio; CFO is cash flow from operating activities scaled by lagged total assets; SIZE is the natural logarithm of total assets at year-end; LOSS is an indicator variable with 1 if a firm incurred losses in either one or both of the previous two years and 0 otherwise.