Getting Compensation Right – the Choice of Performance Measures in CEO Bonus Contracts and Earnings Management

Abstract

This paper examines whether the choice of performance measures in CEO bonus compensation contracts is associated with earnings management. From a sample of FTSE350 Index firms over the period of 2005-2014, we investigate the relationship between earnings management, through discretionary accruals and real activities management, and (1) the use of and extent of reliance on financial and non-financial performance measures in CEO bonus contracts; and (2) the use of long-term and short-term measures in CEO bonus contracts. We find less income-increasing manipulation through discretionary accruals and expenses when non-financial performance measures (NFPMs) are used alongside financial performance measures (FPMs) and when the NFPMs are used to a larger extent than FPMs. Furthermore, we find less discretionary accruals when long-term performance measures are used. This implies that non-financial and long-term measures encourage executives to work towards the long-term success of the company rather than their own short-term reward.

Key words: Earnings management, executive compensation, financial and non-financial performance measures, discretionary accruals, real activities management

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1. Introduction

There has been much criticism, both in the UK and globally, that executive compensation is not linked to performance (Keate, 2015). One possible explanation is that incentives provided through compensation contracts lead to adverse effects on firm performance. Specifically, the inclusion of short-term focused, earnings-based performance measures in executive compensation can lead to earnings manipulation and therefore inaccurate firm performance (HassabElnaby *et al.*, 2010; Ibrahim & Lloyd, 2011).

Regulatory changes in the UK, starting with the Cadbury Report (Cadbury, 1992), have encouraged the use of a diverse set of performance measures in executive compensation. The 2010 UK Corporate Governance Code (Financial Reporting Council, 2010) specifically advocates that performance-related measures should include *non-financial metrics, where appropriate* to promote the long-term success of the company. This paper examines how alternative performance measures in CEO bonus contracts, such as financial and non-financial measures, are associated with the manipulation of earnings through discretionary accruals and real activities management.

When assessing reward-based compensation for executives, especially in bonus pay, appropriate performance measures must be chosen. These may be related to financial results of the company, non-financial factors, or a combination of both. Some of these are short-term focused, while others are more long-term focused. The use of non-financial performance measures enable better strategic planning, giving investors a more accurate picture of the company's overall performance (Ittner & Larcker, 2003). They also focus managers on the long-term and avoid the risk of managers making short-term decisions to increase their pay, at the expense of the longer-term success of the company (Ibrahim & Lloyd, 2011).

In this study, we use two alternatives to classify the diverse performance measures used in CEO bonus contracts. We first separate the performance measures into financial performance measures (hereafter, FPMs) and non-financial performance measures (hereafter, NFPMs) and propose that NFPMs will lead to fewer incentives

for earnings management. We also construct, through principal component analysis, two performance measurement factors; we interpret the first as a strategic, 'long-term' factor and the second as a 'short-term' financial-based factor.

The information regarding the performance measures used is hand-collected from annual reports and particular attention is given to the weights attached to the alternative measures.

We find evidence that when FPMs and NFPMs are both employed, less income-increasing manipulation through discretionary accruals and expenses takes place. Furthermore, we find evidence that if equal or more weight is given to NFPMs, less earnings management takes place both through discretionary accruals and some real activities accounts. Furthermore, we find that when long-term measures are used, less income-increasing manipulation through discretionary accruals takes place. Some robustness tests are provided which are in line with the main results.

This study contributes to two strands of literature. First, it contributes to the executive compensation literature in that it further highlights the incentive effects of performance measures employed in CEO bonus contracts. We also provide comprehensive data on performance measures and weights used in these bonus contracts in a UK sample and how they have changed over time (2005-2014). In addition, given the detailed data we collect on performance measures, we provide a classification of these, using principal component analysis, into what can be interpreted as long-term and short-term measures which emphasises the two aspects of compensation.

Second, it contributes to the earnings management literature by providing further evidence on both accrual and real activities management in a compensation setting that has not been studied before. The current study is based on a UK sample selected from the FTSE350 Index over the period 2005-2014. Similar studies examining earnings management related to performance measures only focus on US samples (e.g. HassabElnaby et al., 2010; Ibrahim & Lloyd, 2011) and have only examined accrual management. However, recent studies on earnings management (e.g. Cohen

et al., 2008; Zang, 2012) find a shift to real activities management, especially after regulatory reforms such as the 2002 Sarbanes-Oxley Act in the US.

The findings of the study are significant to shareholders, compensation committees and regulators in that they inform them of the importance of the choice of performance measures in incentivising managers.

The remainder of the paper is organised as follows: Section 2 outlines the literature and hypotheses development. Section 3 provides the methodology, data collection, sample selection and explains the empirical models and variables used. Section 4 presents the results and robustness tests, while section 5 concludes.

2. Literature Review and Hypotheses Development

The Cadbury Report (Cadbury, 1992) first recommended that the performance measures used to assess executives' compensation should be disclosed in company reports. This was again stressed in the Greenbury Report (Greenbury, 1995) and was enforced by the Directors' Remuneration Report Regulations in 2002 (DRRR, 2002) which required UK firms to disclose performance measures, targets and related benchmarks. These regulatory measures required firms to include details of performance-based pay such as bonuses and long-term pay. Some of this variable pay, especially bonuses, is linked to performance measures. Zakaria (2012) stresses the importance of firms having clear and concrete target guidelines relative to their own business; otherwise they tend to adopt other organisations' policies (mimetic isomorphism). Although in the past most firms assessed performance for bonus compensation on year-to-date financial results, the recent trend is for firms to also use non-financial performance measures. For example, the 2014 BT Group Annual Report shows that the CEO received an annual bonus based on earnings per share, normalised free cash flows, revenue growth, customer service, environmental, social and governance measures and his personal contribution to company performance (BT Group PLC, 2014). The weight of each of these components in the bonus compensation is shown in Figure 1.

-Figure 1-

Prior research examining the choice of performance measures in bonus contracts is scarce. An exception is Ittner et al. (1997) who examine a sample of firms that use only financial measures in their CEO bonus contracts, and those that report the weights placed on financial and non-financial measures. They find that firms that tend to use more non-financial performance measures are in more regulated industries and have more noisy measures of financial performance. Furthermore, firms that adopt strategic quality initiatives, and follow an innovation-oriented strategy, tend to adopt more non-financial performance measures in the CEO bonus contracts. This implies that firms that are more concerned with factors other than financial performance rely more heavily on non-financial performance measures in their incentive contracts.

2.1 – Association of Earnings Management with Performance Measures

Prior research on performance measures mainly examines the effect of the various measures on firm performance. Limited attention has been given to the influence of performance measures on earnings management. For example, some studies in the US find less earnings management, in the form of discretionary accruals, for firms using both financial and non-financial performance measures in bonus contracts (HassabElnaby *et al.*, 2010; Ibrahim & Lloyd, 2011). They argue that financial performance measures, which are predominantly used when determining cash bonuses in the US, encourage earnings management. They suggest that the use of NFPMs, coupled with FPMs provide fewer incentives to engage in income-increasing earnings management. Brazel et al. (2009) also find that when firms commit financial statement fraud to improve earnings, only financial measures have been used to assess performance.

The benefits of including NFPMs in a Balanced Scorecard are discussed by Kaplan & Norton (2001) who list some of the most effective non-financial measures as customer satisfaction, product quality and ethical conduct. They argue that these give managers more information about the company's operations, allow more effective changes to compensation systems, and reinforce strategic plans. Furthermore, the inclusion of NFPMs creates a higher level of performance management than using current financial measures alone (Neely & Al Najjar, 2006).

An important reason why NFPMs provide limited incentives for earnings management is that they are leading indicators of financial performance (Amir & Lev, 1996; Banker et al., 2000). Hence, they focus managers on the long-term success of the firm, rather than being myopic and short-sighted (Ibrahim & Lloyd, 2011). Evidence of this is found in studies showing NFPMs to be superior to financial measures as indicators of future financial performance (e.g. Ittner & Larcker, 1998; Nagar & Rajan, 2005,). Banker et al. (2000) also show that NFPMs encourage executives to consider long-term performance rather than focusing on short-term objectives. Baiman & Baldenius (2009) find that NFPMs are an important tool in encouraging cooperation across company divisions. Executives who are paid bonuses linked to NFPMs improve project implementation efficiency and reduce upfront investment costs.

Another advantage of using NFPMs is that they are harder to manipulate (Brazel et al. 2009). Additionally, many NFPMs are controlled by external factors such as environmental and political issues which are not capable of manipulation within the company. However, when NFPMs are subject to external factors, managers may either benefit or suffer costs from circumstances which are outside their control. For example, government intervention may influence performance measures related to strategic initiatives (e.g. a merger or acquisition), but this cannot be controlled by the CEO or the company. Similarly, environmental restrictions may impact environmental performance measures.

The choice between alternative performance measures in bonus contracts is mainly dictated by industry type and surrounding factors (Hayes, 1977 and Otley, 1980). Bushman et al. (1996) and Said at al. (2003) stress the importance of tailoring the choice to find a match with firm characteristics. Such an alignment tends to enhance firm performance (Said et al. 2003).

Based on the above discussion, the use of non-financial measures or measures that focus managers on the long-term is expected to be negatively associated with earnings management. This study examines the use of both financial (short-term) and non-financial (long-term) performance measures in bonus contracts and the degree of earnings management by managers. We propose the following hypothesis:

H1: There will be less income-increasing earnings management by managers when performance is assessed by non-financial or long-term measures in bonus contracts, compared to when performance is measured by financial or short-term measures.

Prior studies discussed above have tended to focus on earnings management in the form of accrual manipulation. However, in the US, recent studies on earnings management (e.g. Cohen et al., 2008; Zang, 2012) find a shift from accrual to real activities management following reforms introduced in the 2002 Sarbanes-Oxley Act aimed at strengthening governance in the US. Consistent with US studies, previous UK studies find lower accrual manipulation associated with governance mechanisms that would have been impacted by recent regulatory reforms e.g. Higgs Report (Higgs, 2003) which made recommendations about board and ownership structure (Iqbal & Strong, 2010; Habbash et al., 2013a, 2013b).

Furthermore, firms with incentives to manipulate earnings that face higher costs to do so through accrual manipulation may prefer to manage earnings through real activities (Cohen & Zarowin, 2010).[1] This means that earnings management from incentives provided by bonus contracts can be achieved through either discretionary accruals, real activities management or both. Therefore, hypothesis 1 is tested through both accrual and real activities management.

Our second hypothesis extends the argument by assessing the amount of earnings management based on the extent of use of the non-financial measures. When designing optimal compensation contracts, heavier weights placed on non-financial measures must be accompanied by a decreased weight on accounting income (Hemmer, 1996). Furthermore, there is evidence that firms use a higher weight on non-financial measures when they are better indicators of future profitability (O'Connell & O'Sullivan, 2014). This suggests that firms should rely more on NFPMs and less on FPMs (Ibrahim & Lloyd, 2011).

[1] Costs of accrual manipulation examined in Cohen & Zarowin (2010) include cost of litigation and factors that would increase the probability of detection such as the type of auditor, auditor tenure, and analyst following.

Dechow et al. (2011), examine firms with alleged misstatements of financial statements, and find that accruals and sales (financial measures) were abnormally high during misstatement years. Furthermore, the amount of earnings management decreases as the weighting of NFPMs increases (HassabElnaby *et al.,* 2010; Ibrahim & Lloyd, 2011).

Given the relative significance of NFPMs, we expect that the strong influence of these measures may inhibit managers from engaging in earnings management and therefore propose the following hypothesis:

H2: There will be less income-increasing earnings management by managers when equal or more weight is placed on non-financial performance measures in bonus contracts.

3 – Methodology

3.1 – Sample Selection and Distribution

The sample is chosen from the FTSE350 Index of firms with available data over the period 2005-2014. The choice of the year 2005 as the start of the sample relates to the adoption of International Financial Reporting Standards (IFRS) by listed firms in the UK. Therefore, all financial statements in the sample are prepared using IFRS.

Firms in the financial sector are omitted, which is typical in research on executive compensation (e.g. Buck et al., 2003; Ozkan, 2011), as they have unique corporate governance rules and financial structure. In addition, firms with less than two years' continuous presence in the FTSE350 Index are excluded, as are firms whose financial data are not disclosed and those where performance-measure data is not available. The final sample includes 188 firms and 1,588 firm year observations.[2] Performance measure and corporate governance data are hand-collected from annual reports. We focus on the performance measures used in CEO bonus contracts given that long-term incentive pay is typically based on financial or return measures (Ibrahim & Lloyd, 2011; KPMG, 2014). Bloomberg and Thomson Reuters are used to collect financial data

[2] The firm-year observations include only those years where weights placed on performance measures are disclosed similar to Ittner et al. (1997). However, the results of hypothesis 1 hold in a broader sample where the types but not necessarily the weights of performance measures are disclosed.

to estimate proxies for earnings management and other control variables. The details of sample selection are summarised in Table 1.

-Table 1 -

Table 2 provides the industry distribution of firms based on the FTSE Industry Classification Benchmark (ICB) introduced in 2005. The table shows that industrial and consumer services represent 56% of the sample, whereas utilities (3.15%) and telecommunications (3.27%) are at the lower end. Consumer goods represent 12.47% of the sample and the remainder of the industries range between 4.66% and 9.57%. The sample distribution is similar to that of the full FTSE350 index in year 2014, excluding financial firms.

-Table 2-

The performance measures used in CEO bonus contracts are hand-collected from the 1,588 available annual reports. We collect information on the performance measure and weight used for each firm in the sample. Table 3 presents data on the use of non-financial performance measures in the sample. From the table, we see that the percentage of firms that use non-financial measures in their CEO bonus contracts has increased from 48% in 2005 to 74% in 2014. Over the sample period, around 62% of the sample firms include non-financial performance measures. In terms of the weights used, the overall weight placed on NFPMs is not substantial, but has increased over time. On average, firms place 10% weight of their bonus compensation on NFPMs in 2005 and this has increased gradually over the sample period to 18% in 2014. In the full sample, about 85% of the bonus contract is based on financial measures and 15% on non-financial measures.

-Table 3-

We categorise the performance measures into the following groups: a) Earnings measures (earnings per share, earnings before interest, tax, depreciation and amortisation (EBITDA) or operating profit); b) Return on accounting measures (return on equity (ROE), return on assets (ROA) or return on capital employed (ROCE)); c) Operational Efficiency; d) Cash flows; e) Revenue growth; and f) Other financial

measures. These are all based on financial measures and therefore are termed FPMs. The remaining performance measures include: a) Customer-related factors; b) Safety and environment; c) Employee-related factors; d) Quality; e) Strategic factors; f) Individual factors; and g) Other qualitative factors. These are not financial in nature and therefore are termed NFPMs. Appendix 1 presents some examples of the categories of the performance measures.

Panel A of table 4 shows the number of firms using the specific financial and non-financial performance measures, together with average weights (the average of all individual weights within each category). It can be seen that the average weight of the earning measures in the overall bonus contract has somewhat declined from 72% in 2005 to 56% in 2014. With regard to return on accounting measures, the number of firms using these measures has fluctuated, but the average weighting over the period has remained fairly constant. Although the percentage of firms using operational efficiency has fluctuated, the average weighting is consistent (less than a third). Cash flows is utilised by an increasing number of firms, but the average weighting has decreased over the ten years of the study (32% in 2005 to 20% in 2014). The use of revenue growth as a measure has increased between 2007 and 2014, although the average weighting has decreased over the last four years. Finally, other financial performance measures have been increasingly used and the average weighting, apart from 2005, has remained fairly constant.

In terms of non-financial factors, customer-related factors have been increasingly used over the sample period and the weighting has also increased (from 17% in 2005 to 21% in 2014). The importance of safety and environment considerations is indicated by the rise in use, from 12 firms in 2005 to 28 in 2012-14. On the other hand, the average weighting has fallen from a high of 25% in 2005 to 14% in the final four years of the sample. Employee-related factors are given less emphasis and the average weighting has fallen to 10% in 2014. The quality of the product or service has the lowest priority with only one firm including it as a performance measure. However, the average weighting given to this element is consistently high at 25% for every year of the sample. The use of strategic factors, relating to such matters as business expansion,

has almost doubled over the period, although the average weighting has remained constant. Individual factors relate to qualities appropriate to the executive's role in the company and an increasing number of firms in the sample use these as an important performance measure and apply an average weighting of 23%. The final column, headed 'other qualitative' relates to all the remaining NFPMs used by sample firms and shows a steady use with constant weighting, around 23%.

-Table 4-

Panel B of Table 4 shows the industry distribution of the use of FPMs and NFPMs. It can be seen that the industrial sector has the highest adoption in most areas of financial factors, perhaps because this is the largest sector represented in the FTSE350 Index. It is interesting that in the sample under review no industrial firm has used operational efficiency as a performance measure. However, a relatively large proportion of firms in this sector have used cash flows with an average weighting of 26%. Consumer Services rely heavily on earnings measures with an average weighting of 70%.

In terms of non-financial factors, we find that relatively few firms use customer satisfaction and other customer-related factors, with the Consumer Goods, Consumer Services and Telecommunications industries being an exception. Safety and environment is seen as an important factor in the Utilities and Oil & Gas industries with a relatively high weighting. Only a few firms include employee-related factors as a performance measure, mostly in the Oil & Gas, Consumer Services and Utilities sectors. The strategic and individual factors are prominent in most industries and other qualitative measures are given high average weightings in Consumer Goods and Utilities (40%).

3.2 – Variables Used and Empirical Models

3.2.1 – Earnings Management Variables

We use the Jones (1991) model with the Dechow et al. (1995) and Kothari et al. (2005) modifications to estimate proxies for discretionary accruals. Firstly, we estimate coefficients using the following regression:

$$TAC_{it} = \beta_0 + \beta_1\left(\frac{1}{A_{it-1}}\right) + \beta_2\left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \beta_3\left(\frac{PPE_{it}}{A_{it-1}}\right) + \beta_4 ROA_{it-1} + \varepsilon_{it}$$

Where:

TAC_{it}	total accruals, calculated as the difference between income and cash from operations for firm *i* in year *t*, deflated by A_{it-1};
A_{it-1}	total assets of firm *i* at end of year *t-1*;
ΔREV_{it}	sales revenues of firm *i* in year *t* less sales revenues in year *t-1*;
ΔREC_{it}	accounts receivable of firm *i* in year *t* less accounts receivable in year *t-1*;
PPE_{it}	gross property, plant and equipment of firm *i* at the end of year *t*;
ROA_{it-1}	ratio of net income to total assets for firm *i* in year *t-1*;
ε_{it}	the residual.

The coefficients are estimated through industry-year regressions of the sample firm/year observations where industries are classified using the Industry Classification Benchmark (ICB) introduced by FTSE in 2005. The inclusion of prior year return on assets (ROA) in the above regression is proposed by Kothari et al. (2005) to control for the level of performance of firms. Non-discretionary accruals are then estimated as follows:

$$NDAC_{it} = \hat{\beta}_0 + \hat{\beta}_1\left(\frac{1}{A_{it-1}}\right) + \hat{\beta}_2\left[\frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}}\right] + \hat{\beta}_3\left(\frac{PPE_{it}}{A_{it-1}}\right) + \hat{\beta}_4 ROA_{it-1}$$

Where $NDAC_{it}$ represents the non-discretionary accruals of firm *i* in year *t*, deflated by beginning total assets, and all other variables are as previously defined.

Discretionary accruals are then measured as follows:

$$DAC_{it} = TAC_{it} - NDAC_{it}$$

Where DAC_{it} is discretionary accruals for firm *i* in year *t* and all other variables are as previously defined.

Earlier research on earnings management mainly concentrates on the use of discretionary accruals and pays little or no attention to real activities management when investigating the effectiveness of non-financial measures in constraining earnings management (e.g. HassabElnaby *et al.*, 2010 and Ibrahim & Lloyd, 2011). Real activities management (hereafter, RAM), which involves manipulation of operating decisions, can be used more effectively to manipulate earnings, primarily because it is less easily detected. Examples of RAM include the adjustment of expenditure on research and development (hereafter, R&D) (Baber et al. 1991; Cheng, 2004) and the timing of sales of assets (Bartov, 1993; Herrmann et al. 2003). Overproduction and manipulation of sales can also be used to increase earnings (Roychowdhury, 2006; Cohen & Zarowin, 2010). Other methods involve taking credit for forward sales, rescheduling dates of shipments and reducing necessary maintenance expenses (Healy & Wahlen, 1999; Dechow & Skinner, 2000; Roychowdhury, 2006; Cohen & Zarowin, 2010). Following Roychowdhury (2006) and Cohen & Zarowin (2010) we use three variables to investigate RAM related to abnormal cash from operations, discretionary expenditures and overproduction.

Abnormal cash from operations result from temporary sales encouraged by generous price discounts or lenient credit terms (Roychowdhury, 2006; Cohen & Zarowin, 2010); we use the following model to estimate firm-specific coefficients to measure abnormal cash from operations (ACFO):[3]

$$CFO_t = \beta_0 + \beta_1\left(\frac{1}{A_{t-1}}\right) + \beta_2\left(\frac{REV_t}{A_{t-1}}\right) + \beta_3\left(\frac{\Delta REV_t}{A_{t-1}}\right) + \varepsilon_t$$

Where:

CFO_t cash from operations in year *t*, deflated by A_{t-1};

REV_t sales revenue in year *t*;

All other variables are as previously defined.

Discretionary expenditures include R&D, advertising and maintenance. These are usually charged in the period in which they are incurred, but earnings can be

[3] We omit the *i* subscript for simplicity.

abnormally increased by reducing such expenditures (Roychowdhury, 2006; Cohen & Zarowin, 2010). The following model is used to estimate the coefficients to measure abnormal discretionary expenditures (ADISEXP):

$$DISEXP_t = \beta_0 + \beta_1\left(\frac{1}{A_{t-1}}\right) + \beta_2\left(\frac{REV_{t-1}}{A_{t-1}}\right) + \varepsilon_t$$

Where:

$DISEXP_t$	discretionary expenses in year *t*, deflated by A_{t-1};
REV_{t-1}	sales revenue in year *t-1;*
	All other variables are as previously defined.

Overproduction involves producing more goods than necessary to service current and immediate future sales and it is used to spread fixed costs over a larger number of units, which has the effect of increasing earnings in the current period (Roychowdhury, 2006; Cohen & Zarowin, 2010). The following model estimates coefficients used to measure abnormal production costs (APROD):

$$PROD_t = \beta_0 + \beta_1\left(\frac{1}{A_{t-1}}\right) + \beta_2\left(\frac{REV_t}{A_{t-1}}\right) + \beta_3\left(\frac{\Delta REV_t}{A_{t-1}}\right) + \beta_4\left(\frac{\Delta REV_{t-1}}{A_{t-1}}\right) + \varepsilon_t$$

Where:

$PROD_t$	cost of goods sold in year *t* plus change in inventory in year *t*, deflated by A_{t-1};
ΔREV_{t-1}	sales revenue in year *t-1* less sales in year *t-2;*
	All other variables are as previously defined.

The three measures of RAM: ACFO, ADISEXP, and APROD are the residuals from the above three regressions using CFO_t, $DISEXP_t$ and $PROD_t$ as the dependent variables. A negative value for ACFO and ADISEXP as well as a positive value of APROD is in line with income-increasing manipulation (Roychowdhury, 2006).

3.2.2 – Performance Measure Variables

Prior surveys of directors' compensation in the UK show that firms in the FTSE350 index use multiple performance measures for bonus compensation including financial measures such as earnings per share and non-financial measures. On the other hand, equity-based compensation is mostly based on total shareholder returns and/or earnings per share measures (KPMG, 2014).

Our analysis is based on the use of non-financial as well as financial performance measures in only bonus compensation. Our first test variable, F&NFPM, is defined as follows:

F&NFPM	A dummy variable that takes the value of 1 if the firm uses NFPMs along with FPMs in CEO bonus contracts, and 0 otherwise.

We also use principal component analysis (PCA) to group the performance measures into distinct categories. The purpose of PCA is to reduce the dimensionality of a data set which consists of a large number of variables, that may be inter-related, by transforming them to a new set of variables or factors which are uncorrelated (Jolliffe, 2002). We identify two discrete factors and using quartimax rotation, (orthogonal transformation of original factors – Jolliffe, 2002) are able to interpret the factors as a strategic, 'long-term' factor and a 'short-term' financial factor. The loadings on the rotated factors are presented in Table 5.

-Table 5-

As can be seen from Table 5, the performance measures that load heavily on factor 1 are: customer-related factors (loading = 0.39) and employee-related factors (loading = 0.33). These measures appear to be related to the long-term success of the firm (e.g. Ittner & Larcker, 1998) and so we term it 'LONG-TERM'. We find that earnings measures load heavily on factor 2 (loading = 0.36); these are financial and are concerned with the short-term performance of the firm and we term this factor 'SHORT-TERM'. Therefore, we construct the following two factors as alternative classification of performance measures:

LONG-TERM	Factor determined by principal component analysis with high loadings on customer-related factors and employee-related factors;
SHORT-TERM	Factor determined by principal component analysis with high loading on earnings measures.

Our final variable relates to the extent of use of non-financial performance measures in bonus compensation and is constructed as follows:

High_NFPM	A dummy variable that takes the value of 1 if the weight placed on NFPMs in CEO bonus contracts is equal to or greater than that placed on FPMs, and 0 otherwise.

In robustness tests, we also use the actual weights used by firms on NFPMs.

3.2.3 – Empirical Research Models

The following models are employed to test hypothesis 1:

$$EM_{it} = \beta_0 + \beta_1 F\&NFPM_{it} + \beta_2 LTIPR_{it} + \beta_3 INSTOWN_{it} + \beta_4 BLOCK_{it} + \beta_5 CCIND_{it} + \beta_6 BSIZE_{it} + \beta_7 BIND_{it} + \beta_8 DUALITY_{it} + \beta_9 AUDCIND_{it} + \beta_{10} LEV_{it} + \beta_{11} SIZE_{it} + \beta_{12} GROWTH_{it} + \beta_{13} CFO_{it} + \beta_{14} ROA_{it} + \beta_{15} REG + \beta_{16} NON\_EARN + \beta_{17} CRISIS_{it} + \sum \beta_k INDUSTRY_{it} + \varepsilon_{it} \quad (1)$$

$$EM_{it} = \beta_0 + \beta_1 LONG\text{-}TERM_{it} + \beta_2 SHORT\text{-}TERM_{it} + \beta_3 LTIPR_{it} + \beta_4 INSTOWN_{it} + \beta_5 BLOCK_{it} + \beta_6 CCIND_{it} + \beta_7 BSIZE_{it} + \beta_8 BIND_{it} + \beta_9 DUALITY_{it} + \beta_{10} AUDCIND_{it} + \beta_{11} LEV_{it} + \beta_{12} SIZE_{it} + \beta_{13} GROWTH_{it} + \beta_{14} CFO_{it} + \beta_{15} ROA_{it} + \beta_{16} REG + \beta_{17} NON\_EARN + \beta_{18} CRISIS_{it} + \sum \beta_k INDUSTRY_{it} + \varepsilon_{it} \quad (2)$$

We also use the following model to test hypothesis 2:

$$EM_{it} = \beta_0 + \beta_1 High\_NFPM_{it} + \beta_2 LTIPR_{it} + \beta_3 INSTOWN_{it} + \beta_4 BLOCK_{it} + \beta_5 CCIND_{it} + \beta_6 BSIZE_{it} + \beta_7 BIND_{it} + \beta_8 DUALITY_{it} + \beta_9 AUDCIND_{it} + \beta_{10} LEV_{it} + \beta_{11} SIZE_{it} + \beta_{12} GROWTH_{it} + \beta_{13} CFO_{it} + \beta_{14} ROA_{it} + \beta_{15} REG + \beta_{16} NON\_EARN + \beta_{17} CRISIS_{it} + \sum \beta_k INDUSTRY_{it} + \varepsilon_{it} \quad (3)$$

Where:

EM_{it} Earnings management variable for firm *i* in year *t*, including: DAC_{it}, $ACFO_{it}$, $ADISEXP_{it}$ and $APROD_{it}$;

All other variables are defined in Appendix II.

The test variables for hypothesis 1 are: F&NFPM, LONG-TERM, SHORT-TERM and for hypothesis 2, it is: High_NFPM. In line with the hypotheses, lower income-increasing manipulation would be confirmed if the coefficient β_1 in models 1 and 2 is negative for DAC and APROD but positive for ACFO and ADISEXP. For testing hypothesis 2, we expect the coefficient β_1 in model 3 also to be negative for DAC and APROD but positive for ACFO and ADISEXP.

We include the following control variables. First, we include the ratio of long-term incentive pay to total pay, LTIPR, given that incentives provided in long-term incentive pay differ from that in short-term pay. Prior research finds the use of discretionary accruals is higher in firms with higher equity incentives pay (Cheng &

Warfield, 2005; Bergstresser & Philippon, 2006).[4] On the other hand, firms with more long-term incentive plans have lower levels of earnings management (Richardson & Waegelein, 2002).

We also include ownership variables representing institutional ownership (INSTOWN) and blockholder ownership (BLOCK) as they have a restraining effect on earnings management by monitoring executives' behaviour (Hartzell & Starks, 2003). The monitoring effect is also controlled by the internal governance variables, compensation committee independence (CCIND), board size (BSIZE), board independence (BIND), CEO-chairman duality (DUALITY), and audit committee independence (AUDCIND) (e.g. see Schiehll & Bellavance, 2009 and Li et al, 2012). Firm performance is controlled by ROA and CFO and, following Dechow et al. (1995) and Healy & Wahlen (1999), leverage (LEV) is used as a proxy for debt covenant violation. In line with previous research, we use additional control variables such as firm size (SIZE) (Bartov, 1993) and growth prospects (GROWTH) (Carcello et al. 2006).

We also include the variable, REG, to control for the effect of regulation in specific industries, which can incentivise earnings management (Healy & Wahlen, 1999). Regulated industries include the utilities and telecommunications industries, which tend to use more non-financial performance measures (Ittner et al., 1997) as well as the oil and gas industry (Hall, 1993). Furthermore, we include NON_EARN to proxy for the impact of financial performance measures other than earnings-based ones. For example, some firms include financial operational efficiency measures, cash flows or revenue growth, which are not expected to provide incentives to manage earnings. We also include CRISIS, which indicates the impact of the financial recession period on the level of accruals and other financial measures. Finally, we control for industry membership.

[4] Cheng & Warfield (2005) measure equity incentives as the number of option grants, unexercisable options, exercisable options, restricted stock grants and ownership during or at the end of the year; Bergstresser & Philippon (2006) measure equity incentives through the dollar change in the value of a CEO's stock and option holdings. Given that UK firms rarely make payments in the form of options, we focus on annual grants of shares and other long-term pay as reported in the annual report.

For all regressions, we calculate the Breusch-Pagan/Cook-Weisberg statistic to check for heteroscedasticity. This tests the null hypothesis that the variance of the residuals is constant. We find all p-values to be greater than 10% indicating no issues with heteroscedasticity.

4 – Empirical Results

4.1 – Descriptive Statistics

Table 6 presents the descriptive statistics for variables used in the analyses. Discretionary accruals (DAC) and the three real activities management variables (ACFO, ADISEXP and APROD), as expected, all have a mean value of zero. Both DAC and APROD have positive median values, but ACFO and ADISEXP are both negative. This means that there is an income-increasing trend using all earnings management variables.

-Table 6-

Descriptive statistics for the main test variables show that 62% of firms in the sample use both FPM and NFPM (mean F&NFPM = 0.62). However, only 7% of the firms give equal or more weight to NFPM (mean High_NFPM = 0.07). The mean for both LONG-TERM and SHORT-TERM factors are 0.00 but the range is larger for SHORT-TERM factors (minimum = -0.44 and -3.78 and maximum = 3.79 and 1.37 for LONG-TERM and SHORT-TERM, respectively).

Institutional ownership is shown as 29%, which is consistent with prior research (e.g. 22% by Peasnell et al., 2005; 29% by Ozkan, 2007). The blockholder statistics (BLOCK) indicate that 52% of shareholders in the sample firms have more than 10% ownership. Indicating high compliance with the UK Corporate Governance Code (Financial Reporting Council, 2010), compensation committee independence averages 96%. Average board size is low in the UK and the indicated figure of 9 is consistent to that found by other researchers (e.g. Beekes et al. 2004; Habbash et al. 2013b). The UK Corporate Governance Code (Financial Reporting Council, 2010) requires that at least 50% of board members should be non-executives. The figure shown in the table is an average of 60%.

Although the UK Corporate Governance Code (Financial Reporting Council, 2010) states that no executive should hold dual positions in a company (e.g. CEO and Chairman), the sample includes 2% duality. This is because data from years prior to 2010 is included. The code also sets out standards of good practice regarding audit committee independence and the sample shows 99% compliance with this. Even though the code is advisory, where firms have to 'comply or explain', most firms have chosen to comply with its requirements (e.g. MacNeil & Li, 2006; Arcot et al., 2010).

Leverage is on average 60% which is similar to that found in prior studies (e.g. 49% in Ball & Shivakumar, 2004 and 57% in Kuang & Qin, 2009). In our sample, the mean value of size is 3.25. This is lower than the 8.26 found by Liang & Shan (2013). The growth variable (market-to-book-ratio) has a mean value of 4.81. Cash from operations (CFO) has a mean value of 0.13 which is more favourable than that shown by Peasnell et al. (2005) of –0.12. The mean value of 7.95 for return on assets (ROA) is higher than the figure of 6.13 found by Gregg et al. (2012).

The regulated industries constitute 15% of the sample (mean REG is 0.15) and on average firms that use financial performance measures that are not related to earnings are 49% (mean NON_EARN is 0.49). Finally, about a third of the sample is within the financial crisis years (mean CRISIS is 0.30).

4.2 – Results of Hypothesis 1

Hypothesis 1 expects less income-increasing earnings management by executives when performance is assessed by both financial and non-financial measures. Table 7 presents the coefficients (p-values) from model (1), using earnings management proxies as dependent variables. F&NFPM is the test variable representing firms' usage of performance measures. As predicted by H1, the results suggest that when executives' performance is assessed by both financial and non-financial performance measures, there is a lower level of discretionary accruals (coefficient of F&NFPM in column 1 is -0.004, p-value 0.02), indicating that executives engage in less income-increasing manipulation when these two performance measures are in place. This is in line with the findings reported in Ibrahim & Lloyd (2011) in a US sample. Furthermore, the magnitude difference in the UK appears to be smaller (coefficient in

Ibrahim & Lloyd = -0.062 as compared to -0.004 in our study). Table 7 also shows a significant positive relationship between abnormal discretionary expenses and F&NFPM (coefficient 0.068 and p-value 0.03). This indicates that when firms employ both FPMs and NFPMs to appraise managers' performance, there is less income-increasing manipulation through the use of discretionary expenses. This may be because NFPMs are more closely related to long-term performance and therefore the current focus on earnings is lower. However, we do not find any significant evidence that other forms of real activities such as abnormal cash from operations (coefficient 0.008 and p-value 0.99) and APROD (coefficient 0.007 and p-value 0.86) differ between firms that use only FPMs and those that use both FPMs and NFPMs to assess executives' performance.

We do not test for the substitute/complementarity effect of accrual and real activities management (e.g. Zang, 2012) but the evidence points to both accruals and discretionary expenses being used as mechanisms to manage earnings in firms that do not include non-financial performance measures in a complementary way. Furthermore, the time period in this study includes only years following regulatory reforms (e.g. Higgs, 2003) that may have caused a shift from accrual to real activities management. These findings have never been documented in prior research. Therefore, we conclude that earnings management incentives through both accrual and real activities management are lowered when firms employ non-financial performance measures in their CEO compensation.

In terms of the control variables, the results in column 1 of Table 7, using DAC as dependent variable indicate that the only governance variable that is associated with discretionary accruals is the audit committee independence (AUDCIND) (coefficient 0.041 and p value 0.07). Surprisingly, it does not appear to have a constraining effect. However, most firms have independent audit committees as can be seen in Table 6. Furthermore, firms with more growth prospects and higher performance have higher discretionary accruals (coefficient = 0.000, 0.001, and 0.000 for GROWTH, CFO, and ROA, respectively, significant at the 5%, 1% and 1% levels, respectively). We also find

that regulation (REG) and the inclusion of non-earnings financial performance measures (NON_EARN) are not associated with discretionary accruals.

In the remaining columns of Table 7, we find that compensation committee independence, board size, firm size, firm performance and the non-earnings financial performance factors are associated with abnormal cash from operations. However, only firm performance and the financial crisis period variables are associated with abnormal discretionary expenses.

-Table 7-

Table 8 presents the results from model 2 including the factors: LONG-TERM and SHORT-TERM as test variables. We find that less income-increasing manipulation through accruals is associated with the use of long-term performance measures (coefficient on LONG-TERM in column 1 is -0.009 and p-value is 0.03), even after controlling for long-term incentive pay (coefficient on LTIPR is -0.014 and p-value is 0.03). We do not find any consistent significant results for the real activities management variables. For example, ADISEXP is the expected sign (coefficient is 0.008) and is close to significance (p-value is 0.18). However, ACFO is negative and significant (coefficient is -0.007 and p-value is 0.06) which indicates income-increasing behaviour. This could be an indication of a substitute effect between accrual and real activities management. We interpret our results as evidence that the long-term horizon effect of performance measures discourages earnings management behaviour only through discretionary accruals. There is no prior evidence on the horizon effect of bonus compensation on earnings management. However, Richardson & Waegelein (2002) show that firms that have long-term incentive plans in their total compensation have a lower incidence of earnings management, which is in line with the horizon effect. None of the coefficients of SHORT-TERM are significant in any of the regressions.

With regard to control variables, column 1 of Table 8 shows that the only corporate governance variable that is associated with discretionary accruals is AUDCIND (coefficient = 0.056 and p-value 0.10), which suggests that it has no limiting effect on earnings management. In addition, GROWTH, CFO and ROA are all significant at the

1% level, showing that these variables are associated with higher discretionary accruals. No association is found between discretionary accruals and REG and NON_EARN. Finally, the association between crisis years (CRISIS) and discretionary accruals is significant at 1% (coefficient = 0.004, p value 0.00).

We also find an association at varying levels of significance between ACFO, ADISEXP and APROD and several governance and other control variables such as CCIND, SIZE, and CFO.

-Table 8-

4.3 – Results of Hypothesis 2

Hypothesis 2 proposes that there is less income-increasing earnings management when performance is assessed by giving equal or more weight to non-financial performance measures. Table 9 presents the coefficients (p-values) from model (3) using earnings management proxies as the dependent variable. The results suggest that when the weight placed on NFPMs in CEO bonus contracts is equal to or greater than FPMs, executives engage in less income-increasing manipulation through discretionary accruals. There is a significant negative association between High_NFPM and discretionary accruals (coefficient -0.012 and p-value 0.02). This is in line with findings in HassabElnaby et al. (2010) in a US sample. However, the coefficient in our study (-0.012) is smaller than that found in the US (coefficient in HassabElnaby et al., 2010 is -0.046). No prior studies have documented the association between the use of weighted NFPMs in CEO bonus contracts and real activities management.

-Table 9-

Interestingly, the use of all three RAM techniques as dependent variables reveals that firms that give equal or higher weight to NFPMs in executive compensation contracts have lower real activities management in the form of abnormal discretionary expenses and overproduction but more income-increasing manipulation through abnormal cash from operations. The results indicate that there is a significant negative relation between High_NFPM and abnormal cash from operations (coefficient in column 2 for

High_NFPM is -0.009 and p-value 0.04). A significant positive association is found with regard to abnormal discretionary expenses and High_NFPM (coefficient 0.113 and p-value 0.06). In addition, the results show that there is a marginally significant negative association between APROD and High_NFPM (coefficient -0.061 and p-value 0.08).

In terms of the control variables, column 1 shows that LTIPR is associated with discretionary accruals (coefficient = -0.012, p value = 0.04). The only corporate governance variable that is associated with discretionary accruals is AUDCIND (coefficient = 0.046 and p-value 0.10), which suggests that it has no limiting effect on earnings management. Variables associated with discretionary accruals are GROWTH, CFO and ROA, with significance levels of 10 %, 1% and 1% respectively. No association is found between discretionary accruals and REG, NON_EARN and CRISIS.

The remaining three columns of Table 9 show that there is an association at varying levels of significance between LTIPR, INSTOWN, CCIND, SIZE, GROWTH, CFO and ACFO. Significant association at varying levels is found between LTIPR, CCIND, BIND, SIZE, CFO, ROA, NON_EARN and ADISEXP and there is also a significant association between LTIPR, DUALITY, LEV, SIZE, NON_EARN and APROD.

Overall, the findings indicate that firms that place higher weights on non-financial performance measures have lower income-increasing accrual manipulation. We also find lower income-increasing real activities management through abnormal discretionary expenses and overproduction for firms that place more weight on non-financial measures. This is in line with a complementary effect between accrual and real activities management.

4.4 – Robustness Tests

In this section, we provide results of robustness tests for both hypotheses. First, prior research on governance and firm performance indicate that both are inter-related (e.g. Wintoki et al., 2012). Therefore, tests of hypotheses 1 and 2 may be impacted by endogeneity in the regressions. Following the approach used by Coles et al. (2008) and

McKnight & Weir (2009), we use an instrumental variables (IV) two-stage regression (2SLS) analysis, using lagged values of endogenous variables as instruments. The following variables are regarded as endogenous: INSTOWN, BLOCK, CCIND, BSIZE, BIND, DUALITY and AUDCIND. The 2SLS results (Untabulated) are in line with the main results for both hypotheses. This indicates that the results do not appear to be affected by endogeneity.

Second, we use an alternative measure of magnitude of reliance on non-financial performance measures to test hypothesis 2. Specifically, we use the actual weights placed on NFPMs. We construct the following variable:

High_NFPM(W)	Actual weight (percentage) placed on non-financial performance measures in CEO bonus contracts for firms that use these, and 0 otherwise.

The results, in Table 10, indicate that the higher the weight placed on NFPMs, the lower the level of income-increasing accrual manipulation (coefficient is -0.008, p-value is 0.05), in line with the main results. There is also evidence of less income-increasing real activities management through discretionary expenses (coefficient of ADISEXP is 0.005, p-value is 0.06) and overproduction (coefficient of APROD is -0.039, p-value is 0.10). However, we still find evidence of income-increasing real activities management using sales (coefficient of ACFO is -0.046, p-value is 0.06). The effect of the control variables is similar to that in the main tests.

-Table 10-

Our third robustness test examines the income-increasing vs. income-decreasing incentive effect of the bonus. Healy (1985) argues that when earnings are below the threshold for receiving any bonus, executives decrease current earnings to increase their chances of meeting targets for future years. Murphy & Jensen (2011) confirm these findings and add that executives may further reduce earnings by taking a big bath when the target bonus level is reached so that the target is not raised even higher for the next year. However, Holthausen et al. (1995) do not find any evidence that managers manipulate earnings downwards when the minimum target has not been reached. Given alternative incentives for income-increasing and income-decreasing

manipulation, following Bergstresser & Philippon (2006), we use the absolute values of discretionary accruals. We also use the absolute values of real activities management measures.

The results in table 11 are in line with the main results of hypothesis 1 indicating that firms that use non-financial performance measures in their bonus compensation have lower levels of absolute discretionary accruals (coefficient of F&NFPM in column 1 is -0.014 and p-value is 0.01). We interpret this as evidence of lower incentives for earnings management when bonus contracts include non-financial performance measures. However, the absolute value of abnormal discretionary expenses are higher when firms rely on non-financial performance measures (coefficient of F&NFPM is 0.156, p-value is 0.05), which is in not in line with lower earnings manipulation.

-Table 11-

The results of hypothesis 2 are also in line with the main results with respect to discretionary accruals. In table 12, we find that firms that rely more on non-financial performance measures in bonus compensation have lower levels of absolute discretionary accruals (coefficient of High_NFPM in column 1 is -0.042, p-value is 0.03). We also find lower abnormal cash from operations (coefficient of High_NFPM in column 2 is -0.039, p-value is 0.05) and overproduction (coefficient is -0.099, p-value is 0.09), which is in line with less income manipulation. However, there is a higher level of abnormal discretionary expenses (coefficient is 0.096, p-value is 0.04). Therefore, the results are consistent with lower levels of income manipulation through accruals and some but not all real activities, when firms rely more on non-financial performance measures in their bonus contracts.

-Table 12-

5 – Conclusion

This paper examines the importance of the choice of performance measures in CEO bonus contracts in constraining earnings management both through accruals and real activities management. Data on performance measures used in CEO bonus contracts is hand-collected from a sample of FTSE350 Index firms over the period 2005-2014.

Performance measures are classified as financial and non-financial measures with particular emphasis on the degree of weighting given to both FPMs and NFPMs. We find that less income-increasing manipulation through discretionary accruals and expenses takes place when FPMs and NFPMs are used together to assess executive performance. In addition, we find that if equal or more weight is given to NFPMs the amount of earnings management by discretionary accruals and real activities management through discretionary expenses and overproduction is lower.

We also classify the performance measures using principal components analysis into two factors which are interpreted as: long-term and short-term factors. We find that the use of long-term factors is associated with less income-increasing manipulation through discretionary accruals. We present several robustness tests which provide similar results.

Our research stresses the importance of including diverse performance measures to assess executive performance and we show that the use of a mix of FPMs and NFPMs as well as long-term and short-term measures is more effective and benefits all stakeholders. Our findings should be helpful to regulators in refining the present rules regarding the choice of performance measures. Compensation committees should also benefit from a recommendation that they should consider the importance of NFPMs and long-term performance measures in CEO bonus contracts when drafting executive compensation contracts.

As with all research, the study has some limitations. Firstly, the sample is limited by the availability of relevant data regarding performance measures in company financial statements and reports. It would be useful if regulatory changes could make full disclosure mandatory, particularly with regard to FTSE350 Index firms. Furthermore, it is impossible to extend this study to smaller firms as the availability of data is even more restricted. In addition, the omission of financial companies means that the study is not fully representative of all FTSE350 Index companies.

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Appendix I: Examples of Performance Measures

Performance measure	Explanation	Example
Financial:		
Earnings measures	Measures related to earnings e.g. earnings per share, profit before tax, earnings before interest, tax and depreciation	'Financial measures (e.g. *profit before tax*) will represent the majority of bonus' EasyJet, annual report 2013. (emphasis added)
Operational efficiency	Measures related to efficient use of resources e.g. whether within budget or costs	'indicators of the full and *effective use of resources*.' Royal Dutch Shell annual report, 2011. (emphasis added)
Other financial measures	Financial-based measures that cannot be classified into any of the other financial categories or when financial measures are not clear	'26% based on *strategic financial* performance measures.' Tesco plc annual report, 2013. (emphasis added)
Non-financial:		
Customer-related factors	Measures related to development of customer relations or satisfaction	'In 2007, the potential 100% cash bonus comprised … 20% to key business targets covering land, sales, *customer service* and Health and Safety.' Redrow plc annual report, 2007. (emphasis added)
Safety and environment	Measures related to safety of employees or environmental factors	'reinforcing *safety and risk management*, and rebuilding trust' BP plc annual report, 2010. (emphasis added)
Strategic factors	Measures related to strategies of firm	'The performance measures for Executive Directors are based on a mix of …. non-financial goals as follows: R&D investment, Development of product portfolio, Succession Planning, Employee engagement, Compliance' Smith and Nephew plc, annual report 2012.
Other qualitative factors	Non-financial-based measures that cannot be classified into any of the other non-financial categories or when non-financial measures are not clear	'annual targets were based on annual and three year increases in profit, earnings per share (EPS) growth, cash generation and certain *non-financial targets*' Rotork plc annual report, 2012. (emphasis added)

Appendix II: Definition of Variables

Variable	Symbol	Definition
Discretionary accruals	DAC	Estimated by Jones (1991) model with the Dehow et al. (1995) and Kothari et al. (2005) modifications
Abnormal cash from operations	ACFO	Estimated by the Roychowdhury (2006) model
Abnormal discretionary expenses	ADISEXP	Estimated by the Roychowdhury (2006) model
Abnormal production costs	APROD	Estimated by the Roychowdhury (2006) model
Financial and non-financial performance measures	F&NFPM	A dummy variable that takes the value of 1 if the firm uses NFPMs along with FPMs in CEO bonus contracts, and 0 otherwise
Long-term performance measures	LONG-TERM	Factor determined by principal component analysis with high loadings on customer-related factors and employee-related factors
Short-term performance measures	SHORT-TERM	Factor determined by factor analysis with high loading on earnings measures
Extent of use of non-financial performance measures	High_NFPM	A dummy variable that takes the value of 1 if the weight placed on NFPMs in CEO bonus contracts is equal to or greater than that placed on FPMs, and 0 otherwise
Long-term incentive pay ratio	LTIPR	Value of long-term incentive pay divided by total pay, where long-term incentive pay includes value of pay through save-as-you-earn plans, share-option plans, long-term-incentive plans and share-incentive plans during the year
Institutional ownership	INSTOWN	The number of shares held by the institutional investors divided by the issued number of shares by the company
Blockholder ownership	BLOCK	A dummy variable that takes the value of 1 if the company has outside shareholders holding 10% or more of the company's outstanding shares, and 0 otherwise
Compensation committee independence	CCIND	A dummy variable that takes the value of 1 if the compensation committee is exclusively composed of independent, non-executive directors, and 0 otherwise
Board size	BSIZE	The number of directors on the board
Board independence	BIND	The proportion of independent, non-executive directors to the total number of board directors
CEO-chairman duality	DUALITY	A dummy variable that takes the value of 1 if the positions of CEO and chairman are held by the same person, and 0 otherwise
Audit committee independence	AUDCIND	The proportion of independent, non-executive directors on the audit committee to the total number of directors on the audit committee

Leverage	LEV	The ratio of total debt to total assets
Size	SIZE	The natural logarithm of total assets at year-end
Growth	GROWTH	Market-to-book-ratio
Cash from operations	CFO	Cash from operations divided total assets at the beginning of the year
Return on assets	ROA	Net income divided by total assets at the beginning of the year
Regulated industries	REG	A dummy variable that takes the value of 1 if the observation belongs to a firm in the following regulated industries: utilities, oil and gas, and telecommunications, and 0 otherwise
Non-earnings performance measures	NON_EARN	A dummy variable that takes the value of 1 if the firm includes financial performance measures other than earnings-based measures, and 0 otherwise
Financial-crisis period	CRISIS	A dummy variable that takes the value of 1 if the data are from 2007-2009, and 0 otherwise
Industry effect	INDUSTRY	Dummy variables to control for industry effect

Table 1: Sample Selection Criteria

Description	Number of Firms
Initial sample (FTSE350 as at 31st December 2014)	352
Exclude:	
Financial Firms	(112)
Firms that do not have two years presence in FTSE350	(21)
Firms that do not have three years of financial data	(10)
Firms where performance measure data is not available	(21)
Final Sample	**188**

Table 2: Industry Distribution of Sample

Industry	Number of Firms	Firm-Year Observations	Percentage of Sample
Oil & Gas	10	85	5.35%
Basic Materials	17	152	9.57%
Industrials	57	482	30.35%
Consumer Goods	23	198	12.47%
Health Care	9	82	5.16%
Consumer Services	48	413	26.01%
Telecommunications	7	52	3.27%
Utilities	7	50	3.15%
Technology	10	74	4.66%
Full Sample	**188**	**1,588**	**100.00%**

Industry sectors are determined using the Industry Classification Benchmark (ICB) which was introduced by FTSE in 2005.

Table 3: Use of FPM and NFPM in sample by year

Year	Firm-year observations	Percentage of firms with NFPM	Mean weight used	
			FPM	NFPM
2005	130	48%	90%	10%
2006	135	49%	89%	11%
2007	146	51%	87%	13%
2008	148	51%	87%	13%
2009	152	60%	85%	15%
2010	161	61%	86%	14%
2011	171	65%	85%	15%
2012	177	72%	83%	17%
2013	181	73%	82%	18%
2014	187	74%	82%	18%
Full sample	**1,588**	**62%**	**85%**	**15%**

Table 4: Panel A: Yearly Distribution of Performance Measures

Financial Performance Measures

	Earnings Measures*	Mean Weight (%)	Return on Accounting Measures**	Mean Weight (%)	Operational Efficiency	Mean Weight (%)	Cash flows	Mean Weight (%)	Revenue Growth	Mean Weight (%)	Other Financial	Mean Weight (%)
2005	126	72%	3	25%	7	29%	21	32%	13	33%	23	19%
2006	131	73%	3	25%	8	25%	22	29%	13	32%	24	21%
2007	142	71%	7	31%	9	24%	23	26%	13	34%	24	22%
2008	144	69%	7	31%	8	25%	27	27%	14	34%	24	23%
2009	148	65%	6	28%	9	26%	31	29%	16	30%	28	24%
2010	157	65%	8	32%	11	28%	35	25%	19	32%	29	25%
2011	167	63%	12	32%	12	29%	41	25%	21	28%	37	27%
2012	173	59%	13	32%	11	26%	47	20%	25	28%	44	28%
2013	177	57%	11	29%	11	26%	51	20%	31	28%	47	30%
2014	183	56%	10	29%	9	29%	54	20%	34	28%	42	30%
N	**1,548**		**80**		**95**		**352**		**199**		**322**	

Non-financial Performance Measures

	Customer-Related Factors	Mean Weight (%)	Safety and Environment	Mean Weight (%)	Employee-Related Factors	Mean Weight (%)	Quality	Mean Weight (%)	Strategic Factors	Mean Weight (%)	Individual Factors	Mean Weight (%)	Other Qualitative	Mean Weight (%)
2005	5	17%	12	25%	3	20%	1	25%	24	31%	57	24%	10	24%
2006	7	15%	14	23%	4	20%	1	25%	25	33%	58	23%	11	21%
2007	8	18%	16	18%	4	20%	1	25%	29	32%	62	22%	11	22%
2008	8	18%	14	16%	5	20%	1	25%	30	30%	61	22%	11	21%
2009	9	16%	19	13%	7	15%	1	25%	31	29%	66	22%	12	23%
2010	12	16%	21	13%	7	15%	1	25%	31	28%	64	22%	14	23%
2011	15	13%	25	14%	8	15%	1	25%	32	29%	70	22%	15	23%
2012	17	22%	28	14%	7	10%	1	25%	42	29%	75	23%	17	23%
2013	17	21%	28	14%	7	10%	1	25%	45	27%	80	23%	15	23%
2014	18	21%	28	14%	9	10%	1	25%	45	28%	78	23%	14	23%
N	**116**		**205**		**61**		**10**		**334**		**671**		**130**	

Panel B: Industrial Distribution of Performance Measures

Financial Performance Measures

	Earnings Measures*	Mean Weight (%)	Return on Accounting Measures**	Mean Weight (%)	Operational Efficiency	Mean Weight (%)	Cash flows	Mean Weight (%)	Revenue Growth	Mean Weight (%)	Other Financial	Mean Weight (%)
Oil & Gas	61	52%	11	23%	40	37%	26	25%	11	21%	30	19%
Basic Materials	136	56%	9	40%	30	30%	6	24%	0	0%	37	29%
Industrials	487	69%	31	35%	0	0%	159	26%	28	26%	72	35%
Consumer Goods	179	59%	24	25%	8	18%	63	24%	37	24%	45	58%
Health Care	78	50%	0	0%	7	25%	14	18%	16	36%	32	14%
Consumer Services	411	70%	5	33%	9	10%	38	17%	67	27%	64	21%
Telecommunications	56	34%	0	0%	0	0%	32	27%	21	31%	5	23%
Utilities	57	61%	0	0%	1	35%	8	21%	0	0%	4	20%
Technology	83	57%	0	0%	0	0%	6	11%	19	39%	33	23%
N	**1,548**		**80**		**95**		**352**		**199**		**322**	

Non-Financial Performance Measures

	Customer-Related Factors	Mean Weight (%)	Safety and Environment	Mean Weight (%)	Employee-Related Factors	Mean Weight (%)	Quality	Mean Weight (%)	Strategic Factor	Mean Weight (%)	Individual Factors	Mean Weight (%)	Other Qualitative	Mean Weight (%)
Oil & Gas	0	0%	52	21%	10	16%	0	0%	60	33%	33	30%	14	21%
Basic Materials	5	18%	60	11%	0	0%	0	0%	55	44%	49	25%	5	22%
Industrials	7	29%	21	9%	0	0%	10	25%	85	22%	213	22%	26	8%
Consumer Goods	29	15%	19	16%	7	15%	0	0%	37	25%	51	23%	10	40%
Health Care	8	15%	0	0%	9	19%	0	0%	19	27%	53	19%	13	20%
Consumer Services	29	12%	16	14%	11	10%	0	0%	58	27%	166	22%	63	11%
Telecommunications	24	21%	6	12%	8	12%	0	0%	14	26%	28	32%	0	0%
Utilities	13	32%	23	20%	16	16%	0	0%	8	30%	40	20%	9	40%
Technology	1	10%	8	17%	0	0%	0	0%	18	23%	38	18%	0	0%
N	**116**		**205**		**61**		**10**		**334**		**671**		**130**	

*Earnings measures include earnings per share (EPS), earnings before interest, tax, depreciation and amortization (EBITDA) and operating profit.

**Return on accounting measures include return on assets (ROA), return on equity (ROE) and return on capital employed (ROCE).

Table 5: Factor Loadings using Principal Component Analysis
(N=1,588)

Performance Measure	Factor 1	Factor 2
Customer-related Factors	**0.390**	0.137
Employee-related Factors	**0.330**	0.081
Operational Efficiency	0.204	-0.199
Safety and Environment	0.143	-0.163
Other Qualitative	0.008	0.005
Earnings Measures	-0.041	**0.355**
Return on Accounting Measures	0.016	0.048
Quality	0.025	0.047
Revenue Growth	0.000	-0.072
Cash flows	0.042	-0.079
Individual Factors	-0.023	-0.094
Strategic Factors	0.009	-0.165
Other Financial	-0.045	-0.174

Table 6: Descriptive Statistics
(N = 1,588)

Variable	Mean	Median	St. Dev.	Min.	Max.
DAC	0.00	0.00	0.05	-0.45	0.38
ACFO	0.00	-0.01	0.07	-0.46	0.40
ADISEXP	0.00	-0.07	0.37	-1.20	1.78
APROD	0.00	0.02	0.42	-2.05	1.84
F&NFPM	0.62	1.00	0.49	0.00	1.00
LONG-TERM	0.00	-0.28	0.75	-0.44	3.79
SHORT-TERM	0.00	0.17	0.68	-3.78	1.37
High_NFPM	0.07	0.00	0.26	0.00	1.00
LTIPR	0.29	0.20	0.19	0.00	0.91
INSTOWN	0.29	0.28	0.16	0.00	0.72
BLOCK	0.52	1.00	0.50	0.00	1.00
CCIND	0.96	1.00	0.18	0.00	1.00
BSIZE	8.99	9.00	2.32	5.00	16.00
BIND	0.60	0.60	0.12	0.00	1.00
DUALITY	0.02	0.00	0.12	0.00	1.00
AUDCIND	0.99	1.00	0.08	0.00	1.00
LEV	0.60	0.61	0.21	0.01	0.77
SIZE	3.25	3.21	0.67	1.71	5.20
GROWTH	4.81	2.74	9.62	0.00	44.30
CFO	0.13	0.11	0.14	0.00	0.61
ROA	7.95	6.77	10.39	-6.42	17.44
REG	0.15	0.00	0.36	0.00	1.00
NON_EARN	0.49	0.00	0.50	0.00	1.00
CRISIS	0.30	0.00	0.46	0.00	1.00

Definitions of all variables can be found in appendix II.

Table 7: Regression Results of Earnings Management Variables and Use of NFPMs and FPMs
(N=1,588)

		Accrual-based EM	Real Activities-based EM		
	Expected Sign	**DAC**	**ACFO**	**ADISEXP**	**APROD**
F&NFPM	+ / -	-0.004	0.008	0.068	0.007
		(0.019)**	(0.992)	(0.026)**	(0.859)
LTIPR	+ / -	-0.005	-0.005	0.005	-0.009
		(0.232)	(0.569)	(0.946)	(0.863)
INSTOWN	-	0.023	-0.041	0.151	-0.028
		(0.411)	(0.236)	(0.115)	(0.856)
BLOCK	-	-0.003	-0.001	0.002	-0.007
		(0.546)	(0.572)	(0.962)	(0.679)
CCIND	-	-0.006	-0.021	0.033	-0.031
		(0.256)	(0.018)**	(0.654)	(0.619)
BSIZE	-	0.002	-0.002	0.002	-0.003
		(0.656)	(0.079)*	(0.772)	(0.716)
BIND	-	0.004	-0.007	-0.004	0.006
		(0.932)	(0.523)	(0.957)	(0.938)
DUALITY	-	0.002	-0.014	-0.018	-0.049
		(0.851)	(0.323)	(0.271)	(0.541)
AUDCIND	-	0.041	0.026	-0.162	0.079
		(0.072)*	(0.636)	(0.256)	(0.733)
LEV	+ / -	0.003	-0.004	-0.019	0.041
		(0.636)	(0.642)	(0.716)	(0.549)
SIZE	+ / -	0.000	-0.004	0.016	0.002
		(0.723)	(0.061)*	(0.341)	(0.915)
GROWTH	+ / -	0.000	0.000	0.002	0.001
		(0.049)**	(0.101)	(0.856)	(0.639)
CFO	+ / -	0.001	0.006	0.063	0.069
		(0.000)***	(0.000)***	(0.000)***	(0.649)
ROA	+ / -	0.000	-0.000	-0.001	0.001
		(0.000)***	(0.000)***	(0.000)***	(0.211)
REG	+ / -	-0.001	-0.002	0.021	-0.019
		(0.622)	(0.659)	(0.310)	(0.622)
NON_EARN	+ / -	-0.001	-0.049	-0.026	-0.001
		(0.829)	(0.083)*	(0.731)	(0.941)
CRISIS	+ / -	-0.016	0.005	0.036	-0.036
		(0.103)	(0.136)	(0.086)*	(0.309)
_cons		-0.047	0.051	0.071	-0.051
		(0.266)	(0.129)	(0.722)	(0.749)
INDUSTRY		Yes	Yes	Yes	Yes
R^2		27.42%	33.29%	19.29%	7.56%
Wald Chi^2		542.29***	869.34***	156.42***	36.49*

*, **, *** indicate significance levels of 10%, 5%, and 1% respectively.
Definitions of all variables can be found in appendix II.

Table 8: Regression Results of Earnings Management Variables and Use of Long-term and Short-term Factors
(N=1,588)

		Accrual-based EM	Real Activities-based EM		
	Expected Sign	**DAC**	**ACFO**	**ADISEXP**	**APROD**
LONG-TERM	+ / -	-0.009	-0.007	0.008	-0.011
		(0.031)**	(0.062)*	(0.182)	(0.232)
SHORT-TERM	+ / -	0.005	-0.006	0.022	-0.025
		(0.263)	(0.333)	(0.556)	(0.243)
LTIPR	+ / -	-0.014	-0.007	0.009	-0.014
		(0.031)**	(0.077)*	(0.911)	(0.824)
INSTOWN	-	-0.005	-0.024	0.072	-0.016
		(0.726)	(0.079)*	(0.265)	(0.432)
BLOCK	-	0.004	-0.007	0.010	-0.008
		(0.511)	(0.522)	(0.078)*	(0.644)
CCIND	-	-0.006	-0.026	0.021	-0.021
		(0.236)	(0.011)**	(0.057)*	(0.653)
BSIZE	-	0.001	-0.002	-0.001	-0.006
		(0.796)	(0.623)	(0.781)	(0.751)
BIND	-	0.004	-0.016	-0.012	-0.003
		(0.869)	(0.456)	(0.054)*	(0.984)
DUALITY	-	-0.004	-0.018	-0.007	-0.055
		(0.772)	(0.047)**	(0.912)	(0.053)*
AUDCIND	-	0.056	0.016	-0.175	-0.022
		(0.097)*	(0.723)	(0.346)	(0.561)
LEV	+ / -	0.006	-0.006	-0.023	0.031
		(0.686)	(0.641)	(0.718)	(0.057)*
SIZE	+ / -	-0.003	-0.006	0.021	0.003
		(0.911)	(0.065)*	(0.000)***	(0.006)***
GROWTH	+ / -	-0.003	0.000	-0.004	0.002
		(0.000)***	(0.000)***	(0.823)	(0.651)
CFO	+ / -	0.003	0.008	-0.034	0.526
		(0.000)***	(0.000)***	(0.000)***	(0.081)*
ROA	+ / -	0.000	-0.000	-0.001	0.001
		(0.000)***	(0.241)	(0.000)***	(0.003)***
REG	+ / -	0.004	-0.004	0.023	-0.012
		(0.526)	(0.512)	(0.322)	(0.252)
NON_EARN	+ / -	-0.003	-0.008	0.071	-0.096
		(0.149)	(0.086)*	(0.456)	(0.351)
CRISIS	+ / -	0.004	0.006	0.041	-0.031
		(0.000)***	(0.172)	(0.136)	(0.332)
Intercept		-0.045	0.033	0.079	-0.032
		(0.013)**	(0.000)***	(0.586)	(0.132)
INDUSTRY		Yes	Yes	Yes	Yes
R^2		17.45%	19.23%	11.29%	11.16%
Wald Chi^2		26.11**	31.42**	17.42*	8.56*

*, **, *** indicate significance levels of 10%, 5%, and 1% respectively.
Definitions of all variables can be found in appendix II.

Table 9: Regression Results of Earnings Management Variables and Extent of Use of NFPMs
(N=1,588)

		Accrual-based EM	Real Activities-based EM		
	Expected Sign	DAC	ACFO	ADISEXP	APROD
High_NFPM	+ / -	-0.012	-0.009	0.113	-0.061
		(0.018)**	(0.041)**	(0.056)*	(0.081)*
LTIPR	+ / -	-0.012	-0.006	0.005	-0.010
		(0.041)**	(0.051)*	(0.096)*	(0.095)*
INSTOWN	-	-0.002	-0.026	0.056	-0.046
		(0.962)	(0.075)*	(0.156)	(0.586)
BLOCK	-	0.004	-0.002	0.000	-0.006
		(0.565)	(0.541)	(0.112)	(0.712)
CCIND	-	-0.011	-0.036	0.046	-0.036
		(0.246)	(0.023)**	(0.031)**	(0.623)
BSIZE	-	-0.002	-0.002	-0.004	-0.004
		(0.623)	(0.562)	(0.685)	(0.656)
BIND	-	0.001	-0.007	-0.006	-0.005
		(0.861)	(0.581)	(0.051)*	(0.966)
DUALITY	-	-0.002	-0.016	-0.014	-0.051
		(0.827)	(0.354)	(0.862)	(0.026)**
AUDCIND	-	0.046	0.014	-0.188	0.085
		(0.097)*	(0.675)	(0.312)	(0.681)
LEV	+ / -	0.004	-0.003	-0.005	0.086
		(0.621)	(0.672)	(0.876)	(0.012)**
SIZE	+ / -	-0.002	-0.005	0.018	0.004
		(0.836)	(0.056)*	(0.000)***	(0.000)***
GROWTH	+ / -	-0.000	0.002	-0.000	0.000
		(0.076)*	(0.091)*	(0.863)	(0.681)
CFO	+ / -	-0.001	0.006	-0.052	-0.056
		(0.000)***	(0.006)***	(0.006)***	(0.114)
ROA	+ / -	0.000	-0.000	-0.004	0.004
		(0.000)***	(0.223)	(0.002)***	(0.235)
REG	+ / -	0.002	-0.002	0.031	-0.015
		(0.516)	(0.662)	(0.341)	(0.561)
NON_EARN	+ / -	-0.012	-0.026	-0.027	-0.003
		(0.126)	(0.123)	(0.092)*	(0.061)*
CRISIS	+ / -	-0.005	0.006	0.056	-0.026
		(0.311)	(0.176)	(0.134)	(0.333)
Intercept		-0.043	0.456	0.071	-0.046
		(0.156)	(0.156)	(0.629)	(0.856)
INDUSTRY		Yes	Yes	Yes	Yes
R^2		53.11%	32.33%	24.56%	13.11%
Wald Chi^2		823.11***	476.61***	156.31**	46.11*

*, **, *** indicate significance levels of 10%, 5%, and 1% respectively.
Definitions of all variables can be found in appendix II.

Table 10: Regression results of Earnings Management Variables and Extent of Use of NFPMs using actual weights
(N=1,588)

		Accrual-based EM	Real Activities-based EM		
	Expected Sign	DAC	ACFO	ADISEXP	APROD
High_NFPM (W)	+ / -	-0.008	-0.046	0.005	-0.039
		(0.049)**	(0.059)*	(0.061)*	(0.096)*
LTIPR	+ / -	-0.008	-0.004	-0.006	-0.007
		(0.026)**	(0.032)**	(0.091)*	(0.061)*
INSTOWN	-	0.054	0.000	-0.002	-0.001
		(0.091)*	(0.256)	(0.065)*	(0.439)
BLOCK	-	0.000	-0.035	0.134	-0.006
		(0.096)*	(0.469)	(0.046)**	(0.134)
CCIND	-	-0.045	-0.021	0.135	0.042
		(0.135)	(0.542)	(0.034)**	(0.359)
BSIZE	-	-0.009	-0.012	-0.002	0.046
		(0.043)**	(0.136)	(0.212)	(0.281)
BIND	-	-0.116	0.036	0.156	0.231
		(0.016)**	(0.542)	(0.063)*	(0.256)
DUALITY	-	-0.015	-0.004	-0.021	0.326
		(0.231)	(0.023)**	(0.521)	(0.010)***
AUDCIND	-	-0.055	0.546	0.342	-0.146
		(0.236)	(0.186)	(0.352)	(0.352)
LEV	+ / -	-0.016	-0.096	0.036	0.156
		(0.263)	(0.143)	(0.325)	(0.033)**
SIZE	+ / -	0.002	0.000	0.000	0.000
		(0.000)***	(0.000)***	(0.000)***	(0.000)***
GROWTH	+ / -	0.000	0.000	0.001	0.000
		(0.000)***	(0.000)***	(0.031)**	(0.210)
CFO	+ / -	0.126	0.279	0.549	0.263
		(0.000)***	(0.000)***	(0.000)***	(0.052)*
ROA	+ / -	0.000	0.000	0.000	0.000
		(0.000)***	(0.067)*	(0.000)***	(0.151)
REG	+ / -	0.002	-0.000	0.016	-0.015
		(0.242)	(0.279)	(0.244)	(0.566)
NON_EARN	+ / -	-0.023	-0.017	-0.036	-0.002
		(0.096)*	(0.121)	(0.081)*	(0.082)*
CRISIS	+ / -	0.023	-0.025	-0.006	-0.016
		(0.001)***	(0.127)	(0.526)	(0.636)
_cons		0.256	-0.132	-0.291	0.338
		(0.055)*	(0.000)***	(0.112)	(0.216)
INDUSTRY		Yes	Yes	Yes	Yes
R^2		53.36%	38.27%	31.42%	11.37%
Wald Chi^2		751.23***	554.49***	156.39*	42.26*

*, **, *** indicate significance levels of 10%, 5%, and 1% respectively.
High_NFPM (W) is the actual weight (percentage) placed on non-financial performance measures in CEO bonus contracts for firms that use these, and 0 otherwise.
Definitions of all remaining variables can be found in appendix II.

Table 11: Regression Results of Absolute Values of Earnings Management Variables and Use of NFPMs and FPMs
(N=1,588)

		Accrual-based EM	Real Activities-based EM		
	Expected Sign	Abs(DAC)	Abs(ACFO)	Abs(ADISEXP)	Abs(APROD)
F&NFPM	+ / -	-0.014	0.006	0.156	0.044
		(0.012)**	(0.756)	(0.052)*	(0.857)
LTIPR	+ / -	-0.007	-0.001	0.004	-0.029
		(0.351)	(0.676)	(0.771)	(0.849)
INSTOWN	-	0.032	-0.020	0.150	-0.029
		(0.532)	(0.242)	(0.141)	(0.872)
BLOCK	-	-0.004	-0.004	0.003	-0.006
		(0.519)	(0.539)	(0.952)	(0.637)
CCIND	-	-0.004	-0.021	0.022	-0.032
		(0.219)	(0.012)**	(0.649)	(0.621)
BSIZE	-	0.003	-0.007	0.004	-0.003
		(0.659)	(0.090)*	(0.771)	(0.742)
BIND	-	0.003	-0.011	-0.003	0.008
		(0.851)	(0.516)	(0.931)	(0.956)
DUALITY	-	0.003	-0.014	-0.069	-0.051
		(0.845)	(0.320)	(0.259)	(0.549)
AUDCIND	-	0.049	0.011	-0.251	0.071
		(0.087)*	(0.746)	(0.180)	(0.755)
LEV	+ / -	0.002	-0.004	-0.020	0.049
		(0.564)	(0.611)	(0.711)	(0.581)
SIZE	+ / -	0.002	-0.003	0.040	0.003
		(0.656)	(0.056)*	(0.332)	(0.942)
GROWTH	+ / -	0.001	0.000	0.001	0.001
		(0.050)**	(0.152)	(0.851)	(0.639)
CFO	+ / -	0.009	0.004	0.044	0.081
		(0.000)***	(0.000)***	(0.000)***	(0.679)
ROA	+ / -	0.000	-0.000	-0.001	0.001
		(0.000)***	(0.000)***	(0.000)***	(0.271)
REG	+ / -	-0.004	-0.004	0.019	-0.014
		(0.662)	(0.652)	(0.251)	(0.661)
NON_EARN	+ / -	-0.021	-0.051	-0.044	-0.002
		(0.133)	(0.087)*	(0.751)	(0.924)
CRISIS	+ / -	-0.043	0.004	0.050	-0.051
		(0.139)	(0.268)	(0.067)*	(0.331)
_cons		-0.031	0.056	0.062	-0.072
		(0.256)	(0.163)	(0.737)	(0.751)
INDUSTRY		Yes	Yes	Yes	Yes
R^2		45.39%	53.59%	19.29%	8.56%
Wald Chi^2		467.72***	732.32***	188.56***	26.21*

*, **, *** indicate significance levels of 10%, 5%, and 1% respectively.
Abs(DAC), Abs(ACFO), Abs(ADISEXP), and Abs(APROD) are absolute values of DAC, ACFO, ADISEXP, and APROD, respectively.
Definitions of all variables can be found in appendix II.

Table 12: Regression results of Absolute Values of Earnings Management Variables and Extent of Use of NFPMs

(N=1,588)

		Accrual-based EM	Real Activities-based EM		
	Expected Sign	Abs(DAC)	Abs(ACFO)	Abs(ADISEXP)	Abs(APROD)
High_NFPM	+ / -	-0.042	-0.039	0.096	-0.099
		(0.029)**	(0.051)*	(0.044)**	(0.089)*
LTIPR	+ / -	-0.007	-0.009	0.004	-0.009
		(0.063)*	(0.066)*	(0.089)*	(0.069)*
INSTOWN	-	-0.001	-0.046	0.086	-0.066
		(0.956)	(0.089)*	(0.139)	(0.712)
BLOCK	-	0.002	-0.002	0.000	-0.016
		(0.579)	(0.582)	(0.121)	(0.762)
RMUCIND	-	-0.016	-0.046	0.056	-0.072
		(0.281)	(0.026)**	(0.046)**	(0.739)
BSIZE	-	-0.001	-0.001	-0.006	-0.005
		(0.656)	(0.562)	(0.656)	(0.744)
BIND	-	0.001	-0.008	-0.009	-0.005
		(0.926)	(0.571)	(0.052)*	(0.839)
DUALITY	-	-0.002	-0.029	-0.016	-0.076
		(0.851)	(0.336)	(0.852)	(0.061)*
AUDCIND	-	0.036	0.016	-0.186	0.022
		(0.091)*	(0.671)	(0.352)	(0.739)
LEV	+ / -	0.001	-0.005	-0.009	0.086
		(0.632)	(0.663)	(0.862)	(0.010)***
SIZE	+ / -	-0.000	-0.006	0.036	0.002
		(0.851)	(0.072)*	(0.001)***	(0.000)***
GROWTH	+ / -	-0.000	0.001	-0.000	0.000
		(0.076)*	(0.089)*	(0.856)	(0.712)
CFO	+ / -	-0.000	0.005	-0.052	-0.066
		(0.000)***	(0.000)***	(0.000)***	(0.112)
ROA	+ / -	0.000	-0.000	-0.001	0.001
		(0.000)***	(0.234)	(0.000)***	(0.329)
REG	+ / -	0.002	-0.002	0.034	-0.016
		(0.556)	(0.656)	(0.352)	(0.634)
NON_EARN	+ / -	-0.016	-0.051	-0.045	-0.003
		(0.125)	(0.236)	(0.136)	(0.156)
CRISIS	+ / -	-0.004	0.005	0.052	-0.036
		(0.336)	(0.175)	(0.163)	(0.459)
Intercept		-0.036	0.436	0.053	-0.036
		(0.156)	(0.196)	(0.652)	(0.734)
INDUSTRY		Yes	Yes	Yes	Yes
R^2		53.51%	42.39%	25.36%	09.10%
Wald Chi^2		923.29***	526.33***	223.96**	83.25*

*, **, *** indicate significance levels of 10%, 5%, and 1% respectively.

Abs(DAC), Abs(ACFO), Abs(ADISEXP), and Abs(APROD) are absolute values of DAC, ACFO, ADISEXP, and APROD, respectively.

Definitions of all variables can be found in appendix II.