

## **Forward-looking performance disclosure and earnings quality**

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# **FORWARD-LOOKING PERFORMANCE DISCLOSURE AND EARNINGS QUALITY**

## **Abstract**

We investigate the role of earnings quality in investor assessments of the credibility of forward-looking performance disclosures that managers provide in the narrative sections of the annual report. Our proxy for forward-looking disclosure is a self-constructed coded index of statements conveying information about future performance. We find that the expansiveness of these statements generally increases in a firm's earnings quality, consistent with forward-looking performance disclosures complementing high quality financial reporting systems. The abnormal returns associated with the unexpected element of these disclosures also increase in a firm's earnings quality, consistent with investors using earnings quality as a credibility signal. Further analysis distinguishing between the sources of earnings quality, shows that earnings quality serves as a credibility signal when it is predominately discretionary, i.e. informative of managerial incentives, rather than driven by intrinsic factors of the firm's economic environment.

## **FORWARD-LOOKING PERFORMANCE DISCLOSURE AND EARNINGS QUALITY**

### **I. INTRODUCTION**

We examine how earnings quality affects investors' reliance on voluntary forward-looking performance disclosures that managers provide in the narrative sections of the annual reports. Our proxy for forward-looking performance disclosure is an encoded index of statements about future performance included in the narrative sections. Prior research finds that these statements are associated with stock prices that are more informative about future earnings, suggesting that managers provide these disclosures to communicate their private information to the market. Regulators interest on the content of the narrative sections of the annual report has grown on the belief that these sections could improve the relevance of corporate reporting (Beattie et al. 2004). However, as forward-looking performance statements are not immediately verifiable or auditable and often contain price sensitive information, managers have incentives to make self serving disclosures that might reduce their credibility, e.g. release overly optimistic views of the future to maximize the value of their stock options, reduce the probability of bankruptcy or hostile takeovers, or reduce the cost of new equity capital. The risk of shareholder litigation might be less operative in this case as forward-looking disclosures in annual report narratives are usually qualitative. To guard against misleading disclosures, investors look for credibility signals. Viewing earnings quality as a proxy for the credibility of the earnings signal emanating from the financial statements, we examine whether investors assess the quality of reported earnings to infer the credibility of forward-looking performance disclosures.

Managers provide extensive voluntary disclosures in management discussion and analysis sections in the annual reports, referred to as the MD&A in most countries and the operating and financial review (OFR) in the UK, often extending to hundreds of pages. We focus on narrative sections of the annual report that include forward-looking information; the chairman's statement, financial highlights, summary results, chief executive's review, operating and financial reviews and the financial director's report. Forward-looking performance disclosure refers to information on current plans and forecasts that enable

shareholders, investors, and financial analysts to assess a company's future financial performance. The following examples illustrate the nature of forward-looking performance information in the annual report narratives:

*'Management is confident that, with the launch of its new division "The Film Factory at VTR", the company is now well placed to capture a large stake of these special effects commercials and feature film market which will ensure the company's continuing growth in profitability.'*(VTR Plc Annual Report and Accounts 1996).

*'This was achieved despite significant revenue investment in areas such as the Argos store card and new products at Experian, which will underpin future profits growth.'* Great Universal Stores PLC (2002).

In the above examples, the chairmen of VTR Plc and Great Universal Stores Plc make strong predictions about future earnings using mainly non-quantitative information. Beattie et al. (2004) develop a four-dimensional content analysis framework classifying disclosures according to their topic, time orientation (historical, forward-looking, non-time specific), financial/non financial focus, and quantitative/qualitative nature. While quantitative disclosure usually includes measures and changes, qualitative disclosures include facts and judgments. The authors observe that when it comes to forward-looking disclosures within the annual report narratives of UK firms, quantitative disclosures are rare. Further to their qualitative nature the above statements appear non-time specific as they don't refer to an explicit future time horizon. These two characteristics increase the attractiveness of these statements to managers as a tool to convey private information. Prior research shows that managers use these statements to 'bring the future forward' as the frequency of these disclosures increases the ability of the stock market to anticipate next period earnings (see Section II). We complement this line of research by exploring how investors assess the credibility of these forward-looking performance statements.

Following prior research examining the credibility of voluntary disclosure (e.g. Jennings 1987; Hutton et al. 2003; Mercer 2004; Gu and Li 2007), we define the credibility of forward-looking performance statements as the extent to which investors believe in the disclosure. A fundamental

determinant of disclosure credibility is the management's credibility as the credibility of any message relies on its source. Management's credibility reflects managers' ability to build a reputation for credible disclosure that increases the believability of their subsequent disclosures (Williams 1996). Assessing managerial credibility in management earnings forecasts is straightforward as investors can check the accuracy of prior projections through ex-post realizations in the firm's audited financial statements. Investors however cannot evaluate the precision of the signal emanating from the firm's record of forward-looking performance disclosures with similar accuracy, as these often contain qualitative future projections of unspecified time horizon (see Section III), for which it is difficult to trace ex-post realizations. Therefore when it comes to investors' assessments of the credibility of forward-looking performance disclosures, earnings quality becomes an important signal of management's credibility.

A key determinant of whether investors use earnings quality as a credibility signal is the association between earnings quality and disclosure of forward-looking performance statements. Analytical research provides conflicting predictions about how earnings quality might affect voluntary disclosure (see Section II). We endorse the strand of research that stresses the importance of the endogenous nature of information quality in providing high quality voluntary disclosures. Deliberating on the information of forward-looking performance statements in relation to the information in reported earnings, we develop two hypotheses; the first on the association between forward-looking performance statements and earnings quality and the second on the association between the perceived credibility of these statements and earnings quality.

To construct our coded index of forward-looking performance information in the annual reports we count the number of forward-looking performance statements disclosed in the narrative sections of annual reports using the scoring method of Hussainey et al. (2003). The index is then standardized using the total number of sentences in the annual report narratives. We accommodate the endogenous nature of forward-looking performance disclosures, exploring various factors that affect their frequency. Our measure of earnings quality is the common factor identified by factor analysis performed on three measures commonly used in the literature: accruals quality, the absolute value of abnormal accruals, and earnings volatility

(similar to Francis et al. 2008). As there is much noise in any measure of earnings quality, the common factor may not be a reliable measure of the quality of the financial reporting outcome. To mitigate the confounding effect of noise and circumvent this limitation, we focus on the variation of the measure attributed in business characteristics and managerial incentives. This is a novel feature of our research design.

The results of our initial analysis show that our earnings quality construct is associated with (i) innate features of the firm's operating environment, e.g. the operating cash cycle, firm size, sales volatility and intangible assets intensity, and (ii) managerial incentives, e.g. openness in prior forward-looking performance disclosures, achieving analyst expectations, equity issues, and growth. Focusing on the variation in the earnings quality construct driven by these factors, we find that forward-looking performance statements increase in a firm's earnings quality. Forward-looking performance statements further increase with financing needs, i.e. debt or equity issues, reporting of earnings declines, achieving of analyst expectations and growth, and decrease in a firm's size. Abnormal returns associated with the unexpected element of forward-looking performance statements increase in a firm's earnings quality, consistent with investors relying on assessments of the firm's earnings quality to infer the credibility of the management's forward-looking performance disclosures. In additional analysis we investigate the role of the source of the earnings quality and the potential indirect effect of forward-looking disclosures on investors' perceptions about reporting credibility. We find that investors condition on earnings quality when relying on forward-looking performance disclosures only when earnings quality is primarily discretionary, i.e. driven by managerial incentives. When earnings quality is less informative about managerial incentives and primarily driven from innate features of the firm's economic environment it no longer serves as a prerequisite for investors' reliance on forward-looking performance statements. In the later case the indirect effect of forward-looking performance disclosure appears to dominate, as they help investors re-assess the information in reported earnings.

Our study makes two main contributions. The first is to the literature examining the credibility of forward-looking disclosures. Prior studies in this area focus on investors' reliance on management

earnings forecasts (Williams 1996; Hirst et al. 1999; Hodge et al. 2000; Hutton and Stocken 2007). We focus on a less verifiable type of forward-looking disclosure, the forward-looking performance statements that managers provide in the annual report narratives, and probe the role of earnings quality. Our findings should be of interest to managers, market participants, policy-makers and regulators. For managers our results suggest that there is a benefit to maintaining a high quality reporting system, as then the market is more responsive to the forward-looking performance information included in the annual reports. For individual investors and analysts, our evidence offers reassurance that the market uses safeguards in relying in forward-looking disclosures. The insights are timelier for policy-makers and regulators. The UK government recently considered making an extensive OFR a statutory requirement. In the end the statutory requirement was abandoned, but the UK Accounting Standards Board (ASB) has published a new financial reporting standard that recommends the adoption of a revised OFR which is far more extensive than the previous version (ASB 2008) and recommends that firms focus on publishing balanced and comprehensive forward-looking information. The greatest risk in broadening the scope of forward-looking information in the OFR is that managers may exploit this latitude to make self-serving disclosures and mislead investors. Our results suggest that investors mitigate this risk by conditioning their reliance on forward-looking performance disclosure on the firm's reported earnings quality, especially when this is primarily informative about managerial incentives.

Our study also contributes to the arguably sparse literature on the information flow through the two most important communication channels in capital markets; firm's mandatory and voluntary disclosures. In the area of the interaction between earnings quality and voluntary disclosure, prior research provides controversial evidence depending on the type of voluntary disclosure examined and the earnings quality measured used. In developing our hypothesis about the association between forward-looking disclosures and earnings quality, we deliberate over the specific nature of these disclosures and the dominance of their direct or indirect effect on investors' perceptions. We also allow the association to vary with the source of the earnings quality. Our results show that investors' behavior differs depending on whether earnings quality is informative about managerial incentives versus intrinsic business characteristics. To our

knowledge, this is the first evidence to suggest that the association between voluntary disclosure and earnings quality is not linear, and concavity is due to the source of the earnings quality.

## **II. PRIOR RESEARCH AND HYPOTHESES DEVELOPMENT**

An established finding of prior research is that forward-looking disclosure is useful for predicting a firm's future financial status and performance (e.g. Tennyson et al. 1990; Clarkson et al. 1994; Bryan 1997; Smith and Taffler 2000). Gebbl and Zarowin (2002) and Lundholm and Myers (2002) find that information revealed by firms' disclosure activities is incorporated in current stock prices. Measuring voluntary disclosure through the AIMR-FAF ratings,<sup>1</sup> they find that firms with more informative voluntary disclosures have a higher amount of future earnings news reflected in their current returns. In their survey of US executives, Graham et al (2005) find that the predictability of future profitability is indeed an overarching theme for voluntary disclosure decisions. Hussainey et al. (2003) and Schleicher et al. (2007) provide consistent evidence for UK firms. They show that forward-looking performance disclosures in annual report narratives increase the degree which current share price movements anticipate future earnings changes. While this research suggests that forward-looking disclosures are relevant for decision making, the credibility issue arising from the non-verifiable nature of these disclosures has received limited attention in the literature.

Kothari et al. (2009) outline the credibility issue arising in analyzing management disclosures and predict credibility differences by its content, i.e. favorable versus unfavorable news. In addition to the content, prior research on the credibility of voluntary disclosure identifies managerial incentives as a key factor in disclosure credibility (for a review see Mercer 2004). This line of research however draws inferences mainly based on the analysis of quantitative and largely verifiable information disclosed by

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<sup>1</sup> Financial analysts produced the AIMR-FAF ratings by evaluating firms' disclosures along three dimensions: a) the detail of information disclosed in annual published reports b) the detail of information in quarterly reports and c) the responsiveness and openness of management to analyst questions. These ratings covered all the various disclosures made by firms, including verbal information given during analyst meetings and conference calls. Prior research using these ratings argues that it is not clear how analysts select firms to be included in the ratings, suggesting the existence of a strong bias towards the largest firms in each industry sector. Also the financial analysts federation discontinued the ratings in 1995.

management, the most common type being management earnings forecasts. The evidence suggests that investors and analysts (reasonably) rely more on management earnings forecasts when firms have provided accurate forecasts in the past (Williams 1996; Hirst et al. 1999; Hodge et al. 2000; Hutton and Stocken 2007). While the accuracy of management earnings forecasts is easily assessed through subsequent financial statements, forward-looking disclosures are not as easily verifiable. For this type of disclosure investors need to appraise alternative aspects of management's credibility. Consistent with this argument, recent evidence on managers' tone and uncertainty within earnings announcements suggests that investors' reliance on this soft non-verifiable information depends on factors related to the firm's information environment e.g. analyst and media coverage, forecast dispersion, and earnings quality (Demers and Vega 2009). Of the information environment parameters, we focus on earnings quality as it is a more primitive construct of information quality. As a signal of managements' credibility, earnings quality is costly as to maintain a high precision of the reporting outcome managers would need to invest on a high quality financial reporting system and powerful internal controls. They would also need to sacrifice the benefits associated with earnings management, e.g. a market reward for meeting analyst expectations, e.g. lower public scrutiny, higher job security, lower likelihood for takeover (see Graham et al.2005).

Whether investors rely on the quality of reported earnings to assess the credibility of forward-looking disclosure depends on how earnings quality affects the likelihood of forward-looking disclosure in the annual reports. Several theoretical studies on the effect of information quality on disclosure choices shed light into this association. Early work by Verrecchia (1983) and Diamond and Verrecchia (1991) shows that voluntary disclosure mitigates information asymmetry and improves the firm's information environment. Given that the firm's information environment affects directly the quality of reported earnings, the implication of this theoretical proposition is that voluntary disclosures is inversely associated with earnings quality, so that firms with poorer earnings quality disclose more to mitigate information asymmetry.<sup>2</sup> This implies a substitutive association between voluntary disclosure and earnings quality.<sup>3</sup>

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<sup>2</sup> Similar to Francis et al. (2008), we believe that earnings quality is causally related to information asymmetry. Consistent with this, empirical evidence provides evidence of positive association between measures of information

However, this intuition ignores the endogenous nature of voluntary disclosure; managers need to operate a high quality reporting system to be able to provide voluntary disclosures that investors would view as credible. Taking the issue of endogeneity into account, subsequent research by Dye (1985) and Verrecchia (1990) proposes that high information quality implies a lower threshold level for voluntary disclosure and therefore a higher likelihood, as investors treat such disclosure as more credible. The rationale is that as information quality increases, the likelihood of disclosure also increases as the market is more likely to perceive information withheld as bad news and discount the firm's value. This implies a positive, i.e. complementary, association between voluntary disclosure and information quality. In his concluding remarks however, Verrecchia (1990) notes that a complementary association between voluntary disclosure and information quality may not be unequivocal when risk is priced, as higher quality information conveyed voluntarily has a potential indirect effect of lowering the discount on the asset that the market imposes for uncertainty. This might raise the threshold of disclosure and therefore decrease its likelihood, consistent with a substitutive association.

Empirical studies probing the association between voluntary disclosure and information quality provide evidence consistent with both a substitutive and a complementary relation, depending on the disclosure and information quality measures chosen. Using a self-constructed disclosure index Francis et al. (2008) find a complementary association between disclosure and earnings quality. However, focusing on the disclosure component relating to the company's projected information, they find no evidence of a significant association with earnings quality. Using earnings volatility to measure information quality Imhoff (1978) finds that firms issuing earnings forecasts have less volatile earnings than non-forecast firms. Waymire (1985) finds that firms issuing earnings forecasts more frequently have less volatile

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asymmetry and measures of earnings quality. For example, Rajgopal and Venhatachalam (2006) and Ecker et al. (2006) document a significant association between measures of earnings quality (including accruals quality) and idiosyncratic returns volatility and informed trading scores (PINs). We also document a significant association between our accruals based measure of earnings quality and two information asymmetry constructs: the bid-ask spread and analyst forecast dispersion. Therefore the assumed link between information asymmetry and earnings quality is well-founded.

<sup>3</sup> Francis et al. (2008, 56-57) provide a detailed review of the two strands of this literature, interpreting a negative (positive) association between earnings quality and voluntary disclosure as a substitutive (complementary) association.

earnings relative to firms issuing such projections on an infrequent basis. On the other hand, Lang and Lundholm (1993) find that the AIMR-FAF ratings are decreasing in the correlation between earnings and returns, consistent with firms with less informative financial statements providing more voluntary disclosure. Similarly, using conference calls as a disclosure metric, Tasker (1998) documents an inverse relation between earnings informativeness and the likelihood that a firm uses a conference call. Focusing on a less verifiable type of voluntary disclosure, Demers and Vega (2009) find that net optimism<sup>4</sup> detected in soft information that managers disclose in earnings announcements is priced more for firms with lower quality accounting data, consistent with net optimism substituting for poor earnings quality.

Neither the analytical nor the empirical literature on the interaction between voluntary disclosure and earnings quality investigate the properties of different types of voluntary disclosure. An implicit or explicit assumption made in most of these studies is that mandatory and voluntary signals have a common underlying value (e.g. the firm's current financial status and performance); it is this feature that triggers the indirect effect of voluntary disclosure on investors' perceptions of earnings quality and therefore substitutability between voluntary disclosure and earnings quality. Even though this assumption holds for most supplementary voluntary disclosure, it is more weakly sustained for forward-looking disclosure. This is due to the different time orientation as forward-looking disclosure focuses on future performance, whereas earnings quality is assessed based on contemporaneous and historical performance. It is also due to the nature of forward-looking performance statements as they are predominately qualitative and often offer insights on future performance that may not be incorporated in contemporaneously reported earnings (e.g. expected returns from structural business changes, new divisions and segments, expansion plans etc., see Section III). If the correlation between forward-looking performance disclosure and earnings quality is indeed less likely to be driven by the common underlying value, a complementary association is more likely to prevail. We therefore form the following hypothesis,

**H1:** Forward-looking performance statements increase in a firm's earnings quality.

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<sup>4</sup> Demers and Vega (2009, p.9) define net optimism as language conveying praise, satisfaction and inspiration, net of language containing blame, hardship and denial detected within the soft information of the earnings announcements.

If issued to complement earnings quality, forward-looking disclosure increases in a firm's earnings quality and investors would regard such disclosures by firms with higher earnings quality as more credible. Therefore we form the following hypothesis on the association between the perceived credibility of forward-looking disclosure and earnings quality.

**H2:** The perceived credibility of forward-looking performance statements increases in a firm's earnings quality.

### **III. MEASUREMENT OF TEST VARIABLES**

#### **Forward-looking disclosure score**

Studies of voluntary disclosure use several proxies for firm's disclosure practices, including self constructed scores, scores generated by capital market participants (e.g. AIMR-FAF scores and Standard & Poor's S&P scores), management forecasts and conference calls. Most of the self constructed indices measure disclosures of supplementary or both supplementary and forward-looking information. Botosan (1997) and Francis et al. (2008) construct a disclosure index comprising four elements: summary of historical results (e.g. ratio analysis, industry trends, corporate strategy discussion), other financial measures (free cash flow, residual income, cost of capital), non-financial measures (number of employees, market share, units sold, unit selling price) and projected information (e.g. forecasted market share, cash flow forecast, profit and sales forecast, industry forecasts). Kothari et al. (2009) content analyze six types of management disclosures in SEC-mandated corporate reports, namely market and industry risk, firm risk, organizational risk, reputational risk, performance risk, and regulatory risk. They focus on the economic consequences of favorable versus unfavorable disclosures but do not distinguish these in terms of the time orientation. We construct a voluntary disclosure index that focuses exclusively on forward-looking performance information. This disclosure differs from management earnings forecasts as it often comprises qualitative non-time specific information instead of quantitative time-specific projections. As we focus on forward-looking performance information, externally generated scores would provide a noisy disclosure proxy, as they usually measure the firms' overall disclosure policies evident in annual and quarterly report

and conference calls. In addition to enabling us to focus on specific types of disclosures, a self constructed index gives us direct control over the sample selection criteria and the sample period, and the calculation of scores for all firm–years in the sample. Hence, it ensures a high degree of comparability across firms and over time. Our coding and construction process is also largely automated, allowing for a straightforward replication. A limitation of our score is that it does not take into account disclosures in presentations and conference calls. To mitigate concern over this limitation, we perform additional analysis controlling for contemporaneous news about the firm’s future profitability reflected analysts’ forecast revisions following the earnings announcement. Also, it is possible that the usefulness of different narrative sections of the annual report varies. If this limitation though has important empirical implications, it will reduce the power of our tests and work against our ability to document the perceived credibility of forward-looking performance disclosures.

To calculate disclosure scores we use the scoring methodology developed in Hussainey et al. (2003, p276-282). The authors automate the generation of disclosure scores for large samples of UK firms through the use *Nudist* text analysis software. *Nudist* is widely used by qualitative researchers to analyze interviews, speeches, newspaper articles and text documents. Within the annual reports we focus on the narrative sections as they are more likely to contain voluntary forward-looking performance predictions. Annual report narrative sections are those with at least one of the following headings: Financial Highlights, Summary Results, Chairman’s Statement, Chief Executive Officer’s Review, Operating and Financial Review, Financial Review, Financial Director’s Report, Finance Review, Business Review, and Operating Review. All other sections of the annual report are excluded from our analysis.

Our disclosure measure is the number of forward-looking performance sentences in the annual report narratives. We focus on performance indicators because Hussainey et al. (2003), Schleicher et al. (2007) and Hussainey and Walker (2009) find that these indicators improve the stock market’s ability to anticipate future earnings changes. Disclosure scores are calculated in three stages. The first stage requires the identification of all forward-looking statements in annual report narratives. In this stage, we electronically search annual report narrative sections using a list of forward-looking keywords. This list

includes the following thirty five key words: accelerate, anticipate, await, coming (financial) year(s), coming months, confidence (or confident), convince, (current) financial year, envisage, estimate, eventual, expect, forecast, forthcoming, hope, intend (or intention), likely (or unlikely), look forward (or look ahead), next, novel, optimistic, outlook, planned (or planning), predict, prospect, remain, renew, scope for (or scope to), shall, shortly, should, soon, will, well placed (or well positioned), year(s) ahead. We also include future year numbers in the list of forward-looking key words. The next stage in the calculation of performance disclosure scores is the identification of relevant performance related keywords. These keywords are identified from sell-side analysts' reports to proxy for the market's view about the firm's disclosure quality. For each forward-looking statement in analysts' reports, the key noun in the statements is identified. These keywords include: 'benefit', 'breakeven', 'budget', 'contribution', 'earnings', 'eps', 'loss', 'margin', 'profit', 'profitability', 'return' and 'trading'. Finally, we use QSR N6 to count the number of sentences that include at least one forward-looking keyword and one performance keyword. We do this by finding the intersections of the key word search and the topic search. Our forward-looking disclosure score, *FDSCORE*, is the number of these intersections divided by the total number of sentences in the annual report narrative sections and multiplied by 100. Using this procedure, *FDSCORE* is bounded by 0 and 100. Panel A of Table 1 summarizes the three stages of the index construction. We believe that our coding scheme is an improvement on binary coding<sup>5</sup> as it counts the frequency of forward-looking performance statements in the annual report narrative, not merely their existence. To this extent, *FDSCORE* captures the expansiveness of forward-looking information on future performance contained in the annual report narratives.

Evaluating the success of their scoring methodology in identifying forward-looking information, Hussainey et al. (2003) compare the classifications of the *Nudist* automated search to a manual inspection of the discussion sections of 50 randomly selected annual reports and find that *Nudist* identifies 86% of the cases correctly. The remaining 14% are misclassified with Type I and II errors of 12% and 2%. Most

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<sup>5</sup> For each of the elements included in the disclosure scores a binary scheme codes each element as existing (value equals one) or not (value equals zero), e.g. the firm either discloses a profit forecast or not.

errors occur when *Nudist* misses forward-looking information, but any further additions to the forward-looking keywords would increase the Type II error. On the firm level the Pearson and Rank correlations between the *Nudist* score and the index constructed by manual inspection are calculated at 0.96 and 0.95.

To evaluate further the validity of *FDSCORE*, we randomly select a sample of 140 forward-looking performance statements from UK annual reports across our sample period. Panel B of Table 1 presents some of these statements to shed light on their content. The statements contain mainly qualitative information about future performance often referring to expected returns from a) new business segments and divisions; b) expansion programs; c) restructuring and investment programs; d) mergers and acquisitions; e) development programs f) investments in technology; g) exploring growth opportunities; h) new customer contracts; and g) increased capacity and efficiency. In these statements, consistent with the evidence of Bujaki et al. (1999), Clarkson et al. (1992), Clarkson et al. (1994), and Clatworthy and Jones (2003) good news appears to dominate bad news. Of the randomly selected sample statements, 95 percent contain good news about the future. Only a few of these statements contain a mixture of good and bad news. Within these statements the bad news component refers to current or past events, leading to the good news component with the forward-looking perspective. A second observation is that the statements contain predominately qualitative information about the future with no reference to a specific time horizon. Consistent with the evidence of Beattie et al. (2004), only 1 percent of the random sample statements are quantitative in nature and a minority contains time-specific projections.

### **Earnings quality**

Given the wide range of metrics for earnings quality we use a combined measure based on the common factor score (*CFEQ*) from three earnings quality metrics: accruals quality (*AQ*), absolute abnormal accruals ( $|AA|$ ), and earnings variability ( $\sigma EARN$ ), similar to Francis et al. (2008).<sup>6</sup> The first two measures focus on accruals, specifically how accruals map into firm fundamentals. We use an accruals quality metric based on Dechow and Dichev's (2002) model, which focuses on the association between

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<sup>6</sup> Appendix A provides detailed definitions of all variables.

current accruals and prior, current and future cash flows. Following McNichols' (2002) discussion we also consider change in revenues as an additional explanatory variable. We further control for operating performance (Kothari et al. 2005) and extend the model to account for the role of accruals in asymmetrically timely loss recognition (Ball and Shivakumar 2006) as follows:

$$\begin{aligned} \frac{WCA_{it}}{A_{i,t-1}} = & a_0 + a_1 \frac{CFO_{it-1}}{A_{i,t-1}} + a_2 \frac{CFO_{it}}{A_{i,t-1}} + a_3 \frac{CFO_{it+1}}{A_{i,t-1}} + a_4 \frac{\Delta CR_{it}}{A_{i,t-1}} + a_5 ROA_{i,t-1} \\ & + a_6 \frac{\Delta CFO_{it}}{A_{i,t-1}} + a_7 I_{\Delta CFO_{it}} + a_8 \frac{\Delta CFO_{it}}{A_{i,t-1}} \times I_{\Delta CFO_{it}} + e_{i,t} \end{aligned} \quad (1)$$

where  $WCA$  is working capital accruals,  $\Delta CR$  is the change in revenue less the change in receivables and  $I_{\Delta CFO_{it}}$  equals one if the annual change in operating cash flows,  $\Delta CFO_{it}$ , is negative, 0 otherwise. We focus on the working capital element of accruals (changes in receivables, inventory and payables), as it is more likely to reflect errors stemming from the features of firm's operating environment and managerial incentives to manage earnings than non-current accruals (e.g. depreciation, amortization).<sup>7</sup> This is because working capital accruals are directly related to the volatility of the firm's operations and involve a higher degree of judgment in their estimation (Sloan 1996; Subramanyam 1996; Thomas and Zhang 2000; Dechow and Dichev 2002). With  $\Delta CFO$  capturing current year earnings news,  $I_{\Delta CFO_{it}}$  and  $\Delta CFO_{it} \times I_{\Delta CFO_{it}}$  convert equation (1) into a piecewise linear model accommodating the asymmetric recognition of accrued (unrealized) losses. The firm- and year-specific residuals of equation (1),  $AA$ , form the basis for an *inverse measure of accruals quality*,  $AQ$ .  $AQ$  is the standard deviation of  $AA$  estimated over years  $t-4$  through  $t$ ,  $AQ = \sigma(\hat{e}_{it})$ . Larger standard deviations of the residuals indicate poorer accruals quality. The second earnings quality measure is based on the absolute value of abnormal accruals generated by equation (1),  $|AA|$ . For comparability with the other earnings quality measures, we average  $AA$  by firm over years  $t-4$

<sup>7</sup> We re-calculate the common factor for earnings quality based on total accruals. To measure abnormal total accruals we replace  $WCA$  in equation (1) with total accruals and augment the equation with gross property plant and equipment ( $PPE$ ). Our core results remain unaltered using this alternative earnings quality metric. However consistent with our argument, we find that the total accruals based measure of earnings quality is more weakly associated with proxies for managerial incentives included in the earnings quality model (see Section IV).

through  $t$ . Higher values of average  $|AA|$  indicate poorer earnings quality. The third earnings quality measure is the firm-specific volatility of reported earnings (Dichev and Tang 2008).  $\sigma EARN$  is the standard deviation of the firm's earnings over years  $t-4$  through  $t$ . We define earnings as earnings before extraordinary and exceptional items, scaled by lagged total assets. Higher values of  $\sigma EARN$  indicate poorer earnings quality. As  $CFEQ$  is the common factor of the three earnings quality metrics higher (lower) values indicate poor (good) earnings quality.

#### IV. METHODOLOGY

##### Tests of the relation between forward-looking performance disclosures and earnings quality

In our first set of tests we investigate whether there is a complementary association between a firm's earnings quality and forward-looking performance disclosures. Given the ordering of our variables, a complementary association between a firm's earnings quality and the expansiveness of its forward-looking performance disclosures (H1a) translates into a negative association between  $CFEQ$  and  $FDSCORE$ . Our tests of H1 condition on firm characteristics that prior literature identifies as related to voluntary disclosure (e.g. Lang and Lundholm 1993; Healy et al. 1999; Baber et al. 2006; Lapointe-Antunes et al. 2006; Butler et al. 2007). We model forward-looking performance disclosures as a function of the firm's information environment, financing needs, contemporaneous earnings news, proprietary costs, size, growth and year and industry effects as follows

$$\begin{aligned}
 FDSCORE_{it} = & \beta_0 + \beta_1 CFEQ_{it} + \beta_2 SPREAD_{it} + \beta_3 TRADEVOL_{it} + \beta_4 NANAL_{it} + \beta_5 DISPERSION_{it} \\
 & + \beta_6 FINANCING_{it} + \beta_7 MBE_{it} + \beta_8 POS\Delta EARN_{it} + \beta_9 PROFIT_{it} + \beta_{10} ZSCORE_{it} \\
 & + \beta_{11} ROA_{it} + \beta_{12} PROPRIETARY_{it} + \beta_{13} SIZE_{it} + \beta_{14} BTM_{it} + YEAR_t + INDUSTRY_t + e_{it}
 \end{aligned} \tag{2a}$$

We first include  $FDSCORE_{t-1}$  as evidence suggests that firms' disclosures tend to be 'sticky' across years (Bushee et al. 2003; Skinner 2003; Graham et al. 2005). If according to H1 forward-looking performance statements increase in earnings quality, we expect  $\beta_1$  to be negative. We include four additional proxies for a firm's information environment: a)  $SPREAD$  is the average bid-ask spread during the year; b)

*TRADEVOL* is an indicator of abnormal trading volume capturing the increased demand for information for investment decision-making; c) *NANAL* is the number of analysts following the firm capturing the information demands of the investment community and d) *DISPERSION* is the dispersion of analyst earnings forecasts during the year capturing the market's uncertainty about how the content of firms' financial reports translates into firm value.<sup>8</sup> We include a measure of changes in financial structure, i.e. an indicator of debt or equity issues (*FINANCING*), as managers disclose more information to outside investors when obtaining internal or external financing to increase confidence on the firms' ability to generate future cash flows and obtain financial capital as cost-effectively as possible (Core, 2001). We control for firms that meet or beat the analyst forecast outstanding at the earnings announcement date (*MBE*), and firms that earnings increases (*POSΔEARN*) or profits (*PROFIT*), as Bagnoli and Watts (2007) show that if the financial report contains sufficiently bad news the manager discloses more private information to mitigate investors' downward response to a negative earnings surprise. Similarly in their survey of US chief financial officers Graham et al. (2005) find that firms that miss analyst expectations and last year earnings spend additional time justifying their failure and rebuilding credibility with the market about their future prospects. Also Schleicher et al. (2007) find that loss firms provide more informative forward-looking performance statements in their annual report narratives. Return on assets, *ROA*, controls for operating performance, and the industry concentration ratio (*PROPRIETARY*) for proprietary costs. As a further control for proprietary costs and any remaining firm-specific factors that could affect disclosures (e.g. public visibility) we include firm size. As a control for growth we include the book to market ratio (*BTM*). Finally year and industry dummies account for differences in disclosure practices across years and industries. Botosan and Harris (2000) show that firms in the same industry tend to follow similar disclosure policies.

In equation (2a) we need to consider the implications of the endogenous nature of earnings quality and the measurement error involved in our measure. Our earnings quality measures reflects both intentional

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<sup>8</sup> Bagnoli and Watts (2007) show that the market's uncertainty about how the content of firms' financial reports translates into firm value is a fundamental determinant of voluntary disclosure.

and unintentional errors in accruals, i.e. errors stemming from the innate features of the firm's economic environment and management's incentives to manage earnings. We expect both sources of earnings quality to affect the propensity and perceived credibility of forward-looking performance disclosures. Our construct however also contains measurement error, i.e. accruals noise that is unrelated to the firms' business model and managers' incentives. To mitigate the confounding effects of measurement error, we first model our earnings quality construct on a set of factors affecting intrinsic earnings quality that prior literature has identified (Dechow and Dichev 2002; Francis et al. 2005) and a set of managerial incentives capturing discretionary earnings quality as follows

$$\begin{aligned}
CFEQ_{it} = & \delta_0 + \delta_1 SIZE_{it} + \delta_2 \sigma CFO_{it} + \delta_3 \sigma SALES_{it} + \delta_4 CYCLE_{it} + \delta_5 LOSSES_{it} + \delta_6 IINTENSITY_{it} \\
& + \delta_7 CINTENSITY_{it} + \delta_8 AFDScore_{it-1} + \delta_9 MBE_{it} + \delta_{10} POS\Delta EARN_{it} \\
& + \delta_{11} PROFIT_{it} + \delta_{12} SEO_{it} + \delta_{13} ZSCORE_{it} + \delta_{14} BTM + YEAR_t + INDUSTRY_i + e_{it}
\end{aligned} \tag{2b}$$

Following Dechow and Dichev (2002) and Francis et al. (2005), we add seven innate factors affecting accruals quality: firm size, standard deviation of cash flows ( $\sigma CFO$ ), standard deviation of revenues ( $\sigma SALES$ ), length of the operating cash cycle ( $CYCLE$ ), frequency of negative earnings realizations ( $LOSSES$ ), intangible assets intensity ( $IINTENSITY$ ) and capital intensity ( $CINTENSITY$ ). We expect smaller firms and firms with greater cash flow and sales volatility, longer operating cash cycles, a greater incidence of losses, and lower asset intensity to have lower earnings quality. We measure all these variables at the firm level using a rolling three year window. For discretionary accruals quality we first include a proxy for the openness of prior disclosures of forward-looking information ( $AFDScore_{t-1}$ ). Examining the association between management earnings forecasts and earnings management, Kasznik (1999) finds that firms have significantly more positive discretionary accruals in the forecasting years than in other years, consistent with managers using accruals to meet their prior earnings projections. If firms have been excessively open in their prior forward-looking disclosures they may distort reported earnings in the current period along the lines of their foreseen performance. In this case  $\delta_8$  would be positive. Another four variables proxy for managers' incentives to engage in earnings management:

*MBE*, *POSΔEARN*, *PROFIT*, *SEO*, *ZSCORE*, and *BTM*. Managers distort earnings quality when inflating earnings to avoid negative earnings surprises, declining profits and losses (Burgstahler and Dichev 1997; Degeorge et al. 1999; Peasnell et al. 2000; Gore et al. 2007; Athanasakou et al. 2009), to boost stock price during seasoned equity offerings (Teoh et al. 1998; Shivakumar 2000), to avoid debt covenant violations (Sweeney 1994; DeFond and Jiambalvo 1994; Dichev and Skinner 2002), or to sustain continuous growth (Skinner and Sloan 2002). To focus on the variation of our earnings quality measure that is due either on innate factors or managerial incentives and mitigate the effect of measurement error we estimate equations (2a) and (2b) in a system of structural equations using three stage least squares.<sup>9</sup>

### **Tests of the perceived credibility of forward-looking disclosures and earnings quality**

To test our second hypothesis, we examine how abnormal returns associated with forward-looking performance disclosures vary with earnings quality. We focus on the unexpected component of forward-looking performance disclosures as this component should contain the most price sensitive information and be reflected in abnormal returns. Initial analysis (Table 3) shows that the forward-looking disclosure score of the prior year annual report is the best expectation for this year's disclosure score, and accordingly we use a random walk model to calculate the unexpected forward-looking performance disclosure as  $\Delta FLDScore = FLDScore_t - FLDScore_{t-1}$ . We regress excess market adjusted returns on  $\Delta FLDScore$  including an interaction term between  $\Delta FLDScore$  and *CFEQ* and controlling for earnings news and other factors as follows:

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<sup>9</sup> Three-stage least squares requires a two stage method to be used on equation (2b) of the structural system to eliminate the random part of the endogenous variable, *CFEQ*, and the dependence between the residuals and the endogenous variable. The residuals of equation (2b) are then used to build the variance-covariance matrix of the residuals of equation (2a) and the coefficients of equation (2a) are estimated using quasi-generalized least squares. This method allows estimation of both equations of the system. We obtain similar results using instrumental variables (two-stage least squares) estimators. An important condition in running two or three stage least squares for the identification of equation (2a) is to ensure there are independent variables in equation (2b) that are not contained in equation (2a) and do not affect the dependent variable *FLDScore*. Correlation statistics in Appendix B show that two innate factors affecting earnings quality, operating cash cycle and cash flow volatility, are not significantly correlated with *FLDScore*.

$$\begin{aligned}
CAR_{i,-2d+2m} = & \gamma_0 + \gamma_1 \Delta FDSCORE_{it} + \gamma_2 \Delta FDSCORE_{it} \times CFEQ_{it} + \gamma_3 CFEQ_{it} + \gamma_4 SURP_{it} \\
& + \gamma_5 MBE_{it} + \gamma_6 PROFIT_{it} + \gamma_7 POS\Delta EARN_{it} + \gamma_8 BTM_{it} + \gamma_9 RISK_{it} + \gamma_{10} SIZE_{it} \\
& + \gamma_{11} ZSCORE_{it} + YEAR_i + INDUSTRY_i + e_{it}
\end{aligned} \quad (2c)$$

where  $CAR_{-2d+2m}$  is excess (market-adjusted) return cumulated from two days before the earnings announcement to two months following the earnings announcement date. We use this window as the annual reports of UK firms are released on average two months after the announcement of the results, yet the chairman's statement is usually released at the time of the announcement of the results. As the chairman's statement is a primary source of forward-looking information, its release allows investors to evaluate part of the forward-looking statements of the annual report narratives. If investors extract useful information from changes in forward-looking performance statements regardless of the firm's earnings quality,  $\gamma_1$  would be positive.  $\Delta FDSCORE \times CFEQ$  shows how the perceived credibility of forward-looking performance statements varies with the level of earnings quality. Given the ordering of our variables, if the perceived credibility of forward-looking statements increases in a firm's earnings quality (H2), we expect  $\gamma_2$  to be negative.<sup>10</sup>

Francis et al. (2008) argue that as a more primitive construct, earnings quality has a first order effect on investors' perceptions with voluntary disclosure having a second order effect. Therefore we add our proxy for earnings quality,  $CFEQ$ . To control for earnings news we include the earnings surprise for the current period deflated by lagged share price ( $SURP$ ). The earnings surprise is the difference between the actual earnings for the period and the analyst earnings forecast outstanding at the earnings announcement date. We add the earnings targets indicators,  $MBE$ ,  $PROFIT$ , and  $POS\Delta EARN$ , as prior evidence suggests that the firms meeting these targets earn a market reward (Hayn 1995; Barth et al. 1999; Bartov et al. 2002; Kasznik and McNichols 2002; Lopez and Rees 2002; Athanasakou et al. 2009). We also control for the book to market ratio ( $BTM$ ), market risk ( $RISK$ ), size ( $SIZE$ ), and financial distress ( $ZSCORE$ ) as these variables affect stock returns (Dichev 1998; Lopez and Rees 2002; Dechow and Ge

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<sup>10</sup> We retain our core inferences on the association between earnings quality and the perceived credibility of forward-looking performance disclosures, when repeating (2c) using  $FDSCORE$  instead of  $\Delta FDSCORE$ .

2006). We estimate equation (2c) as part of the structural system including (2a) for  $\Delta FDSCORE$ , 2(b) and (2c) using three stage least squares.

## V. EMPIRICAL RESULTS

### Sample and descriptive statistics

A requirement for using Nudist as a scoring tool is the availability of annual reports in electronic form and in text format. We obtain electronic versions of annual reports from *Dialog* as they store reports in standard text format deleting images and graphs but retaining all text and numbers. Using *Nudist* we read UK annual reports available on *Dialog* for the years 1996–2002.<sup>11</sup> The total number of annual reports available over this period is 11,756. Removing financial companies reduces our sample to 7,977 firm–year observations. Retaining observations with at least two years of data for calculating changes in disclosure scores reduces the sample to 6,122 observations. Observations with available analyst forecast data from I/B/E/S and price data from Datastream are 4,106. Calculating earnings quality yields a final sample of 3,155 observations (1,032 firms). To mitigate the effect of outliers on our tests, we winsorize the top and bottom 0.5 percent of all variables used in our tests.

Panel A of Table 2 reports descriptive statistics for the variables. Mean  $FDSCORE$  is 3.16, suggesting that about 3 out of every 100 sentences in the annual report are forward-looking performance statements. This translates into approximately 7 forward-looking performance statements on average per annual report based upon a mean count of 190 sentences in annual report narratives in our sample. The maximum number of forward-looking performance sentences in annual report narratives per report is 71 (38 per 100 sentences), while the minimum is zero. Even though mean  $\Delta FDSCORE$  is close to zero, its standard deviation is 2.57, indicating substantial cross sectional variation in annual changes of disclosure scores across our sample (about 5 sentences per annual report). In terms of our proxies for earnings quality, mean and median accruals quality ( $AQ$ ) are 0.049 and 0.039 and its standard deviation is 0.052

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<sup>11</sup> *Dialog* was discontinued by Thomson Financial in mid-2004. The year 2002 is the last year with comprehensive coverage.

(106 percent of the mean value). The other two proxies,  $|AA|$  and  $\sigma EARN$ , have similar distributional properties to  $AQ$ ; their mean values are 0.041 and 0.080 and their standard deviations 0.042 and 0.125, indicating substantial within-sample cross-sectional variation in earnings quality. The mean stock price reaction measured by cumulative abnormal returns (raw returns minus the return on the FTSE All Shares index), over the two month window around the earnings announcement and the release of the annual report (−2 days to +2 months) is 4.8 percent. The median stock price reaction is also positive (0.053) and statistically significant at 1 percent (two tailed rank test).<sup>12</sup> The standard deviation of abnormal returns is 0.243 indicating substantial cross-sectional variation in the market reactions over our window. Consistent with prior research, the majority of firms achieve analyst expectations (56 percent) and report rising profits (56 percent), while a minority of firms (13 percent) report losses. Our sample contains larger listed firms, indicated by high average total assets; and the number of analysts following (7).

Panel B of Table 2 reports Pearson (above the diagonal) and Spearman (below the diagonal) correlations between the three earnings quality measures, and the common factor ( $CFEQ$ ). Correlations between the metrics are substantial ranging from 19 to 98 percent.  $CFEQ$  is more highly correlated with  $AQ$  and  $|AA|$  (above 90 percent correlation), and more weakly associated with  $\sigma EARN$  (22 percent). The weaker correlation is due to  $AQ$  and  $|AA|$  focusing on working capital accruals and  $\sigma EARN$  being driven by both total accruals and operating cash flow volatility. Therefore, while  $CFEQ$  represents all three underlying earnings quality proxies, it more strongly reflects earnings precision, i.e. accuracy in the accruals estimates, rather than just earnings persistence.

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<sup>12</sup> With this level of abnormal returns over a two-month window (4.8%), it is possible that our sample is biased with firms disclosing good news. To mitigate concern over such an effect our multivariate specification includes controls news at the earnings announcement, e.g. earnings surprise, earnings benchmarks indicators. In additional analyses, we also control for news released after the earnings announcement by including the analyst forecast revision of subsequent year earnings over the three months following the earnings announcement date (see Table 7). Finally to mitigate concerns over the length of our sample window we repeat the analysis using a shorter window of returns cumulated from two days before to two days after the earnings announcement date (see Table 8). Our core findings are robust to these additional tests.

## Forward-looking disclosure and earnings quality

Table 3 reports the 3SLS estimates of the system of structural equations that includes the forward-looking performance disclosure model (2a) and the earnings quality model (2b). It also reports the results of a Durbin-Wu-Hausman test for the endogeneity of *CFEQ*.<sup>13</sup> The test is significant ( $F = 4.36$ ), confirming that *CFEQ* is endogenous and OLS is not consistent. In the first stage estimates of 3SLS (earnings quality model) four innate factors, *CYCLE*, *SIZE*,  $\sigma$ *SALES*, and *IINTENSITY*, are significant and in the expected direction. *CFEQ* increases with the length of the operating cash cycle and sales volatility, and decreases with size and intangible assets intensity. This is consistent with smaller firms and firms with longer operating cash cycles, more volatile revenues and lower intangible asset intensity having poorer earnings quality. These results indicate that our earnings quality metric performs well in capturing the effects of most of the innate factors documented by prior research. Our earnings quality metric appears to also capture discretionary earnings quality. Among the discretionary factors,  $AFDSCORE_{t-1}$  is positive and marginally significant ( $0.009, z = 1.92$ ), consistent with firms that have been excessively open in their prior disclosures of forward-looking statements compromising their earnings quality. The coefficients on *MBE*, *SEO*, and *BTM* are also significant and in the predicted directions. Higher growth firms and firms that met analyst forecasts or raised equity during the year have poorer earnings quality. The explanatory power of the innate and discretionary factors is fairly high (39 percent). These results serve as a construct validity test of our earnings quality proxy, suggesting that it contains information for firms' operating and information environment and managerial incentives. Focusing on this information through the two stage process allows for a more refined examination of the impact of earnings quality on changes of forward-looking statements.

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<sup>13</sup> Davidson and MacKinnon (1993) suggest an augmented regression test (DWH test), which is formed by including the residuals from a regression of the endogenous on all exogenous variables, in a regression of the original model. If the coefficient on the residuals in the augmented equation is significant, then OLS is not consistent. Accordingly we regress *CFEQ* on all regressors of equation (2a) and (2b), obtain the residuals (*ACFEQ*), and then regress equation (2a) augmented with *ACFEQ*. Table 3 reports the results of the *F*-test on the significance of the coefficient on *ACFEQ*.

In the second stage results,  $FDSCORE_{t-1}$  is positive and highly significant (0.296,  $z = 17.63$ ), lending credence to anecdotal evidence on the persistence of forward-looking performance disclosures across years.  $CFEQ$  is negative and significant ( $-0.526, z = -2.90$ ), consistent with forward-looking performance statements increasing in earnings quality. This is consistent with our first hypothesis that forward-looking performance statements increase in a firm's earnings quality. Among the remaining disclosure incentives, we find that forward-looking performance statements increase with analysts following ( $NANAL: 0.022, z = 1.96$ ), and reporting of bad earnings news in the form of earnings declines ( $POS\Delta EARN: -0.460, z = -5.30$ ). The latter result is consistent with Bagnoli and Watts (2007) who propose that managers provide more voluntary disclosures if the financial report contains bad news to mitigate investors' downward response. Value firms also appear to issue more expansive forward-looking performance disclosures ( $BTM: 0.174, z = 1.95$ ). Finally,  $SIZE$  is negative and significant ( $-0.278, z = -6.19$ ), consistent with proprietary costs or public visibility restraining the frequency of forward-looking performance disclosures.<sup>14</sup> Taken together the results of Table 3 suggest that forward-looking performance disclosures increase in past disclosures, earnings quality, analyst following, reporting of bad news, and valuation multiples and decrease in firm size. These factors appear to explain approximately 21 percent of the variation in the forward-looking performance disclosures.

### **The perceived credibility of forward-looking disclosure and earnings quality**

Table 4 presents results on the effect of earnings quality on the perceived credibility of forward-looking performance disclosures (equations 2a for  $\Delta FDSCORE$ , 2b, and 2c). The Durbin-Wu-Hausman test for the endogeneity of  $CFEQ$  and of  $\Delta FDSCORE$  are highly significant, ( $F = 60.25$  and  $F = 11.34$ ), confirming that earnings quality and changes in forward-looking performance disclosures are endogenous

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<sup>14</sup> The remaining firm controls are not significantly associated with disclosure. This is consistent with Francis et al. (2008) and Nagar, Nanda and Wysocki (2003), who find weak or no associations between disclosure scores and market to book ratios, firm size, and equity issuances. Also several of the firm specific control variables are likely subsumed in our measure of earnings quality.  $CFEQ$  is significantly negatively correlated with  $NANAL$ ,  $DISPERSION$ ,  $ROA$ , and  $PROPRIETARY$ , and  $BTM$ , and positively associated with  $SPREAD$  (Appendix B).

and OLS is not consistent. Running equation 2(c) without the interaction term  $\Delta DSCORE \times CFEQ$ ,  $\Delta FDSCORE$  is positive and significant (0.005,  $z = 2.05$ ). The magnitude of the coefficient suggests that an increase in forward-looking performance statements of 1 in every 100 sentences is associated with an abnormal market-adjusted return of 0.5 percent over a two month window. When we include the interaction term  $\Delta FDSCORE$  is no longer significant, suggesting that the market does not rely unconditionally on forward-looking performance disclosures.  $\Delta DSCORE \times CFEQ$  is negative and significant ( $-0.051, z = -2.59$ ), consistent with abnormal returns associated with changes in forward-looking performance statements increasing in a firm's earnings quality. This is consistent with the complementary association between forward-looking disclosures and earnings quality. Among the remaining controls,  $CFEQ$ ,  $MBE$ ,  $PROFIT$ ,  $POSAEARN$ ,  $BTM$ ,  $SIZE$  and  $ZSCORE$  are significant. The returns to forward disclosures are incremental to the stock price reaction to achieving earnings benchmarks in the current period and to any abnormal returns associated with firms' earnings quality, growth, size, and probability of financial distress. This evidence is consistent with investors extracting useful valuation information from managers' disclosures of forward-looking information, i.e. viewing these disclosures as credible, conditional on firms' earnings quality.

### **Forward-looking disclosures and earnings quality: complementary or non-monotonic association?**

Verecchia (1990) emphasizes that a complementary association between voluntary disclosure and earnings quality is not unambiguous as the indirect effect of voluntary disclosure on investors' assessments of earnings quality could induce the two signals to act as substitutes. Einhorn (2005) identifies the indirect effect of voluntary disclosure as the additional indirect information that improves the market's ability to interpret information of mandatory disclosure. He suggests that of the total error in the mandatory signal the weight of the error that is common in the voluntary signal affects the dominant association between the direct and indirect information conveyed by voluntary disclosure. When this weight is sufficiently low (high), the direct (indirect) effect of voluntary disclosure dominates the indirect (direct) effect, inducing a

non-monotonic association between the quality of mandatory disclosure and the likelihood of voluntary disclosure.<sup>15</sup>

To the extent the firm's economic environment affects the precision of both projected and reported information, an implication of Einhorn's (2005) propositions is that the source of reported earnings quality, innate or discretionary, could affect the association between forward-looking disclosures and earnings quality and therefore the perceived credibility of forward-looking disclosures. The intuition is that when the error in reported earnings is predominately due to the innate factors of the firms economic environment rather than managerial incentives, the indirect effect of forward-looking disclosures on investors' perceptions about the firm's uncertainty could begin to dominate, as investors would be willing to rely on forward-looking disclosures to re-assess information in reported earnings. If on the other hand the error in reported earnings is predominately discretionary, i.e. highly reflective of managerial incentives, forward-looking disclosures would complement high earnings quality as investors would view as credible only forward-looking disclosures of firms reporting high quality profits. To test the impact of the source of the earnings quality, we first measure the weight of the innate error, i.e. the extent to which the total error in reported earnings is driven by innate factors. With *CFEQ* capturing the total error in reported earnings, we use the parameter estimates of equation (2b) to derive proxies for the innate and discretionary components, *INNATECFEQ* and *DISCCFEQ*, as follows:

$$\begin{aligned}
INNATECFEQ_{it} = & \widehat{\delta}_1 SIZE_{it} + \widehat{\delta}_2 \sigma CFO_{it} + \widehat{\delta}_3 \sigma SALES_{it} + \widehat{\delta}_4 CYCLE_{it} + \widehat{\delta}_5 LOSSES_{it} + \widehat{\delta}_6 INTENSITY_{it} \\
& + \widehat{\delta}_7 CINTENSITY_{it}
\end{aligned} \tag{3}$$

$$\begin{aligned}
DISCCFEQ_{it} = & \widehat{\delta}_8 AFDScore_{it} + \widehat{\delta}_9 MBE_{it} + \widehat{\delta}_{10} POS\Delta EARN_{it} + \widehat{\delta}_{11} PROFIT_{it} + \widehat{\delta}_{12} SEO_{it} \\
& + \widehat{\delta}_{13} ZSCORE_{it} + \widehat{\delta}_{14} BTM_{it} + \widehat{\delta}_{15} BIG4_{it} + \widehat{\delta}_{16} NEDS_{it}
\end{aligned} \tag{4}$$

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<sup>15</sup> Expressing the total level of noise in the mandatory signal  $Y$ ,  $v = \sigma_{\epsilon Y}^2 + \sigma_{\epsilon YZ}^2$ , as the sum of the independent noise term ( $\sigma_{\epsilon Y}^2$ ) and the common noise that influences both the mandatory signal  $Y$  and the voluntary signal  $Z$ ,  $\sigma_{\epsilon YZ}^2$ , Einhorn (2005) proposes that variation in the relative weight of the common noise,  $w = \sigma_{\epsilon YZ}^2 / (\sigma_{\epsilon YZ}^2 + \sigma_{\epsilon Y}^2)$ , causes a non-monotonic association between voluntary disclosure and the quality of mandatory disclosure quality. Einhorn (2005, 605) proposes that when  $w$  is relatively low, the direct effect of the signal  $Z$  dominates its indirect effect. When  $w$  is sufficiently high, the correlation between the two signals is largely due to the common noise, so the direct effect of the signal  $Z$  becomes dominated by the indirect effect.

The weight of innate error is  $WINNATE = INNATECFEQ / (INNATECFEQ + DISCCFEQ)$ . We then set an indicator of high weight of innate error,  $HIGHWINNATE$ , equal to 1 when  $WINNATE$  is above the sample median and expand (2a) and (2b) as follows,

$$\begin{aligned} \Delta FDScore_{it} = & \beta_0 + \beta_{1a}CFEQ_{it} + \beta_{1b}HIGHWINNATE \times CFEQ_{it} + \beta_2HIGHWINNATE_{it} + \beta_3SPREAD_{it} \\ & + \beta_4TRADEVOL_{it} + \beta_5NANAL_{it} + \beta_6DISPERSION_{it} + \beta_7FINANCING_{it} + \beta_8MBE_{it} \quad (2a') \\ & + \beta_9POS\Delta EARN_{it} + \beta_{10}PROFIT_{it} + \beta_{11}ZSCORE_{it} + \beta_{12}ROA_{it} + \beta_{13}PROPRIETARY_{it} \\ & + \beta_{14}SIZE_{it} + \beta_{15}BTM_{it} + YEAR_t + INDUSTRY_i + e_{it} \end{aligned}$$

$$\begin{aligned} CAR_{i,-2d+2m} = & \gamma_0 + \gamma_1\Delta FDScore_{it} + \gamma_{2a}\Delta FDScore_{it} \times CFEQ_{it} + \gamma_{2b}\Delta FDScore_{it} \times CFEQ_{it} \times HIGHWINNATE_{it} \\ & + \gamma_3HIGHWINNATE_{it} + \gamma_4CFEQ_{it} + \gamma_5SURP_{it} + \gamma_6MBE_{it} + \gamma_7PROFIT_{it} + \gamma_8POS\Delta EARN_{it} \quad (2c') \\ & + \gamma_9BTM_{it} + \gamma_{10}RISK_{it} + \gamma_{10}SIZE_{it} + \gamma_{11}ZSCORE_{it} + YEAR_t + INDUSTRY_i + e_{it} \end{aligned}$$

The interaction term  $HIGHWINNATE \times CFEQ$  captures the shift in the association between  $\Delta FDScore$  and  $CFEQ$  when the error in reported earnings is predominately innate. If managers issue forward-looking performance disclosures to complement earnings quality mainly when the error in reported earnings is predominately discretionary rather than innate we expect  $\beta_{1a}$  to be negative and  $\beta_{1b}$  to be positive. The interaction term  $\Delta FDCORE \times CFEQ \times HIGHWINNATE$  captures the shift in the credibility of forward-looking disclosures when the error in reported earnings is predominately innate. If investors view as credible forward-looking disclosures of firms that complement high earnings quality only when the error in reported earnings is predominately discretionary rather innate, we expect  $\gamma_{1a}$  to be negative and  $\gamma_{1b}$  positive.

We run equations (2a') (2b) and (2c') and report the first (equation 2a') and second stage estimates (equation 2c') in Table 5. In equation (2a')  $CFEQ$  is negative ( $-3.867, z = -5.54$ ), consistent with forward-looking disclosures complementing reported earnings quality when the error in reported earnings is predominately discretionary. While  $CFEQ \times HIGHWINNATE$  is positive ( $1.500, z = 2.57$ ),  $CFEQ + CFEQ \times HIGHINNATE$  remains negative and significant ( $-2.367, \chi^2 = 6.42, p = 0.011$ ), consistent with a weaker complementary association between forward-looking disclosures and earnings quality when

the error in reported earnings is predominately innate.<sup>16</sup> In equation (2c') while  $\Delta FDCORE \times CFEQ$  is negative and significant ( $-0.058, z = -2.04$ ),  $\Delta FDCORE \times CFEQ \times HIGHWINNATE$  is marginally positive ( $0.054, z = 2.09$ ), leading to an insignificant  $\Delta FDCORE \times CFEQ + \Delta FDCORE \times CFEQ \times HIGHWINNATE$  ( $-0.004, \chi^2 = 1.51, p = 0.219$ ). Therefore when the error in reported earnings is mostly affected by managerial incentives, investors' reliance on forward-looking performance statements increases in a firm's earnings quality. When the error in reported earnings is predominately innate, investors do not appear to rely on earnings quality to infer the credibility of forward-looking performance statements. Additional analysis sheds further light on the latter group and the indirect effect of forward-looking performance disclosures on investors' perceptions of earnings quality.

## VI. ADDITIONAL ANALYSIS

### Construct validity

A way to assess the validity of any disclosure measure, i.e. the extent that it represents what the researcher intends it to represent, is to test its association with firm characteristics that prior literature identifies as related to voluntary disclosure. Our core findings enforce the validity of our forward-looking disclosure measure, as we find that it is significantly associated with factors affecting the firm's information environment. To further validate our measure of forward-looking performance disclosure, we test the reliability of forward-looking performance statements in terms of the information they convey about future earnings. Panel A of Table 6 reports the results of regressions of next period profitability indicators,  $EARN_{t+1}$ ,  $CFO_{t+1}$ , and  $SALES_{t+1}$ , on contemporaneous profitability and the disclosure score,  $FDSCORE_t$ . As expected, the coefficients on  $EARN_t$ ,  $CFO_t$ , and  $SALES_t$  are positive and significant ( $0.616, z = 12.64$ ,  $0.587, z = 24.98$ ,  $0.787, z = 49.33$ ), consistent with the mean reverting nature of these core profitability indicators.  $FDSCORE$  is positive and significant in all three cases

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<sup>16</sup> We retain this inference when repeating equation (2a') for  $FDSCORE$ .

(0.002,  $z = 2.90$ , 0.002,  $z = 3.19$ , 0.012,  $z = 3.31$ ), consistent with forward-looking performance disclosures predicting future earnings, operating cash flows, and sales.

The validity of our earnings quality construct is also crucial for our study. The noise involved in any earnings quality measure raises concern over the reliability of its use to judge managers' disclosures. Our research design allows us to mitigate the confounding effects of noise in the earnings quality measure, as through the system of structural equations we focus on the variation of the measure caused by innate factors of firm's economic environment and managerial incentives. A further way to validate our earnings quality construct is to relate it to the reliability of forward-looking performance disclosure. Evidence of such an association would lend further credence to our hypothesis of the perceived credibility of forward-looking performance disclosure increasing in earnings quality. Therefore we explore how the reliability of forward-looking performance disclosures, i.e. the information they convey for future earnings, varies with earnings quality. In Panel B of Table 6 we repeat the analysis of Panel A interacting *FDSCORE* with earnings quality as predicted by the intrinsic and discretionary factors of equation (2b),  $E(CFEQ)$ .  $FDSCORE \times E(CFEQ)$  is negative and significant in all three cases, ( $-0.002, z = -2.67$ ,  $-0.002, z = -3.53$ ,  $-0.006, z = -3.45$ ), consistent with the predictive power of forward-looking performance statements for future profitability increasing in a firm's earnings quality. Collectively, evidence in Table 6 provide support to our construct validity and reinforce the rational behind investors' reliance on earnings quality to infer the credibility of forward-looking performance disclosure.

### **Controlling for contemporaneous earnings news**

To capture abnormal returns associated with forward-looking performance statements in annual report narratives we use a two month window following the earnings announcement date, as some of these statements are included in the chairman's statement which is usually released at the earnings announcement date. To mitigate the risk of contemporaneous news over this window confounding our results, we repeat equations (2a)–(2c) adding in (2c) the revision of analyst forecasts of subsequent year earnings, *AFREV*. *AFREV* is the difference between the analyst forecast of subsequent year earnings outstanding at the

earnings announcement date and the median forecast of subsequent year earnings over the two months following the earnings announcement date. Calculating *AFREV* reduces the sample to 2,408 observations. The first column of Table 7 reports the results of the second stage estimates (equation 2c). As expected *AFREV* is positive and significant (0.338,  $z = 4.23$ ), suggesting a stock price reaction of 2 percent to one standard deviation of *AFREV*. When excluding the interaction terms,  $\Delta FDSCORE$  remains positive and significant (0.007,  $z = 2.23$ ). The results for  $\Delta FDSCORE \times CFEQ$  ( $-0.041, z = -2.29$ ) are also robust to including *AFREV*.

### **Other determinants of perceived credibility of forward-looking disclosures**

Further to management credibility, Mercer (2004) reviews two broad groups affecting disclosure credibility, situational incentives and external and internal assurance. Situational incentives reflect managers' incentives to bias the information content of forward-looking statements and are inversely related to disclosure credibility. Prior studies examine the role of incentives to mislead by often comparing the credibility of good and bad news disclosures (Hutton 2003), or the disclosure credibility of financially distressed and non-distressed firms (Koch 2003). Our research design captures the effects of managerial incentives through the earnings quality construct, as it is associated with the openness in prior forward-looking performance disclosures, achieving analyst expectations, equity issues, and growth. The documented positive association between the credibility of forward-looking performance disclosures and earnings quality implies a negative association with these incentives. To test the impact of other situational incentives we interact  $\Delta FDSCORE$  with *POS $\Delta$ EARN*, *PROFIT*, and *ZSCORE*. Mercer (2004) reviews the risk of legal liability as an additional determinant of disclosure credibility. Litigation risk varies with the degree of restrictions in market regulation and could be one of the main reasons managers are concerned about the reliability of forward-looking disclosures. Accordingly we interact  $\Delta FDSCORE$  with a proxy for litigation risk, *LIT*. The levels of internal and external assurance of a firm can also affect the perceived credibility of managers' disclosures of forward-looking information. A major source of internal assurance is the board of directors, as it monitors the firms' activities and its financial statements. Mercer (2004)

argues that investors are more likely to perceive managerial disclosures of forward-looking statements as more credible if the firm has a high quality board of directors. As external assurance providers, financial analysts may affect investors' reactions to disclosures of forward-looking statements, yet the association between analyst following and disclosure credibility remains unexplored. Accordingly we interact  $\Delta FDSCORE$  with  $NEDS$  and  $NANAL$ . The final column of Table 7 reports the results of the second stage estimates (equation 2c).  $\Delta FDSCORE \times CFEQ$  remains negative and significant ( $-0.059, z = -3.88$ ). Of the remaining factors,  $\Delta FDSCORE \times POS\Delta EARN$  is negative and significant ( $-0.012, z = -2.43$ ), suggesting with investors regarding forward-looking performance statements of firms reporting earnings declines as more credible. This is consistent with Schleicher et al. (2007) who find that firms reporting bad news during the year provide more informative forward-looking performance statements in their annual report narratives.

#### **Forward-looking disclosure and earnings quality: indirect effect - reverse causality**

Our final analysis explores further the potential reverse association between forward-looking performance disclosure and earnings quality. Mercer (2005) develops a model of how openness of management disclosures affects management reporting credibility. The model predicts that more forthcoming management disclosures boost management reporting credibility in the short-term. This suggests an association between the openness of management disclosures and reporting credibility similar to that implied by Verecchia (1990) and Einhorn (2005), when referring to the indirect effect of voluntary disclosure on the perceived quality of the mandatory signal.

In unconditional analysis our evidence points to a complementary association between earnings quality and forward-looking disclosures, consistent with the direct effect of forward-looking disclosures dominating their indirect effect on investors' perceptions about earnings quality. The rationale for the dominance of the direct effect is that forward-looking performance statements are less likely to be correlated with the contemporaneously reported signal, due to the different time orientation and their qualitative nature. Consistent with this, Hussainey et al. (2003) find that forward-looking statements help

the market anticipate next period earnings, but are unrelated to the market's response to current year earnings. To explore the association between forward-looking performance disclosures and investors' perceptions of reported earnings quality further, we extend equation (2c) by including an interaction term between  $\Delta FDSCORE$  and the earnings surprise,  $SURP$ . Table 8 reports the results. While  $\Delta FDSCORE \times CFEQ$  remains negative ( $-0.051, z = -2.50$ ) and  $\Delta FDSCORE \times SURP$  is insignificant ( $-0.008, z = -0.44$ ), consistent with forward-looking performance statements not affecting the earnings response coefficient. To focus on the market response closer to the earnings announcement, we also estimate equation (2c) using abnormal returns cumulated from two days before to two days after the earnings announcement date. In the second stage estimates while  $SURP$  becomes positive and marginally significant ( $0.025, z = 1.80$ ), as expected due to the shorter window,  $\Delta FDSCORE \times SURP$  remains insignificant ( $0.005, z = 0.69$ ).  $\Delta FDSCORE \times CFEQ$  remains negative ( $-0.018, z = -2.07$ ). Collectively, this evidence suggests that forward-looking performance statements are unrelated to investors' assessments of the quality of contemporaneous profitability, mitigating overall concerns of reverse causality.

When we distinguish between the sources of earnings quality we identified circumstances where the indirect effect could begin to dominate, i.e. when the error in reported earnings is predominately innate. In these cases we argued that investors would be willing to rely on forward-looking performance statements to re-assess information in reported earnings. For the subset of firms where the error in reported earnings is mainly intrinsic we found no evidence of earnings quality affecting the perceived credibility of forward-looking disclosures. To shed further light on the potential dominance of the indirect effect for these firms, we next repeat the analysis distinguishing between firms with high and low weight of innate error in reported earnings. We focus again on the market response closer to the earnings announcement, to capture the relevance of the earnings surprise. The next two columns of Table 8 present the results.  $\Delta FDSCORE \times CFEQ$  remains negative and significant only for firms with low weight of innate error in reported earnings ( $-0.012, z = -1.96$ ). While  $\Delta FDSCORE \times SURP$  remains insignificant ( $-0.009, z = -0.69$ ) for these firms, it becomes marginally positive for firms with high weight of error in

reported earnings ( $0.015, z = 1.75$ ). This evidence suggests that for firms whose earnings quality is largely intrinsic forward-looking disclosures increase the earnings response coefficient, consistent with the dominance of the indirect effect of forward-looking disclosures on investors' assessments of the information in reported earnings. The latter evidence though should be treated with caution due to the low explanatory power of the results.

## VII. CONCLUSION

While prior research establishes that forward-looking performance disclosures in annual report narratives are relevant and useful for investors in assessing the firm's future prospects, it ignores the factors that affect the extent to which investors believe this information. This paper examines the role of earnings quality in investors' assessments of the credibility of forward-looking performance disclosures. We find that the expansiveness of forward-looking disclosures, proxied by a self-constructed coded index of forward-looking statements in annual report narratives conveying mainly qualitative information about future performance, increases in a firm's earnings quality. Consistent with forward-looking disclosures complementing high quality financial reporting environments, we find that investors' reliance on forward-looking performance disclosures also increase in a firms' earnings quality. Extending the analysis to test the impact of the source of earnings quality, we find that earnings quality serves as a credibility signal only when the error in reported earnings is largely discretionary, i.e. informative of managerial incentives. We complement our analysis with construct validity tests and sensitivity checks of our findings to omitted variables bias (e.g. contemporaneous earnings), other determinants of disclosure credibility, and reverse causality.

Our results have important implications for managers and policy makers. For managers they provide insights into the strategies they could follow to increase the extent to which stock prices impound their private information. If managers maintain a high quality reporting system, investors are more responsive to their forward-looking performance disclosures. For UK policy makers who have recently recommended extensive disclosures of forward-looking information in annual report narratives, our

evidence suggests that investors mitigate the risk of resource misallocation by conditioning their reliance on forward-looking disclosures on the firm's reported earnings quality and managerial incentives.

A further important insight from our findings is that the association between voluntary disclosure and earnings quality is not necessarily monotonic and that the direction of the association depends on the source of earnings quality, inherent risk versus managerial incentives, and the type of voluntary disclosure. For a deeper understanding of the interaction between voluntary and mandatory disclosure, future research needs to explore the properties of different types of voluntary disclosure along with the specific conditions that exist in the firm's disclosure environment. The implications of our study also extend to research on accounting choice. We treat financial reporting and disclosure choices as endogenous to the firm's information system and use structural modeling to test our empirical predictions. By shedding light on the interactive effects between forward-looking disclosure and earnings quality and their consequences for investor decision making, our findings highlight the need for examining the firm's policies not in isolation, but as part of a general reporting and disclosure equilibrium.

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Appendix A  
Definition of variables (in alphabetical order)

Variable	Definition
AA	Average abnormal working capital accruals by firm over years $t-4$ through $t$ . AA are estimated using the Dechow and Dichev's (2002) model extended with changes in revenues (McNichols 2002), return on assets (Kothari et al. 2005) and negative changes in cash flows to account for the role of accruals in timely loss recognition (Ball and Shivakumar 2006).
AFDSCORE	Openness of disclosures of forward-looking information measured as <i>FDScore</i> minus the industry-year median <i>FDScore</i> .
AFREV	Analyst forecast revision of subsequent year earnings calculated as the difference between the forecast for next year earnings outstanding at the announcement of the results for year $t$ and the median analyst forecast for next year earnings over the two months following the announcement of the results for year $t$ .
AQ	The standard deviation of a firms' abnormal working capital accruals (AA) calculated over years $t-4$ through $t$ . AA are estimated using the Dechow and Dichev's (2002) model extended with changes in revenues (McNichols 2002), return on assets (Kothari et al. 2005) and negative changes in cash flows to account for the role of accruals in timely loss recognition (Ball and Shivakumar 2006).
BTM	Book (DS307) to market (DSHMV) ratio.
$CAR_{i,-2d,+2m}$	Excess daily returns cumulated from two days before the earnings announcement to two months following the earnings announcement. Excess return is firm return less the market return using the FTSE All Share Index. Returns are from Datastream.
CFEQ	Common factor of three earnings quality metrics: accruals quality (AQ), absolute abnormal accruals ( $ AA $ ), and earnings variability ( $\sigma EARN$ ).
$E(CFEQ)$	Quintiles of <i>CFEQ</i> as predicted by a number of innate features of the firm's economic environment and managerial incentives (equation 2b).
CFO	Operating cash flows (DS1015) scaled by lagged total assets.
CINTENSITY	Average ratio of net property plant and equipment (DS339) divided total asset (DS392) over the accounting periods $t-t-2$ .
CYCLE	Cycle is the operating cycle length of the firm in year $t-1$ computed as $\frac{(\text{Days in Inv} + \text{Days in AR})}{365}$ , where $\text{Days in AR} = 365 \times \frac{AR_{t-1} + AR_{t-2}}{2 \times Sales_{t-1}}$ and $\text{Days in Inv} = 365 \times \frac{Inv_{t-1} + Inv_{t-2}}{2 \times CostofSales_{t-1}}$ . AR is accounts receivable (DS287) and <i>INV</i> is inventory (DS364). Cost of sales is the cost of goods sold (DS129).
DISPERSION	Standard deviation of analyst forecasts during the accounting period scaled by the absolute value of actual earnings.
FINANCING	Equals 1 if the share capital (DS301) or total debt (DS1301) increases by more than 5 percent during the year, 0 otherwise.
FDScore	The number of forward-looking performance statements included in the annual report narratives divided by the total number of sentences in the annual report narrative sections and multiplied by 100.
HIGHWINNATE	Equals 1 when <i>WINNATE</i> is above the sample median, 0 otherwise.
IINTENSITY	Average ratio of research and development expense (WC01201) divided by sales (DS104) over the accounting periods $t-t-2$ .
$I_{CFO_{it}}$	Equals one when $CFO_{it}$ is negative, 0 otherwise.
LEV	Total debt (DS1301) over total assets (DS392).
LIT	Standard deviation of firm daily returns over the last year.
LOSSES	Equals 1 if adjusted earnings number (DS210) is negative over the accounting periods $t-t-2$ .
MBE	Equals 1 if the earnings surprise ( <i>SURP</i> ) is non-negative, 0 otherwise.
NANAL	Number of analysts following the firm over the accounting period (source: I/B/E/S).
NEDS	Number of non-executive directors in the board (DS243) over the total number of directors in the board (DS242).

<i>POSΔEARN</i>	Equals 1 if annual change in I/B/E/S actual EPS is positive, 0 otherwise.
<i>PROFIT</i>	Equals 1 if I/B/E/S actual EPS is positive in the current accounting period, 0 otherwise.
<i>PROPRIETARY</i>	The four firm concentration ratio calculated as the sum of the sales of the four largest companies in the industry (in terms of sales) divided by total industry sales.
<i>RISK</i>	The beta coefficient derived from firm specific regressions of stock return on the FTSE All Share Index return over a 60 month window ending at the financial year end in question The beta estimate of the firm's return sensitivity for the month preceding the announcement of the results (obtained from Datastream).
<i>ROA</i>	Earnings before interest, tax, depreciation, and amortization (DS1502) over total assets (DS392).
<i>SALES</i>	Total sales (DS104) scaled by lagged total assets.
<i>SEO</i>	Equals 1 if the share capital (DS301) increases by more than 5 percent during the year, 0 otherwise.
<i>SIZE</i>	Log of market value of equity (DSHMV).
<i>SPREAD</i>	Average bid-ask spread during the year. The bid-ask spread is the difference between the bid and the ask price divided by half the sum of the bid and the ask price.
<i>SURP</i>	Earnings surprise calculated as the difference between I/B/E/S actual EPS and the forecast outstanding at the earnings announcement date for year $t$ .
<i>TRADEVOL</i>	Equals 1 if the firms' average trading volume during the year divided by the total number of shares outstanding is greater than the sample median, 0 otherwise.
<i>WCA</i>	Working capital accruals measured as change in total current assets (DS376) net of change in cash (DS375), minus change in current liabilities (DS389) net of change in the current portion of long-term debt (DS309).
<i>ZSCORE</i>	Financial distress measure using Taffler's (1984) UK-based Z-score model, $Z = 3.2 + 12.8x_1 + 2.5x_2 - 10.68x_3 + 0.029x_4$ , where $x_1$ is profit before tax (DS154) over current liabilities (DS389), $x_2$ is current assets (DS376) over total liabilities (DS392–DS307), $x_3$ is current liabilities (DS389) over total assets (DS392), and $x_4$ is the non-credit interval computed as quick assets (DS376 – DS364) minus current liabilities divided by sales (DS104) minus profit before tax (DS154) and depreciation (DS136) over 365.
<i>WINNATE</i>	The weight of innate error in reported earnings proxied as <i>INNATECFEQ</i> divided over <i>INNATECFEQ</i> plus <i>DISCCFEQ</i> . <i>INNATECFEQ</i> is part of the error in reported earnings, <i>CFEQ</i> , attributed to innate factors, i.e. <i>CYCLE</i> , <i>SIZE</i> , $\sigma_{CFO}$ , $\sigma_{SALES}$ , <i>LOSSES</i> , <i>IINTENSITY</i> and <i>CINTENSITY</i> . <i>DISCCFEQ</i> is part of the error in reported earnings, <i>CFEQ</i> , attributed to managerial incentives, i.e. <i>AFDSCORE</i> , <i>MBE</i> , <i>POSΔEARN</i> , <i>PROFIT</i> , <i>SEO</i> , <i>ZSCORE</i> , <i>BTM</i> , <i>B4</i> , <i>NEDS</i> .
<i>ΔCFO</i>	Annual change in <i>CFO</i> .
<i>ΔCR</i>	Change in revenue (DS104) minus change in accounts receivable (DS287).
<i>ΔFDSCORE</i>	Annual change in <i>FDSCORE</i> .
$\sigma_{CFO}$	The standard deviation of operating cash flows (DS1015) over the accounting periods $t-t-2$ .
$\sigma_{EARN}$	Standard deviation of the firm's earnings (DS210) scaled by lagged total assets over years $t-4$ through $t$ .
$\sigma_{SALES}$	The standard deviation of total sales (DS104) over the accounting periods $t-t-2$ .

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DS = Datastream code WC = Worldscope code

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Appendix B

Pearson (above the diagonal) and Spearman (below the diagonal) correlations between key variables

	<i>FDSCOR</i> <i>E</i>	<i>CFEQ</i>	<i>SPREAD</i>	<i>TRADE</i> <i>VOL</i>	<i>NANAL</i>	<i>DISPER</i> <i>SION</i>	<i>FINAN</i> <i>CING</i>	<i>MBE</i>	<i>POS</i> <i>AEARN</i>	<i>PFOFIT</i>	<i>ROA</i>	<i>PROPRI</i> <i>ETARY</i>	<i>SIZE</i>	<i>BTM</i>	<i>CYCLE</i>	$\sigma$ <i>CFO</i>	$\sigma$ <i>SALES</i>	<i>LOSSES</i>	<i>IINTENS</i> <i>ITY</i>	<i>CINTEN</i> <i>SITY</i>	<i>AFL</i> <i>DSCORE</i>	<i>SEO</i>	<i>ZSCORE</i>	<i>CAR</i> <sub>-24+2m</sub>	<i>SURP</i>	<i>RISK</i>
<i>FDSCORE</i>	1		0.156	-0.047	-0.171	-0.107	-0.038		-0.081				-0.256	0.184				-0.052			0.333	-0.062	-0.030	0.033	-0.058	-0.109
<i>CFEQ</i>		1	0.123		-0.167	-0.074		-0.041	-0.059	-0.133	-0.096	-0.202	-0.144	-0.103	0.084	0.195	0.183	0.068		0.031	0.047	0.144	-0.045	-0.063		0.131
<i>SPREAD</i>			1	-0.171	-0.385	-0.145	-0.038	-0.146	-0.214	-0.378	-0.330	0.054	-0.489	0.278	0.035	0.101	0.045	0.245	0.045	0.036	0.144	0.005	-0.243		-0.253	-0.090
<i>TRADEVOL</i>				1	0.108	0.101	0.081		0.055		0.050		0.058	-0.112		0.084	0.049	-0.030		0.056	0.112	0.040	0.053	0.055		
<i>NANAL</i>					1	0.382	0.078	0.046		0.167	0.121		0.817	-0.195	-0.134	-0.203	-0.123	-0.133	-0.041	-0.042	-0.179	-0.065		-0.024	0.084	0.256
<i>DISPERSION</i>						1		-0.031	-0.047	-0.048	-0.069		0.375	-0.049		-0.034		0.060	0.062		-0.071		-0.039	-0.036		0.175
<i>FINANCING</i>							1	-0.051		-0.041	-0.064		0.101	-0.120	0.087	0.036	0.029			0.088		0.430	-0.094	-0.079		
<i>MBE</i>								1	0.305	0.244	0.196		0.042	-0.055	-0.024	-0.068	-0.082	-0.144	-0.037		-0.045	-0.064	0.116	0.064	0.386	-0.058
<i>POS/AEARN</i>									1	0.252	0.225		0.036	-0.159	0.042	-0.057	-0.077	-0.079	0.034	-0.066			0.080	0.071	0.212	-0.042
<i>PFOFIT</i>										1	0.594		0.163	-0.105	-0.103	-0.270	-0.086	-0.621	-0.161	-0.155	-0.040	-0.153	0.337	0.085	0.401	-0.125
<i>ROA</i>											1		0.146	-0.163	-0.145	-0.226	-0.081	-0.549	-0.238	-0.102	-0.036	-0.157	0.561		0.264	-0.164
<i>PROPRIETARY</i>												1			-0.038					0.045	-0.026	-0.036	-0.044	0.036		
<i>SIZE</i>													1	-0.320	-0.101	-0.171	-0.082	-0.130		-0.018	-0.226	-0.044	0.059	-0.062	0.107	0.319
<i>BTM</i>														1		-0.134	-0.145		-0.033	-0.050	0.098	-0.156	-0.036	0.102	-0.082	-0.136
<i>CYCLE</i>															1	0.162	-0.040	0.103	0.151		0.031	0.119		-0.030		
$\sigma$ <i>CFO</i>																1	0.464	0.251	0.041	0.262	0.031	0.216	-0.083	-0.043	-0.012	0.095
$\sigma$ <i>SALES</i>																	1	0.055		0.126	0.034	0.182	-0.096	-0.041	-0.041	0.096
<i>LOSSES</i>																		1	0.191	0.160	0.041	0.142	-0.333	-0.047	-0.170	0.107
<i>IINTENSITY</i>																			1			0.091	-0.151			
<i>CINTENSITY</i>																				1		0.155		-0.042		
<i>AFDSCORE</i>																					1				-0.048	-0.083
<i>SEO</i>																						1	-0.050	-0.102	-0.037	0.054
<i>ZSCORE</i>																							1	-0.035	0.171	-0.116
<i>CAR</i> <sub>-24+2m</sub>																								1		-0.035
<i>SURP</i>																									1	
<i>RISK</i>																										1

All correlations in the table are significant at  $p < .10$  (two-tailed (significance levels).

The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Appendix A defines the variables.

Table 1

Panel A: Stages for constructing *FDSCORE*

## Stage 1: Identify forward-looking keywords

Accelerate	Estimate	Next	Scope for, Scope to
Anticipate	Eventual	Novel	Shall
Await	Expect	Optimistic	Shortly
Coming (financial) years	Forecast	Outlook	Should
Coming months	Forthcoming	Planned, Planning	Soon
Confidence, Confident)	Hope	Predict	Will
Convince	Intend, Intention	Prospect	Well placed, Well positioned
Current (financial) year	Likely, Unlikely	Remain	Year(s) ahead
Envisage	Look forward, Look ahead	Renew	

## Stage 2: Identify performance related keywords from analyst reports

Benefit	Contribution	Loss	Profitability
Break even	Earnings	Margin	Return
Budget	EPS	Profit	Trading

Stage 3: Count the intersections between forward-looking and performance related keywords, scaling the intersections by the total number of sentences in the annual report and multiply by 100.

## Panel B: Sample forward-looking disclosure statements

Statement	Source (Year of annual report)
<i>'Management is confident that, with the launch of its new division "The Film Factory at VTR", the company is now well placed to capture a large stake of these special effects commercials and feature film market which will ensure the company's continuing growth in profitability.'</i>	VTR PLC (1996)
<i>'Of the three divisions, RCO Healthcare is attracting the highest level of investment and offers considerable prospects for good returns in the medium and long term.'</i>	RCO Holdings PLC (1996)
<i>'We intend to increase profits both by a controlled programme of organic expansion and by improving the performance of the existing units.'</i>	Vardon PLC (1996)
<i>'We believe that the restructuring and investment programme will restore profitability to the group and strengthen our position in the market place.'</i>	Stoddard Sekers International PLC (1996)
<i>'Its merger into Montgomery will provide an opportunity for profits recovery in future years.'</i>	Macfarlane Group (Clansman) PLC (1996)
<i>'We will continue to invest to improve the business and to translate the many opportunities available to us into good returns for our shareholders.'</i>	FirstBus PLC (1997)
<i>'The Directors believe that the Company is now well positioned to support further growth which should result in a consequent improvement in operating margin.'</i>	Stoves Group PLC (1997)
<i>'Going forward, Cantab will retain key commercial rights to provide both flexibility and greater financial return.'</i>	Cantab Pharmaceuticals PLC (1997)
<i>'Importantly, we expect to produce solid profits and cash flow above the norms of our competition, whilst maintaining our capability to take advantage of improving markets.'</i>	Abacus Polar PLC (1997)
<i>'I am confident that our carefully targeted expansion programmes across all our businesses will result in strong growth in earnings for the future.'</i>	Stagecoach Holdings PLC (1997)
<i>'As with our previous acquisitions we expect them to benefit from being part of McBride and to be earnings enhancing during the forthcoming year.'</i>	McBride PLC (1998)

<i>'Superscape will invest these funds to continue to grow the company and move towards profitability.'</i>	Superscape VR PLC (1998)
<i>'We are looking forward to the years ahead and are confident of generating major rights assets and of producing significant growth in earnings.'</i>	Bloomsbury Publishing PLC (1998)
<i>'The development programme will concentrate primarily on large capacity key sites in high profile locations which have the potential individually to generate profits well in excess of the average bar or nightclub.'</i>	Chorion PLC (1998)
<i>'Our focus on sales will ensure that the Group produces revenue growth and a return to profit and thus progressively build value for our shareholders.'</i>	IES Group PLC (1999)
<i>'To match this investment in technology, we have also increased our sales and marketing activities and expect to see the benefits coming through in the near future.'</i>	Dee Valley Group PLC (1999)
<i>'We believe that such opportunities combined with our reorganised UK operations will lead to improved levels of profitability.'</i>	Liberfabrica PLC (1999)
<i>'A consistent focus on service quality, at sustainable margins, will contribute to long term profitable growth in this business.'</i>	Go Ahead Group PLC (1999)
<i>'Future prospects look encouraging and we intend to take advantage of every opportunity to increase Group profits and earnings, and enhance value to shareholders.'</i>	Columbus Group PLC (1999)
<i>'However, the situation is now improving significantly and the company is moving towards profit and regaining the confidence of its retail and contract customers.'</i>	Mcbride PLC (2000)
<i>'The winning of new contracts and the maintenance of existing relationships will ensure that SSS continues its positive contribution to the Group.'</i>	IES Group PLC (2000)
<i>'It is our intention to continue to expand the sales of our testing services, which will bring the benefits of greater flexibility and additional income.'</i>	Dee Valley Group PLC (2000)
<i>'Thus the Group is well placed for further acquisitions and profit growth in the future.'</i>	Beale PLC (2000)
<i>'Demand for our products remains buoyant and I am confident that the addition of further CD and DVD case capacity in the coming months should provide the opportunity to further increase turnover and profitability.'</i>	Coral Products PLC (2000)
<i>'We shall be actively exploiting new growth opportunities to enhance the Group's profitability.'</i>	Stoves Group PLC (2000)
<i>'The business is building but will inevitably take time to achieve an acceptable return.'</i>	Burden Leisure PLC (2001)
<i>'We expect there to be benefits from increased capacity and improved efficiency.'</i>	W T Foods PLC (2001)
<i>'The Board is confident that the enlarged estate will continue to produce substantial returns in the years ahead'.</i>	Fuller Smith & Turner PLC (2001)
<i>'We are confident that our significant investment in filtration and our strategic strengths will produce a good and increasing return for shareholders, and a rewarding environment for our employees and customers.'</i>	McLeod Russel Holdings PLC (2001)
<i>'Over the short term, profit growth will be constrained by the cost of investment.'</i>	Boots Company PLC – (2002)
<i>'This was achieved despite significant revenue investment in areas such as the Argos store card and new products at Experian, which will underpin future profits growth.'</i>	Great Universal Stores PLC (2002)
<i>'We shall continue our ongoing strategy of using this surplus to buy back shares, in order to enhance long term growth in earnings per share.'</i>	Next PLC (2002)

Table 2

Panel A: Descriptive statistics of key variables

Variable	Mean	Median	Std. Dev	Min	Max
<i>FDSCORE</i>	3.161	2.660	2.420	0.000	37.500
<i>AFDSCORE</i>	-0.075	0.000	2.565	-9.404	8.571
<i>AQ</i>	0.049	0.037	0.052	0.000	0.325
$ AA $	0.041	0.031	0.042	0.000	0.476
$\sigma EARN$	0.080	0.042	0.125	0.003	1.103
<i>SPREAD</i>	0.044	0.031	0.048	0.001	0.973
<i>TRADEVOL</i>	0.428	0.000	0.495	0.000	1.000
<i>NANAL</i>	6.618	4.000	6.455	1.000	30.000
<i>DISPERSION</i>	0.975	0.071	2.096	0.000	17.324
<i>FINANCING</i>	0.527	1.000	0.499	0.000	1.000
<i>MBE</i>	0.558	1.000	0.497	0.000	1.000
<i>POSΔEARN</i>	0.563	1.000	0.496	0.000	1.000
<i>PFOFIT</i>	0.872	1.000	0.335	0.000	1.000
<i>ROA</i>	0.114	0.132	0.167	-0.944	0.489
<i>PROPRIETARY</i>	0.030	0.003	0.114	0.000	1.000
<i>SIZE</i>	11.509	11.445	1.744	7.810	16.442
<i>BTM</i>	0.740	0.558	0.695	-0.365	4.482
<i>CYCLE</i>	4.863	4.876	0.710	2.437	7.297
$\sigma CFO$	0.072	0.047	0.089	0.003	0.741
$\sigma SALES$	0.287	0.173	0.379	0.004	3.038
<i>LOSSES</i>	0.092	0.000	0.289	0.000	1.000
<i>IINTENSITY</i>	0.151	0.000	2.280	0.000	81.228
<i>CINTENSITY</i>	0.037	0.025	0.041	0.000	0.482
<i>AFDSCORE</i>	0.366	0.000	2.348	-5.435	14.710
<i>SEO</i>	0.171	0.000	0.376	0.000	1.000
<i>ZSCORE</i>	3.676	3.286	10.554	-53.819	58.787
$CAR_{-3d+2m}$	0.048	0.053	0.243	-0.840	0.936
<i>SURP</i>	-0.008	0.000	0.070	-0.545	0.281
<i>RISK</i>	0.757	0.790	0.540	-0.500	2.970

Panel B: Pearson (above the diagonal) and Spearman (below the diagonal) correlations between earnings quality measures

	<i>CFEQ</i>	<i>AQ</i>	$ AA $	$\sigma EARN$
<i>CFEQ</i>	1.000	0.983	0.978	0.196
<i>AQ</i>	0.975	1.000	0.933	0.194
$ AA $	0.989	0.936	1.000	0.192
$\sigma EARN$	0.215	0.218	0.216	1.000

The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Appendix A defines the variables.

Table 3

Forward-looking disclosure (*FDSCORE*) and earnings quality (*CFEQ*) – Endogenous earnings quality (3SLS)

$$\begin{aligned}
FDSCORE_{it} = & \beta_0 + \beta_1 FDSCORE_{it-1} + \beta_2 CFEQ_{it} + \beta_3 SPREAD_{it} + \beta_4 TRADEVOL_{it} + \beta_5 NANAL_{it} \\
& + \beta_6 DISPERSION_{it} + \beta_7 FINANCING_{it} + \beta_8 MBE_{it} + \beta_9 POS\Delta EARN_{it} + \beta_{10} PROFIT_{it} \\
& + \beta_{11} ZSCORE_{it} + \beta_{12} ROA_{it} + \beta_{13} PROPRIETARY_{it} + \beta_{14} SIZE_{it} + \beta_{15} BTM_{it} \\
& + YEAR_t + INDUSTRY_i + e_{it}
\end{aligned} \tag{2a}$$

$$\begin{aligned}
CFEQ_{it} = & \delta_0 + \delta_1 SIZE_{it} + \delta_2 \sigma CFO_{it} + \delta_3 \sigma SALES_{it} + \delta_4 CYCLE_{it} + \delta_5 LOSSES_{it} + \delta_6 IINTENSITY_{it} \\
& + \delta_7 CINTENSITY_{it} + \delta_8 AFDScore_{it-1} + \delta_9 MBE_{it} + \delta_{10} POS\Delta EARN_{it} \\
& + \delta_{11} PROFIT_{it} + \delta_{12} SEO_{it} + \delta_{13} ZSCORE_{it} + \delta_{14} BTM + \delta_{15} BIG4_{it} \\
& + \delta_{16} NEDS_{it} + YEAR_t + INDUSTRY_i + e_{it}
\end{aligned} \tag{2b}$$

Variables	First-stage estimates		Second-stage estimates		
	Predicted sign	Coefficient/ (z-stat)	Variables	Predicted sign	Coefficient/ (z-stat)
<i>Intercept</i>		-1.015*** (-2.57)	<i>Intercept</i>		5.354*** (3.98)
<i>CYCLE</i>	+	0.069*** (3.24)	<i>FDSCORE<sub>t-1</sub></i>	+	0.296*** (17.63)
<i>SIZE</i>	-	-0.037*** (-4.66)	<i>CFEQ</i>	-	-0.526*** (-2.90)
<i>σCFO</i>	+	0.102 (0.64)	<i>SPREAD</i>	+	1.912 (1.58)
<i>σSALES</i>	+	0.129*** (3.63)	<i>TRADEVOL</i>	+	-0.035 (-0.43)
<i>LOSSES</i>	+	-0.114* (-2.21)	<i>NANAL</i>	+	0.022** (1.96)
<i>IINTENSITY</i>	-	-0.015*** (-2.86)	<i>DISPERSION</i>	+	-0.010 (-0.50)
<i>CINTENSITY</i>	-	0.524* (1.73)	<i>FINANCING</i>	+	0.092 (1.17)
<i>AFDScore</i>	+	0.009** (1.92)	<i>MBE</i>	-	0.031 (0.37)
<i>MBE</i>	+	0.052*** (2.16)	<i>POSΔEARN</i>	-	-0.460*** (-5.30)
<i>POSΔEARN</i>	+	-0.013 (-0.51)	<i>PROFIT</i>	-	-0.082 (-0.51)
<i>PROFIT</i>	+	-0.134*** (-2.81)	<i>ROA</i>	-	0.239 (0.78)
<i>SEO</i>	+	0.093*** (2.92)	<i>PROPRIETARY</i>	-	-0.533 (-0.98)
<i>ZSCORE</i>	-	-0.001 (-1.09)	<i>SIZE</i>	+/-	-0.278*** (-6.19)
<i>BTM</i>	-	-0.062*** (-3.05)	<i>BTM</i>	+/-	0.137** (1.95)
<i>INDUSTRY DUMMIES</i>		Yes	<i>INDUSTRY DUMMIES</i>		Yes
<i>YEAR DUMMIES</i>		Yes	<i>YEAR DUMMIES</i>		Yes
<i>R<sup>2</sup></i>		0.3920			0.2069
<i>Chi-square</i>		2,034.72			904.31

Durbin–Wu–Hausman test for endogeneity of *CFEQ* (Davidson and MacKinnon 1993)

<i>F</i>	4.36
<i>p</i> -value	0.053

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\*/\*\*/\*\* indicate significance at the 0.1/0.05/0.01 level (two-tailed). Regressions are estimated using three stage least squares (3SLS). Inferences are based on *z*-statistics in parentheses below coefficients.

The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Appendix A defines the variables.

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Table 4

Abnormal returns ( $CAR_{-2d+2m}$ ) changes in forward-looking disclosure ( $AFDSCORE$ ) and earnings quality ( $CFEQ$ ) – Endogenous forward-looking disclosure and earnings quality (3SLS)

Variables	First-stage estimates				Second-stage estimates				
	$CFEQ$ Predicted sign	Coefficient/ (z-stat)	Variables	Predicted sign	$AFDSCORE$ Coefficient/ (z-stat)	Variables	$CAR_{-2d+2m}$ Predicted sign	Coefficient/ (z-stat)	
<i>Intercept</i>		-0.918** (-2.37)	<i>Intercept</i>		-0.708 (-0.39)	<i>Intercept</i>		0.028 (0.76)	0.039 (0.98)
<i>CYCLE</i>	+	0.039** (2.16)	<i>CFEQ</i>	-	-3.778*** (-8.55)	<i>AFDSCORE</i>		0.005** (2.05)	0.001 (0.21)
<i>SIZE</i>	-	-0.014* (-1.85)	<i>SPREAD</i>	+	1.345 (1.05)	<i>AFDSCORE</i> x <i>CFEQ</i>	-		-0.051*** (-2.59)
$\sigma CFO$	+	0.086 (0.65)	<i>TRADEVOL</i>	+	-0.016 (-0.16)	<i>CFEQ</i>		-0.021** (-2.25)	-0.024** (-2.37)
$\sigma SALES$	+	0.068** (2.25)	<i>NANAL</i>	+	0.020 (1.50)	<i>SURP</i>		-0.074 (-1.05)	-0.060 (-0.80)
<i>LOSSES</i>	+	-0.015 (-0.35)	<i>DISPERSION</i>	+	-0.025 (-1.00)	<i>MBE</i>		0.021** (2.15)	0.016* (1.69)
<i>IINTENSITY</i>	-	-0.008* (-1.84)	<i>FINANCING</i>	+	0.242** (2.51)	<i>POSΔEARN</i>		0.029*** (3.07)	0.032*** (3.13)
<i>CINTENSITY</i>	-	0.312 (1.23)	<i>MBE</i>	-	0.309** (2.55)	<i>PROFIT</i>		0.078*** (5.09)	0.068*** (4.09)
<i>AFDSCORE</i>	+	0.083*** (10.34)	<i>POSΔEARN</i>	-	-0.499*** (-4.06)	<i>BTM</i>		0.033*** (4.83)	0.032*** (4.32)
<i>MBE</i>	+	0.066*** (2.71)	<i>PROFIT</i>	-	-0.484** (-2.19)	<i>RISK</i>		0.006 (0.71)	0.004 (0.41)
<i>POSΔEARN</i>	+	-0.024 (-0.95)	<i>ROA</i>	-	-0.047 (-0.12)	<i>SIZE</i>		-0.009*** (-2.94)	-0.009*** (-2.76)
<i>PROFIT</i>	+	-0.098** (-2.15)	<i>PROPRIETARY</i>	-	-0.783 (-1.15)	<i>ZSCORE</i>		-0.002** (-3.80)	-0.001** (-2.36)
<i>SEO</i>	+	0.087*** (3.17)	<i>SIZE</i>	+/-	-0.178*** (-2.96)				
<i>ZSCORE</i>	-	-0.001 (-0.63)	<i>BTM</i>	+/-	-0.162 (-1.54)				
<i>BTM</i>	-	-0.074*** (-3.70)	<i>INDUSTRY DUMMIES</i>		Yes				
<i>INDUSTRY DUMMIES</i>		Yes	<i>YEAR DUMMIES</i>		Yes				
<i>YEAR</i>		Yes							
Chi-square		2,405.72			140.68			112.61	105.42
$R^2$		0.3472			0.0479			0.0347	0.0359
Durbin-Wu-Hausman test for endogeneity (Davidson and MacKinnon 1993)									
<i>Endogeneity of CFEQ</i>					60.25				

Endogeneity of  $\Delta FDScore$

<0.001

11.34

<0.001

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\*/\*\*/\*\* indicate significance at the 0.1/0.05/0.01 level (two-tailed). Regressions are estimated using three stage least squares (3SLS). Inferences are based on z-statistics in parentheses below coefficients.

The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Appendix A defines the variables.

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Table 5

Changes in forward-looking disclosure ( $\Delta FDISCORE$ ) and earnings quality ( $CFEQ$ ) – Endogenous forward-looking disclosure and earnings quality (3SLS). The role of the weight of innate earnings quality ( $WINNATE$ ).

Variables	First-stage estimates		Variables	Second-stage estimates	
	Predicted sign	Coefficient/ (z-stat)		$CAR_{-2d+2m}$	Predicted sign
<i>Intercept</i>		1.108 (0.28)	<i>Intercept</i>		0.033 (0.91)
<i>CFEQ</i>	–	–3.867*** (–5.54)	<i>AFDISCORE</i>		0.001 (0.40)
<i>CFEQ</i> × <i>HIGHWINNATE</i>	+	1.500*** (2.57)	<i>AFDISCORE</i> × <i>CFEQ</i>	–	–0.058** (–2.04)
<i>HIGHINNATE</i>	+/-	–0.056 (–0.40)	<i>AFDISCORE</i> × <i>CFEQ</i> × <i>HIGHWINNATE</i>	+	0.054** (2.09)
<i>SPREAD</i>	+	1.943 (1.31)	<i>HIGHWINNATE</i>	+/-	–0.003 (–0.25)
<i>TRADEVOL</i>	+	–0.032 (–0.28)	<i>CFEQ</i>	–	–0.022*** (–3.06)
<i>NANAL</i>	+	0.029* (1.93)	<i>SURP</i>	+	–0.066 (–0.89)
<i>DISPERSION</i>	+	–0.025 (–0.95)	<i>MBE</i>	+	0.017* (1.69)
<i>FINANCING</i>	+	0.243** (2.31)	<i>POSΔEARN</i>		0.029*** (2.96)
<i>MBE</i>	–	0.298** (2.47)	<i>PROFIT</i>	+	0.074*** (4.44)
<i>POSΔEARN</i>	–	–0.496*** (–4.05)	<i>BTM</i>	+	0.030*** (3.92)
<i>PROFIT</i>	–	–0.336 (–1.46)	<i>RISK</i>	+	0.005 (0.49)
<i>ROA</i>	–	0.092 (0.23)	<i>SIZE</i>	–	–0.008** (–2.46)
<i>PROPRIETARY</i>	–	–0.753 (–1.03)	<i>ZSCORE</i>	–	–0.001*** (–3.04)
<i>SIZE</i>	+/-	–0.130** (–2.04)			
<i>BTM</i>	+/-	–0.189* (–1.67)			
<i>INDUSTRY DUMMIES</i>		Yes			
<i>YEAR DUMMIES</i>		Yes			
$R^2$		0.0375			0.0353
Chi-square		413.81			113.71
$N$		3,155			3,155
Linear combinations of the coefficients		Wald $\chi^2$			Wald $\chi^2$
<i>CFEQ</i> + <i>CFEQ</i> × <i>HIGHWINNATE</i>		6.42 0.011			1.51 0.219

\*/\*\*/\*\* indicate significance at the 0.1/0.05/0.01 level (two-tailed). Regressions are estimated using three stage least squares (3SLS). Inferences are based on z-statistics in parentheses below coefficients.

The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Appendix A defines the variables.

Table 6

Forward-looking disclosure reliability and earnings quality (*CFEQ*).Panel A: Forward-looking disclosure reliability: Regressions of next period profitability ( $EARN_{t+1}$ ,  $CFO_{t+1}$ ,  $SALES_{t+1}$ ) on contemporaneous profitability ( $EARN_t$ ,  $CFO_t$ ,  $SALES_t$ ) and forward-looking disclosures  $FDSCORE_t$ .

Variables	Predicted sign	$EARN_{t+1}$ Coefficient/ (z-stat)	$CFO_{t+1}$ Coefficient/ (z-stat)	$SALES_{t+1}$ Coefficient/ (z-stat)
<i>Intercept</i>		-0.008 (-1.11)	0.032** (2.17)	0.192*** (6.61)
$EARN_t$	+	0.616*** (12.64)		
$CFO_t$	+		0.587*** (24.98)	
$SALES_t$	+			0.787*** (49.33)
$FDSCORE_t$	+	0.002*** (2.90)	0.002*** (3.19)	0.012*** (3.31)
$R^2$ -adjusted		0.3547	0.4118	0.7353
<i>Number of observations</i>		2,876	2,876	2,876

Panel B: Forward-looking disclosure reliability and earnings quality: Regressions of next period profitability ( $EARN_{t+1}$ ,  $CFO_{t+1}$ ,  $SALES_{t+1}$ ) on contemporaneous profitability ( $EARN_t$ ,  $CFO_t$ ,  $SALES_t$ ) and forward-looking disclosures,  $FDSCORE_t$ , conditioned on earnings quality (*CFEQ*).

		$EARN_{t+1}$ Coefficient/ (z-stat)	$CFO_{t+1}$ Coefficient/ (z-stat)	$SALES_{t+1}$ Coefficient/ (z-stat)
<i>Intercept</i>		-0.010 (-1.21)	0.022*** (3.37)	0.183*** (6.31)
$EARN_t$	+	0.609*** (12.60)		
$CFO_t$	+		0.580*** (24.55)	
$SALES_t$	+			0.796*** (52.30)
$FDSCORE$	+	0.006*** (3.21)	0.005*** (4.12)	0.023*** (3.64)
$FDSCORE \times E(CFEQ)$	-	-0.002*** (-2.67)	-0.002*** (-3.53)	-0.006** (-2.45)
$R^2$ -adjusted		0.3571	0.4147	0.7359
<i>N</i>		2,876	2,876	2,876

\*/\*\*/\*\* indicate significance at 0.1/0.05/0.01 levels (two-tailed). *t*-statistics in parentheses are based on robust standard errors clustered by year and firm to control for cross-sectional dependence and heteroskedastic and autocorrelated residuals. The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Calculating  $EARN_{t+1}$ ,  $CFO_{t+1}$ , and  $SALES_{t+1}$  reduces the sample to 2,876 observations. Appendix A defines the variables.

Table 7

Abnormal returns ( $CAR_{-2d+2m}$ ) changes in forward-looking disclosure ( $AFDSCORE$ ) and earnings quality ( $CFEQ$ ) – Endogenous forward-looking disclosure and earnings quality (3SLS). Controlling for contemporaneous news and other determinants of disclosure credibility.

Variables	Predicted sign	Second-stage estimates $CAR_{-2d+2m}$		
		Contemporaneous earnings news Coefficient/ (z-stat)	Contemporaneous earnings news Coefficient/ (z-stat)	Other disclosure credibility factors Coefficient/ (z-stat)
<i>Intercept</i>		0.026 (0.61)	0.029 (0.66)	0.032 (0.80)
<i>AFDSCORE</i>		0.007** (2.23)	0.003 (0.84)	0.003 (0.06)
<i>AFDSCORE x CFEQ</i>	–		–0.041** (–2.29)	–0.059*** (–3.88)
<i>AFREV</i>	+	0.338*** (4.23)	0.305*** (3.63)	
<i>AFDSCORE x POSA EARN</i>	–			–0.012** (–2.43)
<i>AFDSCORE x PROFIT</i>	–			–0.001 (–0.07)
<i>AFDSCORE x ZSCORE</i>	+			0.001 (1.43)
<i>AFDSCORE x LIT</i>	+			0.656 (1.35)
<i>AFDSCORE x NEDS</i>	+			–0.026 (–0.62)
<i>AFDSCORE x NANAL</i>	+			–0.001 (–0.88)
<i>CFEQ</i>	–	–0.028*** (–2.70)	–0.027*** (–2.59)	–0.025** (–2.42)
<i>SURP</i>	+	–0.318*** (–2.88)	–0.258** (–2.20)	–0.069 (–0.90)
<i>MBE</i>	+	0.019* (1.88)	0.015 (1.36)	0.016 (1.53)
<i>PROFIT</i>	+	0.082*** (4.46)	0.071*** (3.62)	0.071*** (4.25)
<i>POSA EARN</i>	+	0.028*** (2.75)	0.030*** (2.83)	0.031*** (3.02)
<i>BTM</i>	+	0.042*** (5.26)	0.043*** (5.17)	0.031*** (4.20)
<i>RISK</i>	+	0.022** (2.26)	0.018 (1.73)	0.005 (0.47)
<i>SIZE</i>	–	–0.010*** (–3.11)	–0.010*** (–2.83)	–0.009*** (–2.64)
<i>ZSCORE</i>	–	–0.002*** (–3.65)	–0.002*** (–2.87)	–0.001** (–2.30)
Chi-square		135.40	131.09	115.57
$R^2$		0.0528	0.0528	0.0412
$N$		2,408	2,408	3,155

\*/\*\*/\*\* indicate significance at the 0.1/0.05/0.01 level (two-tailed). Regressions are estimated using three stage least squares (3SLS). Inferences are based on  $z$ -statistics in parentheses below coefficients.

The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Calculating *AFREV* reduces the sample to 2,408 observations. The Appendix defines the variables.

Table 8

Abnormal returns ( $CAR_{-2d+2m}$ ) changes in forward-looking disclosure ( $\Delta FDISCORE$ ) and earnings quality ( $CFEQ$ ) – Endogenous forward-looking disclosure and earnings quality (3SLS). Reverse causality.

Variables	Predicted sign	Second-stage estimates $CAR_{-2d+2m}$			
		ERC Coefficient/ (z-stat)	ERC $CAR_{-2d+2d}$ Coefficient/ (z-stat)	ERC $CAR_{-2d+2d}$ HIGHWINNATE=0 Coefficient/ (z-stat)	ERC $CAR_{-2d+2d}$ HIGHWINNATE=1 Coefficient/ (z-stat)
<i>Intercept</i>		0.036 (0.93)	0.003 (0.16)	0.010 (0.48)	0.010 (0.48)
<i>AFDISCORE</i>		0.001 (0.54)	0.001 (0.54)	0.004** (2.16)	0.002 (0.99)
<i>AFDISCORE x CFEQ</i>	–	–0.051** (–2.50)	–0.018** (–2.07)	–0.012** (–1.96)	–0.009 (–1.00)
<i>CFEQ</i>		–0.023** (–2.38)	–0.002 (–0.48)	0.004 (0.59)	–0.004 (–0.75)
<i>SURP</i>		–0.061 (–0.82)	0.025* (1.80)	0.012 (0.26)	0.030 (0.75)
<i>AFDISCORE x SURP</i>		–0.008 (–0.44)	0.005 (0.69)	–0.009 (–0.69)	0.015* (1.75)
<i>MBE</i>		0.015 (1.48)	0.013*** (3.06)	0.013** (2.14)	0.015* (1.65)
<i>PROFIT</i>		0.068*** (4.09)	0.029*** (4.24)	0.018*** (3.00)	0.016*** (2.93)
<i>POSΔEARN</i>		0.032*** (3.14)	0.017*** (4.04)	0.022* (1.75)	0.032*** (3.97)
<i>BTM</i>		0.032*** (4.31)	0.014*** (4.67)	0.012*** (3.15)	0.020*** (2.75)
<i>RISK</i>		0.004 (0.42)	0.002 (0.55)	0.001 (0.16)	0.003 (0.68)
<i>SIZE</i>		–0.008*** (–2.76)	–0.003*** (–2.60)	–0.001 (–0.30)	–0.004** (–2.51)
<i>ZSCORE</i>		–0.001** (–2.35)	–0.001 (–0.45)	–0.001 (–1.33)	–0.001 (–0.11)
Chi-square		105.56	130.06	49.60	69.23
$R^2$		0.0392	0.0434	0.0252	0.0390
$N$		3,155	3,155	1,576	1,579

\*/\*\*/\*\* indicate significance at the 0.1/0.05/0.01 level (two-tailed). Regressions are estimated using three stage least squares (3SLS). Inferences are based on *z*-statistics in parentheses below coefficients.

The sample consists of 3,155 observations during the period 1996–2002 for 1,032 UK listed non-financial firms that have their annual reports on Nudist, no changes in year ends and available accounting, corporate governance, return and price-based data from Datastream and analyst forecast data from I/B/E/S. Appendix A defines the variables.