

## Relationship between Earnings Quality and External Audit Quality

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### Abstract

During the recent years, the accounting scandals have multiplied (Enron, World com, Xerox,...). Several factors have contributed to these scandals. Among these factors we find the quality of audit. This paper examines the impact of audit quality on earning quality. Audit quality is measured by financial statements audited by the Big 4 accounting firms. Earning quality is measured by the investors' ability to predict future earnings for profitable and unprofitable firms. We use a sample of around 4,417 firm-year observations in the U.K. market for the period 1996-2002. We document evidence that investors are able to better anticipate future earnings when financial statements are audited by the big four accounting firms. However, the findings are not applicable for unprofitable firms.

**Keywords:** Quality of financial statement; Returns-earnings association; Audit quality; Big4; Earnings response coefficient; Mandatory disclosure; Earning Quality; Earnings predictability

### Introduction

During the last years, the concept of accounting quality has been discussed widely. Earnings quality, which is a part of accounting quality, refers to how well reported earnings represent real (economic) company performance. But there is still no agreement about its definition and measurement, making it an elusive concept [1]. Earnings are viewed of higher quality if they accurately characterize the amount by which shareholder value has increased (decreased) during the period. Several factors can influence earning quality. Among these factors we find external audit.

Lee et al. [2] investigate whether the impact of the quality of financial statements, measured by the ability of investors to anticipate future earnings, is higher when financial statements are audited by the big accounting firms. They examine the association between current year stock returns and future earnings for big and small accounting firms. They find that investors are able to better anticipate future earnings when financial statements are audited by the big accounting firms. However, the authors did not find significant results in the more recent years of their sample (years from 1996 to 2001). So they conclude that the big accounting firms lost their audit quality advantage from 1996.

Kothari et al. [3] mentions corporate evaluation by investors, and discretionary management as relevant factors, and categorizes arguments on earnings quality. Schipper and Vincent present the value relevance viewpoint, and an economics-based concept of income, examining attributes which specify earnings quality, such as time series properties of earnings, including persistence, predictive ability and variability, the qualitative characteristics of a conceptual framework, the relationships between income, cash, accruals and the implementation of decisions.

In a review article, Yeoh and Jubb surveys academic papers on the association between current stock returns and current earnings changes. He finds a strong correlation between returns and earning. The R2 values obtained by regressing current year stock returns on annual earnings or earnings changes are very high. He also finds that the values of earnings response coefficient (ERC) are very low. He attributes these weak results to the low accounting earnings quality. A possible explanation for low earnings quality is the lack of timeliness in reported accounting earnings [3]. The literature on accounting earnings' timeliness is concerned with the degree to which the stock market has access to value-relevant information other than reported accounting earnings. Reported accounting earnings' lack of timeliness is due to the fact that value-relevant events are reflected in stock prices as soon as the information reaches the stock market, while their influence on reported earnings often occurs with a time lag [4]. This lagged reaction of earnings is to a certain extent due to accounting conventions such as objectivity, conservatism and verifiability that prevent earnings from reflecting the value-relevant information on a timely basis [4]. Collins et al. [3] significantly contribute to the accounting and finance literature by empirically investigating the reasons for the weak returns-earnings association. They show that earnings' lack of timeliness is the most important contributing factor to the low returns-earnings relation. They produce a new model to improve the association between returns and earnings known as the Future Earnings Response Coefficient "FERC" framework. The development by Collins et al. [3] of a reliable measure of the association between stock returns and accounting earnings makes it possible to examine the consequences of audit quality on the predictability of earnings change. Therefore, Collins et al. [3] is used in the present study as a measure of earnings predictability.

Allen et al. [5] investigate whether the impact of the quality of accounting information, measured by the ability of investors to anticipate future earnings, is higher when financial statements are audited by the big accounting firms. They examine the association between current year stock returns and future earnings for big and small accounting firms. They find that investors are able to better anticipate future earnings when financial statements are audited by the

big accounting firms. However, the authors did not find significant results in the more recent years of their sample (years from 1996 to 2001). So they conclude that the big accounting firms lost their audit quality advantage from 1996.

The present paper examines essentially two associations. First, it examines the association between quality of financial statements and share price anticipation of earnings for UK firms. This helps to examine the extent to which the big accounting firms lost (or still have) their audit quality advantage in the UK. Second, it tests the degree to which the associations between the quality of financial statements and share price anticipation of earnings differ between profitable and unprofitable firms.

The paper is organised as follows: the next section reviews prior literature and develops the research hypotheses and the methodology is then described. The data is then described and results discussed, followed by the conclusion and areas for future research.

## Literature Review and Research Hypotheses

### Literature related to earning quality

The concept of earnings quality is fundamental in accounting and financial economics. Yet, there are deep disagreements about how to define and measure it. The list of candidate measures is long: earnings persistence, predictability, asymmetric loss recognition, various forms of benchmark beating, smooth earnings, magnitude of accruals, income-increasing accruals, absolute value of discretionary or abnormal accruals, and the extent to which accruals map into cash flows. Complicating the measurement of earnings quality, archival research cannot satisfactorily parse out the portion of managed earnings from the portion resulting from the fundamental earnings process [6].

Earnings predictability is one of the “best” proxy of earning quality [1]. Financial statements are designed to provide value-relevant information for investors (and other users). Investors are using accounting information to study the current performance of a particular firm of interest and then to predict its future prospects. Therefore, high earning quality should enable investors and financial analysts to better anticipate a firm’s future performance and solvency.

A number of definitions of ‘earning quality’ are given in the literature. For example, Diamond and Verrecchia [7] define earning quality as the accuracy of investors’ beliefs about stock prices following the disclosure. King [8] defines disclosure quality as the degree of self-interested bias in corporate disclosure. Hopkins [9] defines disclosure quality as the extent to which current and potential investors can read and interpret the information easily.<sup>1</sup>

Measuring investors’ perception of the firm’s earning quality is not an easy task. Healy and Palepu [10] review academic papers that consider different proxies for the quality of corporate disclosures. They categorise these proxies into three groups: management forecasts, subjective ratings and self-constructed indices. Other studies use computer software packages to automate the generation of the disclosure scores for a large sample of firms [11].

Furthermore, considerable attention has been given to examining the association between disclosure quality and the stock market’s ability to anticipate future earnings [11-16]. These papers find that the

stock market’s ability to anticipate future annual earnings changes is significantly improved when the firm provides higher levels of disclosure. However, these studies did not take into account audit quality as a potential variable signalling value relevant information for investors when valuing firms’ future prospects.

### Literature related to auditing quality and hypothesis

In the auditing literature, audit quality is defined in terms of the accuracy of information supplied by the auditor to investors [17]; or the auditors’ ability to detect and eliminate misstatements and manipulations in financial statements [18,19]. For further definitions of audit quality, see Dang [20].

Audit quality is an unobservable variable. As a result, academic researchers use different measures as proxies for audit quality. These include the number of clients; the big 8 (or big 6 or big 5 or big 4) versus non-big 8 (or big 6 or big 5 or big 4) and the audit fees [20]. To empirically test the current research hypotheses, this paper uses the big 4 accounting firms as a proxy for high audit quality.

Literature mostly related to auditing includes Becker et al. [21], Francis, Maydew, and Sparks, Francis and Krishnan, Chang and Vander Bauwhede et al. who argue that lower levels of discretionary accruals are associated with higher quality audits. Becker et al. [21] examined the relation between audit quality and earnings management, and concluded that clients of non-Big 4 auditors reported the discretionary accruals that increase income relatively more than the discretionary accruals reported by clients of Big 4 auditors. Francis Maydew, and Sparks investigated whether the use of a Big 4 auditor is increasing in the firm’s opportunities for earnings management and whether Big 6 auditors mitigate firms’ earning management behaviour. They found that Big-4-audited firms have higher levels of total accruals but still have lower amounts of estimated discretionary accruals. This finding indicates that the consequence of using a Big 4 auditor is to constrain aggressive and potentially opportunistic reporting of accruals. Francis and Krishnan found that auditors are more likely to issue qualified audit report for high accruals firms, and that only the Big 4 group of auditors show evidence of this reporting conservatism.

Dang et al. [20] use value relevance research method as a measure of market-perceived audit quality. They find a positive association between actual audit quality and market-perceived audit quality, i.e., the ability of investors to use current accounting information to value firms’ future performance. They conclude that investors’ perceived audit quality, measured by the value-relevance of accounting information, can proxy for actual audit quality.

Demand for audit arises from information asymmetry and agency conflicts between corporate managers, outside investors and intermediaries. From an agency theory perspective, Dang [20] argues that auditing financial statements is an effective monitoring mechanism that provides assurance to stakeholders that financial statements are free of material misstatements. Glisten and Milgrom [22] argue that increasing the quality of corporate disclosure reduces information asymmetry and protect the interests of the principles, specifically, current and potential investors. Prior studies show that the big accounting firms are more likely to provide higher quality financial statements with more informative disclosures and reduced earnings management [21,23,24]. Therefore, a rich information environment

<sup>1</sup> All these definitions are cited in Beattie et al. and explained in Hussainey.

and low information asymmetry should have many desirable consequences. One of these consequences is the increase in investors' ability to anticipate future earnings change.

*H1: The degree of investor's ability to anticipate future earnings is greater for companies with financial statements audited by Big 4 accounting firms.*

Previous evidence in Hopkins [9] finds that financial statement classification influences the stock price judgments of a sophisticated financial statement user group [9]. However, Hayn [25] finds that the strength of the association between annual stock returns and annual reported earnings changes is considerably lower for unprofitable firms than for profitable firms. The empirical findings in Hayn [25] suggest that unprofitable firms' current stock returns contain a higher proportion of non-current earnings information. As a result, it is interesting to examine whether audit quality is one source of this non-current earnings information.

Healy and Palepu [10] argue that ".....while theory suggests that auditors enhance the credibility of financial reports, empirical research has provided surprisingly little evidence to substantiate it". Therefore, empirical research is still needed to examine the extent to which audit quality increases the credibility of financial reports and hence increases investors' earnings predictability. Earnings predictability is measured by the degree to which investors are able to better anticipate future earnings changes when financial statements are audited by the Big 4 accounting firms.

Schleicher et al. [15] provide evidence that the association between corporate disclosure and the investor's ability to anticipate future earnings change is not the same for profitable and unprofitable firms. They find that the ability of stock returns to anticipate next year's earnings change is significantly stronger for high disclosure unprofitable firms. They do not find the same results for profitable firms. Therefore, based on the results in Schleicher et al. [15], it will be safe to examine the sensitivity of the results by examining the impact of audit quality on earnings predictability for profitable and unprofitable firms. Thus, the second hypothesis states:

*H2: The strength of the degree of association between investor's ability to anticipate future earnings and audit quality is not the same for profitable firms and unprofitable firms.*

## Methodology

### Statistic model

The present paper uses the Collins et al. [4] returns-future earnings regression model to measure earnings predictability and to test the research hypothesis. However, only two future earnings growth variables are included in the regression ( $N = 2$  and  $k = 1, 2$ ) rather than three future years. In addition, in defining the earnings growth variable, earnings change is deflated by price and not by lagged earnings. The latter adjustment is made to preserve a maximum number of observations for the analyses [11]. These adjustments yields the following modified model:

$$R_t = b_0 + b_1 X_t + \sum_{k=1}^2 b_{k+1} X_{t+k} + \sum_{k=1}^2 b_{k+N+1} R_{t+k} + b_{2N+2} EP_{t-1} + b_{2N+3} AG_t + u_t \quad (1)$$

Where:

$b_0$ : Intercept;

$b_1$ – $b_8$ : Coefficient of slope parameters;

$\mu$ : Error term.

$R_t$ : Stock return for period  $t$

$R_{t+1}$ : Stock return for period  $t+1$

$R_{t+2}$ : Stock return for period  $t+2$

$X_t$ : Earnings change per share in period  $t$  deflated by the share price four months after the end of the financial year  $t-1$

$X_{t+1}$ : Earnings change per share in period  $t+1$  deflated by the share price four months after the end of the financial year  $t-1$

$X_{t+2}$ : Earnings change per share in period  $t+2$  deflated by the share price four months after the end of the financial year  $t-1$

$EP_{t-1}$ : Earnings yield is defined as earnings per share for period  $t-1$  divided by share price four months after the end of the financial year  $t-1$

$AG_t$ : Total assets growth for period  $t$

Further, the above model is expanded by including an audit dummy variable (AUDIT) to examine the potential value of audit quality to investors. All right-hand side variables are interacted with this dummy (1= when financial statements are audited by one of the Big 4 accounting firms; 0 otherwise). All explanatory variables in (1) are interacted with the dummy variable, AUDIT. This yields the following regression model that is used to test the research hypotheses:

$$R_t = b_0 + b_1 X_t + \sum_{k=1}^2 b_{k+1} X_{t+k} + \sum_{k=1}^2 b_{k+3} R_{t+k} + b_6 EP_{t-1} + b_7 AG_t + b_8 AUDIT [AUDIT * X_t] + \sum_{k=1}^2 b_{k+9} [AUDIT * X_{t+k}] + \sum_{k=1}^2 b_{k+11} [AUDIT * R_{t+k}] + b_{14} [AUDIT * EP_{t-1}] + b_{15} [AUDIT * AG_t] + u_t \quad (2)$$

Following Lee et al. [2], the present study seeks to test the hypothesis that audit quality leads to a significant improvement in investors' predictability of future earnings growth. More specifically, if financial statements of a particular firm audited by the Big 4 accounting firms, then this information should be reflected in stock market prices as financial statements are more credible. As a result, one would expect that realised future earnings will be partially anticipated by current stock returns. If this is the case, then the coefficient on interacted future earnings,  $AuditX_{t+1}$  and  $AuditX_{t+2}$ , will be positive in the returns-earnings regression model (2). In other words, high audit quality enhances the credibility of financial reports and hence helps investors to better predict future earnings changes.

### Data

Schleicher et al. [15] examine the association between voluntary disclosure and investors' ability to predict future earnings in UK market. Their sample size was 4568 firms-years for the period 1996-2002 (financial institutions are excluded). The present study uses the same sample collected by Schleicher et al. [15] to examine the effect of audit quality on share price anticipation of earnings. However, the number of firms is reduced further due to missing information about audit type. The number of usable observations used in the present study is 4417 firm-years for the period 1996-2002. This

presents a sample of 3736 profitable firms and 681 unprofitable firms. Table 1 provides descriptive statistics on the independent variable and control variables used in examining the association between earnings quality and audit quality.

	Mean	Std	Max	Min
Stock Return (R)	2,654	0,675	4,765	-0,987
Earnings Change per Share (X)	0,548	0,356	1,876	-2,098
Total Assets Growth (AG)	0,084	0,029	0,104	-0,073
AUDIT	0,453	0,098	1	0
Full Observations	4417			
Profitable Firms	3736			
Unprofitable Firms	681			

**Table 1:** Descriptive Statistics.

Data stream is used to collect accounting and return data. Earnings number is defined as operating income before all exceptional items (World scope item 01250). Earnings per share is obtained by dividing item 01250 by the outstanding number of shares. Stock returns are calculated as buy-and-hold returns (inclusive of dividends) over a 12-month period from eight months before the financial year-end to four months after the financial year-end. Earnings yield,  $EP_{t-1}$ , is defined as period  $t-1$ 's earnings over price four months after the financial year-end of period  $t-1$ .  $AG_t$  is the growth rate of book value of total assets (World scope item 02999) for period  $t$ . Because audit quality is unobservable, the present study uses the audit type as a proxy for audit quality. Audit type is measured by World scope item 07800 which represents the names of the auditor employed by a company to examine its financial statements. Auditor size is used, specifically the Big 4 versus non-Big 4, to differentiate audit quality levels. The Big 4 accounting firms in the sample are Deloitte and Touche; Ernst and Young; KPMG and Price Waterhouse Cooper.

## Results

The effect of audit quality on the investors' ability to predict future earnings is examined on Table 2. For the whole sample, consistent with prior studies, results shows that the coefficient on  $X_t$  is positive and significant at the 1% level. Additionally, there is evidence that investors are able to anticipate future earnings two years ahead for firms with financial statements audited by non-Big 4 accounting firms.

Variable	Coeff. [P-Value]
Intercept	-0.071
	[0.001]
$R_{t+1}$	0.742
	[0.001]
$R_{t+2}$	0.232
	[0.001]
$X_t$	0.567

		[0.001]
$X_{t+1}$		0.604
		[0.001]
$X_{t+2}$		0.232
		[0.001]
$EP_{t-1}$		0.09
		[0.001]
$AG_t$		0.785
		[0.001]
Audit		0
		[0.999]
Audit	$R_{t+1}$	0.019
		[0.439]
	$X_t$	1.252
		[0.001]
	$X_{t+1}$	0.581
		[0.001]
	$X_{t+2}$	0.231
		[0.001]
	$EP_{t-1}$	0.701
		[0.001]
	$AG_t$	-0.099
		[0.001]
Adj. R2		0.324

**Table 2:** The effect of audit quality on investors ability to predict future earnings.

The estimate coefficients on  $X_{t+1}$  and  $X_{t+2}$  are positive and significant at the 1 percent level. The incremental predictive value of audit quality for earnings predictability by investors is given by the estimate coefficients on Audit  $X_{t+1}$  and Audit  $X_{t+2}$ . These coefficients are positive and highly significant at the 1% level. These results indicate that current stock returns incorporate future earnings information much more strongly for companies with financial statements audited by one of the four accounting firms than companies with those with financial statements audited by non-Big 4 auditors. Therefore, hypothesis 1 is supported (not rejected) based on the sample results.

Coeff. [P-Value]		
Variable	Profitable firms	Unprofitable firms
Intercept	-0.03	-0.28
	[0.094]	-0.001



Rt+1		−0.04	−0.03
		[0.082]	[0.113]
Rt+2		−0.03	−0.03
		[0.249]	[0.179]
Xt		0.75	−0.11
		[0.001]	[0.559]
Xt+1		0.84	0.03
		[0.001]	[0.883]
Xt+2		0.17	−0.11
		[0.001]	[0.401]
EPt-1		0.13	0.09
		[0.001]	[0.001]
AGt		0.52	−0.12
		[0.001]	[0.546]
Audit		−0.07	0.07
		[0.001]	[0.165]
Audit	Rt+1	0.01	0.02
		[0.770]	[0.419]
	Rt+2	−0.04	−0.01
		[0.090]	[0.955]
	Xt	1.72	0.23
		[0.001]	[0.270]
	Xt+1	0.57	−0.03
		[0.001]	[0.877]
	Xt+2	0.21	0.16
		[0.001]	[0.306]
	EPt-1	0.87	0.12
		[0.001]	[0.559]
	AGt	−0.12	−0.10
		[0.001]	[0.001]
Adj. R2	0.113		0.022

**Table 3:** Audit Quality and Prediction of Earnings Prediction for Profitable and Unprofitable Firms.

To test hypotheses 2; the sample is divided into two categories: profitable and unprofitable firms. A regression model is then run for each category. Table 3 shows the effect of audit quality on investors' ability to predict future earnings through distinction between Profitable firms and unprofitable firms.

As shown in Table 3, results show a number of significant differences between profitable and unprofitable firms.

## Discussion

### Firstly

A higher earnings response coefficient on the current earnings variable for profitable firms than unprofitable firms. The coefficient on  $X_t$  is 0.75 with a p-value of 0.001 for profitable firms, while it is insignificantly negative for unprofitable firms ( $X_t = -0.11$  with a p-value of 0.559). These results are consistent with Hayn [25] and Schleicher et al. [15] who find that the strength of the relation between annual stock returns and same-period earnings changes is lower for unprofitable firms than for profitable firms.

### Secondly

There is no evidence of share price anticipation of earnings for unprofitable firms with financial statements audited by non-Big 4 accounting firms. For these companies, the coefficient estimate on  $X_{t+1}$  is 0.03 with a p-value of 0.883 and the coefficient estimate on  $X_{t+2}$  is -0.11 with a p-value of 0.401. These results indicate that investors are not able to predict future earnings for unprofitable firms with financial statements audited by non-Big 4 accounting firms. In contrast there is strong evidence that profitable companies with financial statements audited by non-Big 4 accounting firms do exhibit share price anticipation of earnings for two years ahead. The coefficients estimates on  $X_{t+1}$  and  $X_{t+2}$  are positive (0.84 and 0.17, respectively) and significant at the one percent level (p-values = 0.001 and 0.001, respectively).

### Thirdly

For the effect of audit quality on the investors' ability to predict future earnings, we find that the coefficient estimates on Audit  $X_{t+1}$  and Audit  $X_{t+2}$  for unprofitable firms are still insignificant (Audit  $X_t + 1 = -0.03$  with a p-value of 0.877 and Audit  $X_{t+2} = 0.16$  with a p-value of 0.306). These results indicate that audit quality does not improve the stock market's ability to predict future earnings for unprofitable firms. In contrast there is a significant effect of audit quality on investors' earnings predictability for profitable firms. The coefficient estimates on Audit  $X_{t+1}$  and Audit  $X_{t+2}$  for profitable firms are positive and significant at the one percent level (Audit  $X_{t+1} = 0.57$  with a p-value of 0.001 and Audit  $X_{t+2} = 0.21$  with a p-value of 0.001).

Overall the evidence for profitable firms suggests that investors are able to anticipate future earnings changes two years ahead, and this ability is improved when financial statements audited by one of the Big 4 accounting firms. On the other hand, the same results were not found for unprofitable firms with financial statements audited by one of the Big 4 accounting firms.

A statistical test to examine the extent to which the association between investors' ability to predict future earnings and audit quality is significantly stronger for profitable firms than unprofitable firms was done. This test was done by including all firms in one dataset and creating a dummy variable to be equal 1 for profitable firms and zero otherwise and interacting the profit dummy variable throughout the model. This analysis shows that the coefficient estimate on profit\*Audit  $X_{t+1}$  and profit\*Audit  $X_{t+2}$  are positive and significant at the 1% level (not reported in the table). This suggests that the strength of the degree of association between investors' ability to anticipate future earnings and audit quality is not the same for profitable firms

and unprofitable firms. Therefore, hypothesis 2 is supported (not rejected) based on the sample results.

## Conclusion

The Future Earnings Response Coefficient “FERC” framework previously used by Hussainey et al. [11] and others was used to investigate whether audit quality (financial statements are audited by the Big 4 accounting firms) is positively associated with earnings predictability (the investors’ ability to anticipate future earnings). The findings are based on a sample of 4417 companies for the year ends during 1996 to 2002 [26-34].

Evidence is found that financial statements reveal value relevant information to investors for predicting future earnings. Investors’ earnings predictability is increased when companies’ financial statements are audited by one of the Big 4 accounting firms. However, these findings are not applicable for unprofitable firms.

The research findings may have important implications for audit quality literature. The findings show that audit size (the Big 4 versus non-Big 4) is a good proxy for the actual and perceived audit quality. Therefore, firms need to pay attention to who audit their financial statements because this type of information is important to their key stakeholders (i.e. investors and financial analysts) in making their investment decisions.

Similar to Lee et al. [2]; the present study tries to answer a particular research question: Have the Big 4 accounting firms lost their audit quality advantage? Therefore it ignores some variables of interest that would affect the investors’ earnings predictability. In particular, the present study includes a number of limitations. First, it ignores the importance of voluntary disclosure as a value-relevant source of information to investors. Second, it ignores the fact that companies might use different communication channels to convey value relevant information for investors (these include interim reports, conference calls and presentation to financial analysts). Finally it ignores the effect of dividend propensity as an effective value relevant signal for investors in predicting future earnings.

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