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Theory on the Association between Audit Quality and the Accuracy and Dispersion of Analysts' Earnings Forecasts

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Abstract

In this study, we establish a link between audit quality and various characteristics of analysts' earnings forecasts (i.e., accuracy and dispersion) and present theory which suggests that the audit quality enhances the market's earnings expectation. Our proposition is that enhancing audit quality improves the quality of accounting numbers, which in turn affects analysts' forecasting ability. Although prior empirical studies investigated this relation by using various proxies, none of them directly show the relation with theoretical base. In this paper, we model that accounting earnings are in autoregressive process and influenced by earnings shock. The earnings shock is composed of unpredictable random shock and accounting errors. Then we show that high-quality audit can reduce the accounting errors which in turn influence the analysts' earnings forecasts. The model's predictions are: (1) forecast accuracy is higher, and (2) forecast dispersion is smaller for

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firms audited by high-quality auditor. These theoretical predictions are largely consistent with empirical findings in prior studies, especially a recent study of Behn et al. (2008).

Keywords: audit quality, analysts' forecasts, forecast accuracy, forecast dispersion

INTRODUCTION

In this study, we establish a theoretical link between audit quality and various characteristics of analysts' earnings forecasts (i.e., accuracy and dispersion), presenting theoretical evidence which suggests that increasing audit quality improves the quality of accounting numbers, which in turn affects analysts' ability to issue more accurate and less dispersed forecasts. Although there has been voluminous research on the role of audit quality on various aspects of accounting and auditing issue, there is no direct research on the issue related to analysts' earnings forecasts except the recent study of Behn, Choi, and Kang (2008). In addition, prior studies mostly adopt empirical methodology and use various proxies to measure the audit quality. For example, Big 4[1)] or non-Big 4 dichotomy (Becker, DeFond, Jiambalvo, and Subramanyam 1998; Datar, Feltham, and Hughes 1991; DeAngelo 1981)[2)] and industry specialist or non-specialist dichotomy (Balsam, Krishnan, and Yang 2003;

1) For convenience, throughout the paper, Big 4 auditors refer to not only current Big 4, but also previous Big 5, 6, and 8 auditors where appropriate.

2) There exists ample evidence on the effect of the high-quality Big 4 auditors. DeAngelo (1981) and Datar, Feltham, and Hughes (1991) claim that large and more prestigious public accounting firms concerned about protecting their investment in reputation capital have more incentive than other auditors to supply a high-quality audit. Further, Craswell, Francis, and Taylor (1995) note that, although all public accounting firms must comply with minimum professional standards, the Big Six firms voluntarily invest in higher levels of expertise and have incentives to provide higher-quality audits to protect their reputations. Overall, these studies generally suggest that audit quality is likely to be positively related to audit firm size. Likewise, DeFond and Jiambalvo (1993) provide evidence consistent with the view that Big Eight auditors provide higher quality audit. Craswell, Francis, and Taylor (1995), Francis and Krishnan (1995), and Francis and Reynolds (2000) find that the large audit firms have brand-name reputation, charge higher audit fees, and/or behave qualitatively differently from smaller audit firms. Palmrose (1988) also documents that large audit firms have less litigation activity than smaller audit firms.

Craswell, Francis, and Taylor 1995; Francis, Reichalt, and Wang 2005)[3,4] are two widely used measures of the audit quality. These studies report that audit quality is higher for Big 4 and industry-specialist auditors compared with non-Big 4 or industry non-specialist auditors. However, none of the prior studies have entangled the issue why these measures for audit quality are related to different aspects of accounting or auditing issues. This study is intended to fill this gap and shows the theoretical rationale for the reason of the relation, especially with respect to the characteristics of analysts' earnings forecasts.

Financial statements, a central feature of financial reporting, are a principal means of disclosing accounting information. For instance, *Statement of Financial Accounting Concepts No. 1* states that an objective of financial reporting is to provide information useful to present and potential investors, creditors and other users in making rational investment, credit, and similar decisions. The role of an audit is to render credibility to the financial statement numbers, enhancing their decision-usefulness. Independent auditors commonly examine or review financial statements and other information.[5] Both the providers and the users of that information often view an independent auditor's opinion as enhancing its credibility (Financial Accounting Standards Board 1978). As a result, the credibility of accounting information audited by high-quality auditor can influence the outcome of the users' decision making.

Following this argument, we model that accounting earnings are in autoregressive process and influenced by earnings shock. The earnings shock is composed of unpredictable random shock

3) In this paper, we interchangeably use 'industry expert' and 'industry specialist' throughout the paper. Both terms are frequently used in prior studies.

4) Ferguson, Francis, and Stokes (2003) and Francis, Reichelt, and Wang (2005) find that city-specific, office-level industry leadership, when combined with the national-level leadership, generates the highest audit fee premiums (and thus higher audit quality by inference) in the Australian and U.S. audit markets, respectively, suggesting that auditor industry expertise are related to audit quality.

5) External audits contribute to financial reporting credibility by providing an independent assessment of the accuracy and fairness with which financial statements represent the results of operation, financial position, and cash flows in conformity with generally accepted accounting principles (e.g., Abdel-Khalik and Solomon 1988).

and accounting errors. Then we show that high-quality audit can reduce the accounting errors. As a result, we propose two testable predictions: (1) analysts' consensus forecast error will decrease as audit quality increases; and (2) analysts' forecast dispersion will decrease as audit quality increases. Although we do not directly test these predictions empirically, we discuss these predictions with consistent empirical findings in prior studies and suggest future research.

This study has various contributions to accounting research. First of all, this study extends prior audit quality and analyst forecast literature in two ways. First, while there is some evidence that users' positive perception of reporting credibility increases with audit quality (e.g., Balsam, Krishnan, and Yang 2003; Khurana and Raman 2004; Krishnan 2003; Teoh and Wong 1993), there is little evidence on why users' decision making improves with audit quality. This study theoretically pinpoints the rationale for the reason and presents the theoretical background lacked in previous empirical studies. Second, while previous research suggests that security analysts use financial statement information in formulating forecasts (e.g., Abarbanell and Bushee 1997; Brown, Richardson, and Schwager 1987; Lang and Lundholm 1996), no studies examine whether audit quality explains various characteristics of analyst forecasts by raising financial reporting credibility. The only exception is the study of Behn, Choi, and Kang (2008) that investigates the predictions of this study empirically. They document that Big 4 auditors and industry specialist non-Big 4 auditors provide higher-quality audit service than non-Big 4 auditors and industry non-specialist non-Big 4 auditors do, respectively. As a result, analysts' forecasts are more accurate and less dispersed for the firms audited by Big 4 auditors. However, they fail to find the role of industry specialist Big 4 auditors, whereas the analysts' forecast accuracy and dispersion are smaller for the firms audited by industry specialist non-Big 4 auditors than by industry non-specialist non-Big 4 auditors. Their findings are generally consistent with our models' predictions. Our study attempts to fill the voids in the literature and suggests that audit quality plays important role even in the presence of analysts' obvious bias (e.g., Matsumoto 2002). In this respect, this study confirms empirical evidence in an analytical

framework.

The remainder of this paper is organized as follows. In the next section, we develop a model that links audit quality with earnings forecasts and generate several theoretical implications. In Section III, we describe the empirical findings in prior studies and link them to the models in previous section. We then provide concluding comments in Section IV.

PRIOR LITERATURE AND THEORY DEVELOPMENT

Related Prior Studies

There have been several studies which examined the market's perception of audit quality. Teoh and Wong (1993) argue that Big 4 auditors provide higher quality audit service than non-Big 4 auditors do. For example, Teoh and Wong find that the earnings response coefficients (ERC) of the clients of Big 4 auditors are significantly higher than that of the clients of the non-Big 4 auditors. It is because investors believe the earnings information audited by Big 4 auditors more credible than that audited by non-Big 4 auditors. Krishnan (2003) finds that returns are more closely associated with the discretionary accruals of the clients of Big 4 auditors than clients of non-Big 4 auditors are, consistent with the argument that the investors believe that earnings audited by Big 4 are more trustworthy. Similarly, Khurana and Raman (2004) suggest that *ex ante* cost of equity capital, which represents the perceived credibility of accounting information, is smaller for the clients audited by Big 4 auditors.

In addition, Balsam, Krishnan, and Yang (2003) report that the ERC of client firms audited by industry specialist auditors is greater than that of clients firms audited by non-industry specialist auditors. In summary, these prior studies all suggest that the perceived audit quality measured by Big 4 versus non-Big 4 dichotomy and industry specialist versus non-industry specialist dichotomy are important factor influencing the market's response to accounting information.

However, Holthausen and Watts (2001) note that empirical evidence based on the association between accounting information and stock price often says little about whether

financial statement users actually include the accounting numbers in their decision making processes.[6] In this regard, the question of whether audit quality improves users' decision making still appears unanswered. Henceforth, this study tries to respond this unsolved question.

In this study, we focus on analysts' use of accounting information in order to examine the effect of audit quality. We choose the characteristics of analysts' earnings forecasts because the earnings forecasts are direct output of analysts' work which clearly depend on accounting information.[7] If analysts use high-quality accounting information which are free (or at least subject to lesser degree) of intentional bias or unintentional error, analysts can generate more accurate and less dispersed forecasts. In subsequent part, we theoretically show this rationale.

Theory Development

In this section, we incorporate our intuition in a parsimonious model, where higher quality audits lead to higher information quality, which reduces uncertainty in analysts' earnings forecasts.[8] We define audit quality as the probability that financial statements contain no material omissions or misstatements (Palmrose 1988). Palmrose (1988) notes this definition of audit quality is consistent with the definition that appears in the professional literature, which often describes

6) Behn, Choi, and Kang (2008) also cited this argument to support their empirical tests on the relationship between audit quality and various properties of analysts' earnings forecasts. We further discuss Behn, Choi, and Kang's (2008) findings later.

7) Prior empirical studies have also examined various determinants of analysts' forecast properties (e.g., Brown, Richardson and Schwager 1987; Cheng and Warfield 2005; Das, Levine, Sivaramakrishnan 1998; Eames and Glover 2003; Hwang, Jan, and Basu 1996; Kross, Ro, and Schroeder 1990; Lang and Lundholm 1996; Payne and Robb 2000).

8) While Teoh and Wong's (1993) evidence suggests that earnings become more reliable as audit quality increases, we recognize that reliability itself is not observable. Despite the predictions of our model, it is possible that audit quality will have little or no effect on the market's assessment of future earnings if, for example, either the market participants can see through the measurement errors in earnings without much recourse to audit reports and/or audit quality does not materially affect the reliability of financial statements figures.

audit quality in terms of audit risk, with higher quality audit reflecting lower audit risk (American Institute of Certified Public Accountants 1985). In the model, we posit that audit quality increases with audit sample size and that managers' incentive to prepare accounting reports in a more reliable manner also increases as auditors allocate more time and effort to detecting any material omissions or misstatements in a larger sample.

Consider the environment in which accounting earnings follow a first-order autoregressive process[9] of the form:

$$\tilde{u}_{t+1} = \mu + \rho\left(\tilde{u}_t - \mu\right) + \tilde{\varepsilon}_{t+1} \tag{1}$$

where $\tilde{u}_t$ and $\tilde{u}_{t+1}$ are accounting earnings for periods (t-1, t) and (t, t+1), μ equals $E(\tilde{u}_t)$, ρ equals earnings persistence ($0 < \rho < 1$), and $\tilde{\varepsilon}_{t+1}$ is zero-mean earnings shock. We assume that $\tilde{u}_t$ and $\tilde{\varepsilon}_{t+1}$ are independently and normally distributed. We then decompose the earnings shock $\tilde{\varepsilon}_{t+1}$ into uncontrollable and controllable components:

$$\tilde{\varepsilon}_{t+1} = \tilde{x}_{t+1} + \tilde{y}_{t+1} \tag{2}$$

where is unpredictable random shock and $\tilde{y}_{t+1}$ is accounting error that could be reduced by an external audit.[10] Assuming stationarity and independence, we set $\sigma_\varepsilon^2 = \sigma_x^2 + \sigma_y^2$.

This study focuses on the ability of external auditors to reduce the variance of accounting errors σ_y^2. We rewrite the first-order autoregressive process of accounting earnings (1) in the form:

$$\tilde{u}_{t+1} = E[\tilde{u}_{t+1} \mid \tilde{u}_t, \tilde{x}_{t+1}] + \tilde{y}_{t+1} \ . \tag{3}$$

We view the conditional expectation $E[\tilde{u}_{t+1} \mid \tilde{u}_t, \tilde{x}_{t+1}]$ as the firm's (correct) earnings for period (t, t+1). Since the random error $\tilde{x}_{t+1}$ is unobservable, the firm's accounting system reports

9) This is a reasonable assumption which has been used in prior studies. For the reference, please refer to Watts and Zimmerman (1986).

10) In this study, reported accounting earnings are viewed as joint outputs of management and the external audit. Thus, accounting errors (i.e., the difference between true and reported earnings) may consist of various components, such as management misrepresentations, their non-detections by external audits, audit sampling errors, etc. The terms "accounting errors" and "audit errors" are used interchangeably in this study.

as accounting earnings the mean of K independent sample measurements:

$$\tilde{u}_{t+1} = \frac{1}{K}\sum_{k=1}^{K}\left[E[\tilde{u}_{t+1} \mid \tilde{u}_t, \tilde{x}_{t+1}] + \tilde{\xi}_{t+1,k}\right] \quad (4)$$

Where the quantities $[E(\tilde{u}_{t+1} \mid \tilde{u}_t,\ \tilde{x}_{t+1}]+\tilde{\xi}_{t+1,k}]$ denote audit evidence with errors $\tilde{\xi}_{t+1,k}$ $(1 \le k \le K)$. A comparison of the two expressions (3) and (4) for $\tilde{u}_{t+1}$ then yields accounting error as the mean of audit errors:

$$\tilde{y}_{t+1} = \frac{1}{K}\sum_{k=1}^{K}\tilde{\xi}_{t+1,k}\,.$$

As a result, the variance of accounting error $\tilde{y}_{t+1}$ is related to audit errors as follows:

$$\sigma_y^2 = \frac{1}{K}\sigma_{\tilde{\xi}}^2$$

Thus, the quality of accounting reports increases as audit quality increases (i.e., the size of audit sample K increases).[11] The idea that higher audit quality is associated with higher information quality can be due either (or both) to auditor monitoring strength or (and) auditor reputation. Auditor monitoring strength can influence information quality by reducing noise and bias (Wallace 1980). Specifically, monitoring strength is the auditor's ability to provide information that minimizes the difference between a client's reported economic circumstances and the unobservable underlying economic situation of the client. The auditor's monitoring strength is expected to increase the information quality, ceteris paribus (Watkins, Hillison, and Morecroft 2004). Auditor reputation is also known to influence information credibility (i.e., how reliable the information is perceived to be). DeAngelo (1981) argues that incumbent auditors earn client-specific quasi-rents that are subject to loss from discovery of lower-than-expected monitoring

11) Consistent with this theoretical argument, Davidson and Neu (1993), among others, provide evidence that brand name (larger) auditors provide greater monitoring strength than do smaller, non-brand name auditors.

strength and thus serve as collateral against such opportunistic behavior. Large auditors having more clients would incur higher opportunity losses from the performance of low quality audits.

Now let us assume that n analysts follow the firm. At date t, analyst j observes both the public accounting earnings report u_t for period (t–1, t) and also a private signal:[12)]

$$\tilde{v}_{j,t} = \tilde{y}_{t+1} + \tilde{z}_{j,t} \tag{5}$$

where $\tilde{z}_{j,t} \sim N[0, \sigma_z^2]$ for all j and variables $\tilde{x}_{t+1}$, $\tilde{y}_{t+1}$, and $\tilde{z}_{j+t}$ are independently distributed.[13)] Thus, analyst j's forecast of $\tilde{u}_{t+1}$ is conditioned on both public signal and private signal $\tilde{v}_{j+t}$, i.e., $\tilde{m}_{j,t} = E[\tilde{u}_{t+1} \mid \tilde{u}_t, \tilde{v}_{j,t}]$. Under these conditions, we derive our first set of propositions.

Proposition 1: Assume that accounting errors $\tilde{y}_{t+1}$ are small relative to noises $\tilde{z}_{j,t}$ of analysts' private signals $\tilde{v}_{j+t}$, in the sense that

$$\sigma_y^2 < \frac{n}{n-2}\sigma_z^2 \ .$$

Then, as accounting errors decrease with external audits, financial analysts' consensus earnings forecasts become more accurate.

Proof of Proposition 1: As analyst j's earnings forecast is

$$\tilde{m}_{j,t} = E\left(\tilde{u}_{t+1} \mid \tilde{u}_t, \tilde{v}_{j,t}\right) = \mu + \rho(\tilde{u}_t - \mu) + E(\tilde{y}_{t+1} \mid \tilde{v}_{j,t}) \ ,$$

12) Observe that accounting error critically depends on the extent of external audits. In this study, financial analysts are assumed to have rational expectations on the extent of external audits, such as audit sample size, sample errors, etc.

13) In here, we assume that analysts issue unbiased forecasts based on their observations on the signal contained in the financial statements. However, prior empirical studies suggest that analysts' earnings forecasts are biased due to various reasons, such as trading and investment banking incentives (e.g., Abarbanell and Lehavy 2003; Matsumoto 2002; Richardson, Teoh, and Wysocki 2004). Even though the analysts' bias influence the overall accuracy of the forecasts, our results still hold in that quality audit reduces the noise in the earnings even in the presence of the bias. In this respect, the analysts' bias plays a role similar to the random shock or noise in the earnings signal.

the consensus forecast of n analysts has the form:

$$\tilde{m}_j = \frac{1}{n}\sum_{j=1}^{n}\tilde{m}_{j,t} = \mu + \rho(\tilde{u}_t - \mu) + \frac{1}{n}\sum_{j=1}^{n}E(\tilde{y}_{t+1} \mid \tilde{v}_{j,t}).$$

Thus, we have

$$\tilde{u}_{t+1} - \tilde{m}_t = \tilde{x}_{t+1} + \frac{1}{\sigma_y^2 + \sigma_z^2}\left(\sigma_z^2 \quad \tilde{y}_{t+1} - \sigma_y^2 \frac{1}{n}\sum \tilde{z}_{j,t}\right). \tag{6}$$

As a result, we have

$$E\left[\left(\tilde{u}_{t+1} - \tilde{m}_t\right)^2\right] = \sigma_x^2 + \frac{1}{(\sigma_y^2 + \sigma_z^2)^2}\left[\sigma_z^4 + \sigma_y^2 + \frac{1}{n}\sigma_y^4\sigma_z^2\right].$$

Thus, $\frac{\partial}{\partial\sigma_y^2}E\left[\left(\tilde{u}_{t+1} - \tilde{m}_t\right)^2\right] > 0$ if and only if

$$\left(\sigma_z^4 + \frac{2}{n}\sigma_y^2\sigma_z^2\right)\left(\sigma_y^2 + \sigma_z^2\right)^2 > 2\left(\sigma_z^2 + \sigma_y^2\right)\left(\sigma_z^4\sigma_y^2 + \frac{1}{n}\sigma_y^4\sigma_z^2\right).$$

This would hold if and only if $\sigma_z^2 > \left(1 - \frac{2}{n}\right)\sigma_y^2$.

Thus, as audit quality increases, both σ_y^2 and $E[(\tilde{u}_{t+1} - \tilde{m}_t)^2]$ decrease. As a result, the analysts' earnings forecasts become more accurate. Now we turn to our second proposition on the relation between audit quality and analysts' forecast dispersion.

Proposition 2: As audit quality increases, analyst forecast dispersion decreases.

Proof of Proposition 2: Note that

$$\tilde{m}_{j,t} - \tilde{m}_t = E\left(\tilde{y}_{t+1} \mid \tilde{v}_{j,t}\right) - \frac{1}{n}\sum_{k=1}^{n}E\left(\tilde{y}_{t+1} \mid \tilde{v}_{k,t}\right)$$

$$= \frac{\sigma_y^2}{\sigma_y^2 + \sigma_z^2}\left(\tilde{z}_{j,t} - \frac{1}{n}\sum_{k=1}^{n}\tilde{z}_{k,t}\right) \quad .$$

Thus, $E\left[\left(\tilde{m}_{j,t} - \tilde{m}_t\right)^2\right] = \frac{\sigma_y^4}{(\sigma_y^2 + \sigma_z^2)^2}\left[\left(1 - \frac{1}{n}\right)\sigma_z^2\right]$

$$= \frac{\left(1-\frac{1}{n}\right)\sigma_z^2}{\left(1+\frac{\sigma_z^2}{\sigma_y^2}\right)^2} \text{ decreases as the error variance } \sigma_y^2 \text{ decreases.}$$

IMPLICATION FOR EMPIRICAL RESEARCH

There has been voluminous research on the characteristics of analysts' earnings forecasts. For example, Brown, Richardson, and Schwager (1987) claim that the accuracy of an earnings forecast depends on the difficulty or complexity of the forecasting task. Lang and Lundholm (1996) find that analysts' forecasts are more accurate, seem less dispersed and exhibit less volatile revisions for large firms. They also find that the forecasts are less accurate for firms with large earnings surprises. In a similar spirit, Hwang, Jan, and Basu (1996) find that forecasts are less accurate for loss firms. Kross, Ro, and Schroeder (1990) and Das, Levine, and Sivaramakrishnan (1998) report that earnings variability explains forecast accuracy and dispersion. Eames and Glover (2003) document associations between earnings level and both forecast error and earnings predictability.

In summary, although there have been many studies on various characteristics of analysts' earnings forecasts as mentioned above, there has been no research to link the characteristics to the audit quality. The only exception is the recent work of Behn, Choi, and Kang (2008). Behn, Choi, and Kang (2008) use the Big 4 and non-Big 4 dichotomy and industry specialist and non-specialist dichotomy to separate high-quality versus low-quality auditors and report that the analysts' earnings forecasts for the clients firm audited by high-quality Big 4 auditors are more accurate and less dispersed the analysts' earnings forecasts for the clients firms audited by low-quality non-Big 4 auditors. In contrast, they report that auditor industry specialization does not influence the accuracy and dispersion for the clients of Big 4 auditors. However, for the clients of non-Big 4 auditors, they report that the analysts' earnings forecasts are more accurate and less dispersed if the non-Big 4 auditor is industry specialized auditors than non-industry specialized

auditors.[14] They explain that because Big 4 auditors have large client base and diverse experience in various industries, the industry specialization itself does not make big quality difference. In contrast, non-Big 4 auditors have much smaller client base and less diverse experience in various industries, which influence auditor quality based on their industry-specific experience.

The findings in Behn, Choi, and Kang (2008) are generally consistent with the theoretical model's prediction in our paper. Their Hypothesis 1 and 2 are directly related to our Propositions 1 and 2. Even though this paper introduces very stylized simple models, the consistency in the models' predictions and empirical results suggest that the predictions in this study are meaningful and relatively accurate.

CONCLUSION

There have been several prior studies on the association between perceived audit quality and the market's response to accounting information. This information is the one released by firms but audited by the auditors. Thus, the audit quality could influence the credibility of accounting information which in turn influences behaviors of the users of the accounting information. For example, accounting information greatly influences the decision-making of current and potential investors as well as other related parties. However, accounting information may not be very credible given that managers have incentive to manipulate the information. Because credibility of accounting information is unobservable, prior studies have largely relied on stock price to infer how market participants evaluate the credibility. However, none of the prior studies clearly show why the audit quality is related to quality of accounting information provided through the audits. This study focuses on analysts'

14) Prior empirical studies mostly use the dummy variables to separate industry expert auditors from non-industry expert auditors. However, Behn, Choi, and Kang (2008) use the relative percentage of the clients in a specific industry (based on the first two digits of SIC codes) of an auditor out of total clients of the auditor. This measure is a relative measure of the industry expertise. Further study is recommended to investigate the different role of relative versus absolute degree of industry specialty of different auditors.

earnings forecasts especially and shows the reason for the effect of the high-quality audit on the forecasts. As a result, this study aims to provide the direct theoretical evidence on the reason for the effect of the audit quality which supplements empirical findings in prior research.

The models developed in this study are relatively parsimonious, testing whether a higher quality audit renders accounting information more reliable by reducing accounting errors, which, in turn, enhances the market participants' ability to predict future firm performance more accurately and consistently. The model's predictions are: (1) forecast accuracy is higher and (2) forecast dispersion is smaller. These theoretical predictions are largely consistent with empirical findings in prior studies. Especially, Behn, Choi, and Kang (2008) report the empirical results supporting the first and the second predictions. They use the Big 4 versus non-Big 4 dichotomy to separate high-quality versus low-quality auditors but they could not find strong evidence on the quality differences among industry specialist and non-specialist auditors. Further study should investigate this issue in more details.

REFERENCES

Abarbanell, J. and B. Bushee (1997), "Fundamental Analysis, Future Earnings, and Stock Prices," *Journal of Accounting Research*, 35, 1-24.

_____ and R. Lehavy (2003), "Can Stock Recommendations Predict Earnings Management and Analysts' Earnings Forecast Errors?" *Journal of Accounting Research*, 41(March), 1-31.

Abdel-khalik, A. R. and Solomon, I. (eds) (1988), *Research Opportunities in Auditing: The Second Decade*. Sarasota, FL: American Accounting Association — Auditing Section.

American Institute of Certified Public Accountants (1985), *Professional Standards Volume 1*. New York: AICPA.

Balsam, S., J. Krishnan, and J. Yang (2003), "Auditor Industry Specialization and Earnings Quality," *Auditing: A Journal of Practice & Theory*, 22(March), 71-97.

Becker, C., M. DeFond, J. Jiambalvo, and K. Subramanyam (1998), "The Effect of Audit Quality on Earnings Management," *Contemporary Accounting Research*, 15(Spring), 1-24.

Behn, B., J. H. Choi and T. Kang (2008), "Audit Quality and Properties of Analysts' Earnings Forecasts," *The Accounting Review*, 83(April),

327-349.
Brown, L. D., G. Richardson and S. Schwager (1987), "An Information Interpretation of Financial Analyst Superiority in Forecasting Earnings," *Journal of Accounting Research*, 25(Spring), 49-67.
Cheng, Q. and T. D. Warfield (2005), "Equity Incentives and Earnings Management," *The Accounting Review*, 80(April), 441-476.
Craswell, A., J. Francis, and S. Taylor (1995), "Auditor Brand Name Reputations and Industry Specializations," *Journal of Accounting and Economics*, 20(December), 297-322.
Das, S., C. Levine, and K. Sivaramakrishnan (1998), "Earnings Predictability and Bias in Analysts' Earnings Forecasts," *The Accounting Review*, 73(April), 277-294.
Datar, S. M., G. A. Feltham, and J. S. Hughes (1991), "The Role of Audits and Audit Quality in Valuing New Issues," *Journal of Accounting and Economics*, 14, 3-49.
Davidson, R.A. and D. Neu (1993), "A Note on the Association between Audit Firm Size and Audit Quality," *Contemporary Accounting Research*, 9(Spring), 479-488.
DeAngelo, L. E. (1981), "Auditor Size and Audit Quality," *Journal of Accounting and Economics*, 13(December), 183-199.
DeFond, M. L. and J. Jiambalvo (1993), "Factors Related to Auditor-Client Disagreements over Income-Increasing Accounting Methods", *Contemporary Accounting Research*, 9(Spring), 415-431.
Degeorge, F., J. Patel, and R. Zeckhauser (1999), "Earnings Management to Exceed Thresholds," *Journal of Business*, 72, 1-33.
Eames, M. and S. Glover (2003), "Earnings Predictability and the Directing of Analysts' Earnings Forecast Errors," *The Accounting Review*, 78(July), 707-724.
Ferguson, A., J. R. Francis, and D. J. Stokes (2003). "The Effects of Firm-Wide and Office Level Industry Expertise on Audit Pricing," *The Accounting Review*, 78(April), 429-449.
Financial Accounting Standards Board, Objectives of Financial Reporting by Business Enterprises (1978), Statement of Financial Accounting Concepts No. 1, Norwalk, CT.
Francis, J. and J. Krishnan (1995), "Accounting Accruals and Auditor Reporting Conservatism," *Contemporary Accounting Research*, 16(Spring), 135-165.
_____ and J. K. Reynolds (2000), "Does Size Matter? The Influence of Large Clients on Office-level Auditor Reporting Decisions," *Journal of Accounting and Economics*, 30(December), 375-400.
_____, K. Reichelt, and D. Wang (2005), "The Pricing of National and City-specific Reputation for Industry Expertise in the U.S. Audit Market," *The Accounting Review*, 80(January), 113-136.
Holthausen R. and R. Watts (2001), "The Relevance of the Value-

relevance Literature for Financial Accounting Standard Setting," *Journal of Accounting and Economics*, 31(September), 3-75.

Hwang, L., C. Jan, and S. Basu (1996), "Loss Firms and Analysts' Earnings Forecast Errors," *Journal of Financial Statement Analysis*, 1(Winter), 18-31.

Khurana, I. K. and K. Raman (2004), "Litigation Risk and the Financial Reporting Credibility of Big 4 versus Non-Big 4 Audits: Evidence from Anglo-American Countries," *The Accounting Review*, 79(April), 473-495.

Krishnan, G. (2003), "Audit Quality and the Pricing of Discretionary Accruals," *Auditing: A Journal of Practice & Theory*, 22(March), 109-126.

Kross, W., B. T. Ro, and D. Schroeder (1990), "Earnings Expectations: the Analysts' Information Advantage," *The Accounting Review*, 65(April), 461-476.

Lang, M., and R. Lundholm (1996), "Corporate Disclosure Policy and Analyst Behavior," *The Accounting Review*, 71(October), 467-492.

Matsumoto, D. (2002), "Management's Incentives to Avoid Negative Earnings Surprises," *The Accounting Review*, 77(3), 483-514.

Palmrose, Z-V. (1988), "An Analysis of Auditor Litigation and Audit Service Quality," *The Accounting Review*, 63(January), 55-73.

Payne, J. L., and S. W. G. Robb (2000), "Earnings Management: The Effect of Ex-ante Earnings Expectations," *Journal of Accounting, Auditing, and Finance*, 15, 371-392.

Richardson, S., S. H. Teoh, and P. Wysocki (2004), "The Walk-down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives," *Contemporary Accounting Research*, 21(Winter), 885-924.

Teoh, S. H. and T. J. Wong (1993), "Perceived Auditor Quality and the Earnings Response Coefficient," *The Accounting Review*, 68(April), 346-366.

Wallace, W. A. (1980), "The Economic Role of the Audit in Free and Regulated Markets," *Aid to Education Program.* Touche Ross & Co.

Watkins, A. L., W. Hillison and S. E. Morecroft (2004), "Audit Quality: A Synthesis of Theory and Empirical Evidence," *Journal of Accounting Literature*, 23, 153-193.

Watts, R. L. and J. Zimmerman (1986), *Positive Accounting Theory*. NJ: Prentice-Hall.

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