Auditor Industry Specialization and Earnings response coefficient: A New Zealand perspective

A dissertation submitted to Auckland University of Technology in partial fulfilment of the degree of Master of Business

Somdeb Bhattacharya

2011

Under the supervision of

Dr. Ahsan Habib

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ATTESTTATION OF AUTHORSHIP

I hereby declare that the submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

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Somdeb Bhattacharya

ACKNOWLEDGEMENTS

I would like to take this opportunity to thank Dr. Ahsan Habib, whose guidance, patience and help made this dissertation possible. His encouragement and knowledge throughout the whole process instilled within me a love for research and a drive to broaden my academic horizon.

I would also like to thank all the wonderful people here at AUT University, especially all my professors, who made my Masters study experience an amazing journey.

Finally I thank my parents for all their love and support and for backing my decision to do masters here in New Zealand. Thank you for always being there.

Abstract

The purpose of this research is to examine the relationship between auditor industry specialization (as a proxy for audit quality) and Earnings Response Coefficient (ERC) in New Zealand. Previous research in this field has identified a significant positive correlation between industry specialization of auditors and ERC in other countries. The unique market characteristics of New Zealand provide a new setting to test the hypothesis that companies audited by industry specialized Big 4 audit firms have higher ERC than companies audited by non-specialist Big 4 audit firms.

This study is carried out with a sample of NZX listed companies for the time period 2000 to 2009. Using an established model (Balsam, Krishnan and Yang, 2003), the study finds that industry specialization of auditors is not a significant factor which influences ERC in New Zealand. The results show that the established relationship between auditor industry specialization and ERC in other countries does not hold true for the market environment in New Zealand.

1. Introduction

Audit quality and its effect on earnings has been the subject of increased scrutiny by researchers since the fall of Enron in 2001. Existing research have established a positive relationship between superior audit quality and increased response to reported earnings (Teoh and Wong, 1993; Balsam, Krishnan and Yang, 2003). The variation in audit quality of audit firms has been deemed as one of the primary factors which influence the credibility of reported earnings of clients. Since audit quality is not directly observable, previous researchers have used various proxies to study its effects. The most common ways of quantifying auditor quality is through Brand name (which can also be viewed as firm size) of auditors (Palmrose, 1988; Beatty, 1989; Teoh and Wong, 1993; Becker et al. 1998; Reynolds and Francis, 2000; Khurana and Raman, 2004) and Industry specialization (Craswell et al., 1995; Beasley and Petroni, 2001; Balsam, Krishnan and Yang, 2003). The use of Industry specialization as a cogent proxy for audit quality is supported by Owohso et al. (2002) who provide evidence that industry specialist auditors generate a more effective audit than non specialists. Recent industry trends geared towards specialized audit services imply that industry specialization may play an increased role as a measure for audit quality (Hogan and Jeter, 1999; Solomon et al., 1999).

Existing research have shown that there is a relationship between the stock price reaction to earnings surprises and the quality of reported earnings (Imhoff and Lobo, 1992; Teoh and Wong, 1993). Imhoff and Lobo (1992) found that firms with lower consensus in the analyst's forecast of earnings had lower earnings response coefficient (ERC). Teoh and Wong (1993) uses brand name as a proxy for audit quality and find that companies audited by Big 8 firms reported higher ERC than those audited by non Big 8. Balsam, Krishnan and Yang (2003) followed up on these findings and documents that industry specialization of

auditors is positively correlated with higher ERC. These findings show that high audit quality is associated with increased ERC. This can be explained as; Investors cannot directly observe the underlying true earnings of a firm, hence they have to rely on external auditors to ascertain the company is conforming to the relevant accounting principles. Therefore when the investors perceive the reported earnings to be of a higher quality, as attested by a quality auditor, their response to unexpected changes in earnings will be stronger. This is why the ERC for firms, with superior audit quality, is high.

This paper uses previous research as a base to study the effect of audit quality on ERC in New Zealand. Existing studies which have positively correlated increased audit quality with ERC had been done in the United States, which has a markedly different market structure with that of New Zealand. The size of the New Zealand market is much smaller compared to that of the United States and it is characterized by lesser geographic distribution, smaller firm size and lower investor count. This may imply that auditor industry specialization, as a proxy for audit quality, may not exert the same influence on earnings quality in New Zealand as compared to larger market settings such as the U.S. and Australia. Using auditor industry specialization as a proxy for audit quality, this study seeks to observe whether the findings of Teoh and Wong (1993) and Balsam, Krishnan and Yang (2003), which established a significant positive influence of audit quality on ERC in the United States, holds true even in a smaller unique market setting such as New Zealand. The result of the research shows that the hypothesis does not hold after the data is analysed. Two types of auditor industry specialization; national level specialization and city level specialization, do not exhibit any significant impact on the ERC of clients.

The rest of the paper is organized as follows. Section 2 provides background information and existing literature review on audit quality, auditor industry specialization and existing specialization research in New Zealand. Section 3 explains how the hypothesis is

developed. Section 4 provides the research design, the development of the regression equation and explanation of all variables involved in the study. Section 5 and 6 details the sample used in the research and provides descriptive statistics. Section 7 presents the analysis and findings of the study. Section 8 and 9 gives the limitations of the study and provides the conclusion.

2. Literature review
2.1 Audit quality

The collapse of Enron as well as the global financial crisis has highlighted the importance of audit quality as a factor which builds confidence amongst stakeholders of an organization about the credibility of its financial statements. An independent and quality audit provides the necessary assurance, through external checks, about the integrity of the reported earnings. Audit quality is defined as the market assessed joint probability that a given auditor will detect material misstatements in a client's financial reports and subsequently report the said discrepancies (DeAngelo, 1981). This definition can be broken down into two sections; the ability of the auditor to detect material misstatements which implies auditor competence, and the willingness of the auditor to report material misstatements which denotes auditor independence. Therefore audit quality can be viewed as arising from two factors i.e. auditor competence and auditor independence. Palmrose (1988) defined audit quality as the probability that the financial statements contain no material misstatements. In contrast to DeAngelo's (1981) definition of audit quality, Palmrose's (1988) definition is a post hoc view of audit quality since it cannot be measured until the audit engagement has been completed. Other definitions of audit quality include Titman and Trueman (1986) who defined audit quality in terms of accuracy of the data presented to

investors and Davidson and Neu (1993) who defined audit quality as the ability of the auditors to identify and rectify misstatements and manipulations in the reported net income of an organization. Hence a higher quality auditor acts as a more effective deterrent and is therefore expected to provide more assurance to stakeholders.

There is a substantial body of literature which documents the effect audit quality has on various aspects of financial reporting. Becker et al. (1998) and Francis et al. (1999) studied the effect of audit quality on earnings management. Their study documented that clients of Big N audit firms have a lower level of abnormal or unexpected accruals as compared to clients of non-Big N firms. Bauwhede et al (2000) expanded the findings and reported that increased audit quality suppressed income decreasing earnings management. Audit quality has also been documented to have a negative correlation with incidences of litigation of auditors (St. Pierre and Anderson, 1984; Palmrose, 1988) as well as actual prosecution arising out of those cases of litigation (Carcello and Palmrose, 1994). Defond and Jiambalvo (1991) reported that clients of Big N firms had lower incidences of earnings errors and irregularities. Lennox (1999) reported that Big N auditors issued more accurate reports in relation to non Big N auditors. Caramanis and Lennox (2008) using audit engagement hours as a proxy for audit quality found that client's earnings quality is higher when auditors spend more time on audit engagements. Gunny and Zhang (2009) established a link between audit quality and client's earnings quality by studying the Public Company Accounting Oversight Board's (PCAOB) inspection reports of auditors. They found that clients of auditors with a lower rank (as per PCAOB's reports) had lower earnings quality. Teoh and Wong (1993), using auditor brand name as a proxy for audit quality, found that audit quality is positively correlated with ERC. Balsam, Krishnan and Yang (2003) used auditor industry specialization as a proxy for auditor quality and observed that clients of specialist auditors had higher ERC and lower incidences of discretionary accruals.

The next section explains the concept of auditor industry specialization and provides evidence for its suitability as a proxy for audit quality.

2.2 Auditor Industry Specialization

Industry specialization by auditors has been an increasing trend over the years. Audit firms perceive various benefits that result out of industry specialization such as increased market share, profits, audit quality and market competitiveness. Emerson (1993) stated that most of the largest audit firms are showing a trend towards being structured along industry lines and designate a majority of their auditors as industry specialists. Through focussed training (indirect experience) and deep direct experience through working on audit engagements in a particular industry, firms are able to develop specialized auditors within their industry of choice. This trend can be traced back to KPMG Peat Marwick's restructuring in 1993, in which the organization was realigned along industry service lines. Since then there has been a growing emphasis on the audit profession and the auditing standard to better understand the needs of the client's industry and business. This is reflected on the audit quality control standards in the U.S. (American Institute of Certified Public Accountants, 1993), U.K. (United Kingdom Auditing Practices Board, 1995), Australia (Australian Society of Accountants and the Institute of Chartered Accountants in Australia, 1989) and New Zealand (New Zealand society of Accountants, 1986), all of which emphasize the importance of identifying, designating and developing industry specialist auditors (Gramling and Stone, 2001).

Audit firms adopt industry specialization as it offers a myriad of advantages. Through industry specialization, firms are able to increase the demand for their product within the

focal industry. Specialization also improves the efficiency and quality of the audit engagements as firms concentrate their resources and technologies on a specific industry. This further leads to economies of scale resulting in lower costs, allowing industry specialized audit firms to offer higher quality audits at a lower price as compared to their non-specialized competitors. Hogan and Jeter (1999) identified that audit firm expertise allows for differentiated audit market products in contrast to other sellers in the market, whose products are assumed to be imperfect substitutes. According to Kwon (1996) specialized audit firms are able to enhance audit quality by being able to better assess their client's estimates and financial representations which allows for reduction in client's discretion while applying accounting principles. Specialization also acts as a barrier to new firms entering the market as the current standards and technologies require audit firm expertise, allowing only industry specialized auditors to service the market. In spite of these advantages, specialization can reduce audit firm independence and objectivity as they become highly dependent on their focal industry for clients (Gramling and Stone, 2001).

Bonner and Lewis (1990) cite researches in psychology to explain the advantages industry specialized auditors have over non-specialized auditors. Psychology research has shown that knowledge gained by people in a general domain through instruction and experience has a greater ability than their counterpart. This has been shown through studies done on physicists, medical professionals, sports players etc. All these researches show a positive correlation between experience and performance. Knowledge is gained through experience, whereas problem solving skills is partially innate. Therefore, specialized auditors would also be expected to perform at a higher level than their non-specialized counterpart since they have more knowledge, assuming that problem solving ability remains the same. Several researches in auditing have also aimed at delineating the difference between specialist and non-specialist auditors. Bonner and Lewis (1990) expound the studies of

several researchers; Frederick (1989) found that auditors with more experience were able to recall more internal controls as compared to students who had minimal or no experience in the auditing profession. Libby and Frederick (1990) further discovered that experienced auditors were able to identify a higher number of financial statement errors in a ratio analysis task in comparison to students performing the same task. Butt (1988) also showed that experienced auditors were able to make better judgements about the frequency of errors in financial statements relative to students. This finding was supported by Ashton (1991) who found that industry experience was positively correlated to identifying errors in financial statements amongst industry professionals. This increased performance is explained through behavioural decision theory. According to this theory, performance is determined by three factors: experience, ability and knowledge. Experience and knowledge are closely related, and together they amount to expertise. "Expertise has been defined as the ability, acquired by practise, to perform qualitatively well in a particular domain" (Bedard & Chi, 1993). These research support the argument that industry specialized auditors are able to provide better services to their clients as their knowledge and experience (expertise) within the focal industry is significantly higher than non-specialists.

Although the above mentioned researches tested the relationship between experience and performance in the auditing profession, they did not specifically test industry specialization. Moroney (2007) conducted a study which positively correlated industry specialization to greater efficiency in audit judgement. According to Moroney (2007) industry specialization is a form of expertise since auditors with industry specific knowledge are better at understanding and solving problems within the concerned industry. This can be inferred from the decision making process. The decision making process involves three steps; pre-information search phase, the information search phase and finally the decision. In the first stage, the decision maker attempts to understand and evaluate the situation at hand.

Those with a better understanding of the paradigm or context within which the decision is being made will be able to interpret the situation faster. The knowledge needed to perform this analysis is obtained through prior experience within that domain. This knowledge will allow an expert to be more efficient when undertaking a decision. Hence an industry specialist auditor will be able to better understand the situation within which they are required to take the decision than their non-specialist counterpart due to their pre-existing knowledge within the field. Therefore they will take less time in analysing the situation, utilize a strategy which is appropriate and arrive at a decision more efficiently. This comprehensive understanding of their domain of interest places them at an advantageous position. Moroney (2007) in his research discovered that specialist auditors outperformed their non-specialist counterpart when it came to time taken to read case material, amount of time taken to search for and read information cues and the quality of the final decision. This shows that specialization of audit services has a positive impact on the overall quality of financial statements audited. Several researches also show that the recent shift in trend towards industry specialization by audit firms had a positive impact on the audit quality (Hogan and Jeter, 1999; Solomon et al., 1999). As financial statements are the primary source of information in capital markets, it is expected that a higher quality of audit will increase the perception of reliability for users of this information, namely amongst shareholders and investors. In fact it is one of the primary functions of external auditors to lend credibility to financial reports by independently assessing the fairness and accuracy of the information presented within. Other evidences also exist to support an increase in the perceived reliability of financial statements in response to an increase in audit quality (e.g. Krishnan, 2003; Balsam et al., 2003; Khurana and Raman, 2004).

Prior research in auditor industry specialization have mainly focussed on the relationship between industry specialization and audit fees (Craswell et al., 1995; Francis,

Reichelt and Wang, 2005) as well as the relationship between industry specialization and client's earnings quality (Balsam, Krishnan and Yang, 2003; Krishnan, 2003; Reichelt and Wang, 2009). The findings of these researches indicate that auditor industry specialization is positively attributed to higher audit fees and improved quality of reported earnings through lower levels of discretionary accruals. Dunn and Mayhew (2004) reported that the Association for Investment Management and Research (AIMR) ratings for companies which employed industry specialist auditors were higher. These studies show that auditor industry specialization is attributed to higher audit quality and hence can be utilized as a proxy to study the effects of audit quality.

Auditor industry specialization is generally determined at the national level, the next section provides evidence that city level (local firm level) specialization may have a greater effect on quality of audit.

2.3 Levels of Specialization

Although most previous research have used national level specialization, recent studies show that city level specialization may play a more important role (Francis et al., 1999; Ferguson et al., 2003; Francis, Reichelt and Wang, 2005). The rationale behind it is that large audit firms have a decentralized structure and they operate as a network of autonomous local offices (Narayanan, 1995). This is supported by Ferguson et al (2003) and Francis, Reichelt and Wang (2005) who find that audit fee premium for industry specialist auditors are primarily driven by the market share at the local office level. Reichelt and Wang (2009) also find that the audit quality for audit firms is higher when the firm is both a national level as well as city level specialist. City level industry specialists have a deeper understanding of client's needs and have more client specific knowledge within their area of

operations. They are also able to build a greater understanding and bond with clients which lead to longer tenure. Hence city level specialization has the potential to reflect higher audit quality than national level specialization.

Using this rationale, this study employs both national level as well as city level specialization to test the impact of audit quality on ERC in New Zealand. It is expected that city level specialization will show a stronger correlation with ERC than national level specialization measure. Although it can be argued that due to the smaller size and geographical distribution of the New Zealand market, transfer of industry specialization across cities might be easier and national level specialization may be more relevant.

2.4 Existing specialization research in New Zealand

There is a dearth of audit specialization related research in New Zealand. Most of the studies in this area have been confined to US, Australia and a few other countries. Hence New Zealand is a relatively new setting for industry specialization related studies in auditing. This section provides a brief outline of existing research on this topic in New Zealand.

Hay and Jeter (2008) studied the pricing of industry specialization by auditors in New Zealand. Using a sample of both listed and unlisted companies, they reported that clients of industry specialized auditors in New Zealand pay a fee premium. The study found evidence that payment of fee premium in New Zealand is exclusively observed in cases of city level specialization, rather than national level. The study further documented that majority of the fee premium is paid by larger firms, unlisted firms and firms which had lower risk. They concluded that in New Zealand, fee premium is more likely to be paid by clients who could afford a signal of earnings quality rather than by clients who were in the greatest need of such a signal.

Habib and Bhuiyan (2011) documented the relationship between auditor industry specialization and the Audit Report Lag (ARL) in New Zealand. Using national level and city level specialization, the study found that clients of industry specialist auditors have shorter ARLs compared to clients of non specialists. The study also reported that after the mandatory adoption of International Financial Reporting Standards (IFRS) in New Zealand, the ARL of all firms, except those audited by industry specialist auditors, increased.

Kwong (2011) studied if industry specialization of auditors existed in New Zealand and how audit fees were affected by industry specialization. The research found that according to the measure of specialization used in the study (an audit firm was deemed a specialist if it had more than 20% of the market share in the particular industry), auditor industry specialization did exist in New Zealand. However the study failed to find any significant link between audit fees and specialization. Using various models for audit fees and alternate measures of specialization, the initial findings remained constant.

These findings show that industry specialization does exist in New Zealand, but its relationship with other variables is not always in agreement with research findings done in other countries. Although Hay and Jeter (2008) found a link between specialization and fees premium, the relationship is more complex than originally expected. Kwong (2011) also failed to find evidence of a link between specialization and audit fees, in contrast to previous research which established a link between the two variables in other market settings such as the US. There exists a considerable research gap in auditor industry specialization studies within New Zealand. There have been no previous research which has studied how specialization relates to earnings quality in New Zealand. This paper seeks to contribute to that area by studying the relationship between auditor industry specialization and ERC within New Zealand.

2.5 Big 4 Audit firms

Apart from using industry specialization as a proxy for audit quality, the sample for this study exclusively incorporates clients of Big 4 audit firms. This provides an additional measure to control for high audit quality in the sample. The reason for choosing Big 4 auditors are outlined in this section.

Big 4 audit firms provide a higher quality of audit service than non-Big 4 auditors partly due to their focus on industry specialization. This is evidenced by Teoh and Wong (1993) who found that the quality of audited financial statements by Big 5 firms were higher as compared to those audited by non-Big 5 auditors.

Managers in an organization have an incentive to manipulate earnings so as to maximise the firm's wealth. This arises from contracts based on reported earnings, e.g. management compensation plans (explicit contracts), implicit contracts between the manager of the firm and its customers and suppliers, as well as situations in which reported earnings play an important role (e.g. proxy contests, management buyouts etc) (Becker et al., 1998). This where the role of external auditors becomes important, as they are expected to provide an unbiased and objective view of the company's true earnings. The effectiveness with which external audit is able to rectify the irregularities in earnings vary with the quality of auditors. Higher quality auditors are more likely to detect asymmetries in information and subsequently rectify them when compared to lower quality auditors. Big 4 firms are expected to provide the best quality of audit services because of their experience and industry focus. Previous research shows a positive relation between brand name of auditors and earnings quality. Due to their superior knowledge and the drive to protect their brand name, big 4 auditors are better at detecting opportunistic earnings management and subsequently curbing them (Becker et al., 1998; Reynolds and Francis, 2000). It is also observed that clients of Big

4 auditors display lower discretionary accruals as compared to clients of non big 4 firms (Francis et al., 1999).
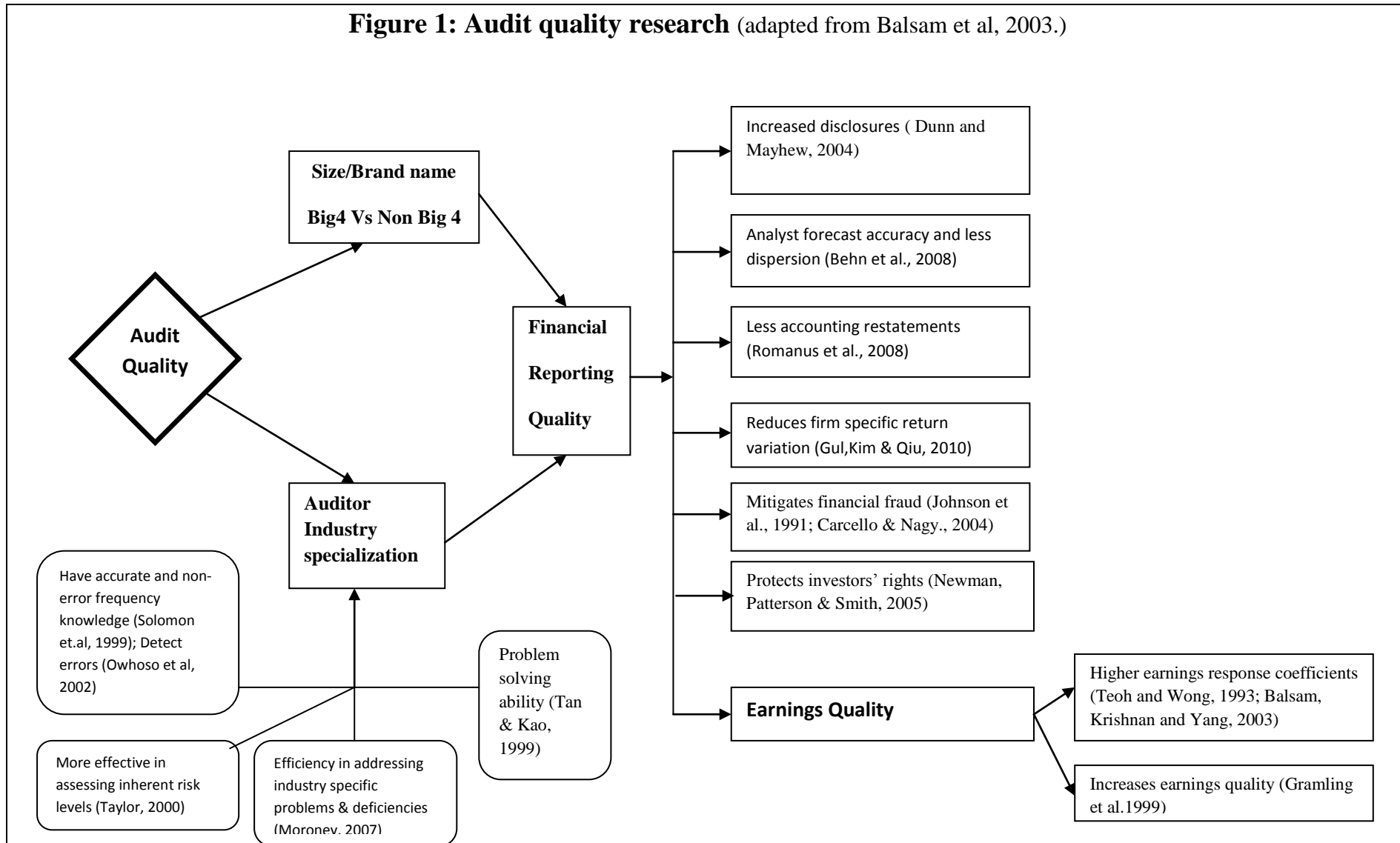
This study uses Big 4 auditors as previous research show that Big N auditors are perceived to have a better quality of audit than non Big N auditors. Dopuch and Simunic (1980, 1982) argues that investors perceive Big N auditors to have higher quality as they have more of the observable characteristics that are generally identified with quality audit, i.e. specialized training, accreditation to reputable agencies, peer reviews etc. The larger size of Big N auditors also contribute to their perceived quality. John (1991) showed that auditor quality increases with size through a model on the optimal size and determinants of audit firm size. It was also reported that firms issuing equity stocks tend to switch to Big N auditors to secure a better price for their share (Carpenter and Strauser, 1971). Using litigation as a measure of audit quality, Palmrose (1988) found that Big N auditors experience less litigation as compared to non-Big N auditors. This result shows that in spite of the tendency to sue larger auditors due to their greater financial capital, Big N auditors are subject to less litigation as the quality of their audit is higher and hence difficult to fault. Research also shows that the return on the initial public offering is higher for clients audited by Big N auditors (Beatty, 1989). Hence for the purpose of this study Big 4 auditors are taken into consideration.

3. Hypothesis development

The model in figure 1 represents the line of research in which audit quality is positively correlated with financial reporting quality. Typically, audit quality is proxied by brand name of auditors and auditor industry specialization. Similarly financial reporting quality can be measured through disclosure quality (Dunn & Mayhew, 2004), analyst forecast accuracy and less dispersion (Behn et al., 2008), less accounting restatements (Romanus et al., 2008), reduction of firm specific return variation (Gul, Kim & Qiu, 2010), mitigation of financial fraud (Johnson et al., 1991; Carcello & Nagy., 2004), protection of investor's right (Newman, Patterson & Smith, 2005) and earnings quality (Teoh and Wong, 1993; Balsam, Krishnan and Yang, 2003; Gramling et al.1999). Several research already exists which have studied earnings quality and its relation to auditor specialization through Increased reporting conservatism (Krishnan, 2005; Lim and Tan, 2009), reduced propensity of earnings to just meet or beat analyst forecasts (Payne 2008) and reduced earnings management (Krishnan, 2003; Balsam et al., 2003).

In this study Industry specialization is used as a proxy for audit quality. This is consistent with existing research in which specialization is used as a measure of audit quality. This stems from the line of research which positively correlates an increase in the quality of financial statements audited by industry specialist auditors as compared to non specialists. Evidence exist that specialized auditors display a better understanding of error characteristics of a company's financial statements (Maletta and Wright, 1996), enhanced problem solving ability (Tan & Kao, 1999), increased performance gains (Dowling and Moroney, 2008) and industry specific tasks (Owhoso, Messier and Lynch, 2002; Taylor, 2000). It is expected that auditor industry specialization will be positively correlated with earnings quality as industry specialist auditors bring with them superior industry specific knowledge which should minimize opportunistic earnings management and financial statement errors.

Figure 1: Audit quality research (adapted from Balsam et al, 2003.)

The concept of earnings quality is not directly observable. Previous researchers have used various proxies to measure earnings quality. In auditing research, earnings quality has been proxied by either earnings response coefficient (Teoh and Wong, 1993) or discretionary accruals (Becker et al., 1998; Frankel et al., 2002) which reflects general error generation and differential earnings management. Earnings response coefficient measures the extent of the stock market responsiveness in relation to earnings surprises. It is hence considered to be a measure of how new earnings information is capitalized in the stock market. Investors are only able to observe the true earnings of a firm indirectly, i.e. through reported financial statements issued by the firm. To ascertain the objectivity and accuracy of the reported figures, external auditors are brought in to certify that the financial statements conform to the prevalent accounting standards. This assures the investors about the credibility of the reported earnings. This is known as the attestation role of external audit (Abdel-Khalik and Solomon, 1988). Since specialized auditors are expected to provide high quality audit as a result of industry experience and knowledge, they are more likely to attain greater compliance between reported earnings and accounting standards. Hence if auditor's quality (proxied by specialization in this case) is perceived to be high by investors, their response to surprises in earnings will be expected to be stronger.

Previous researchers have argued that audit quality can reduce perceived uncertainty and noise in reported earnings figure which results in higher earnings response coefficients. Clients of Big N auditors were found to have higher ERC as compared to clients of non-Big N auditors (Teoh and Wong, 1993). Moreland (1995) found that the ERC of clients audited by Big N auditors declined after being subject to sanctions from the Securities and Exchange Commission (SEC). It was also reported that disclosure about reasons regarding auditor changes leads to a change in the ERC after a change in auditor (Hackenbrack and Hogan,

2002). In accordance to these findings, it is expected that firms audited by industry specialist auditors will be subject to a greater change in ERC in response to earnings surprises.

Therefore using these existing studies as a background, leads to the following hypothesis:

H$_1$: ***The earnings response coefficient is greater for a firm audited by an industry specialist Big 4 auditor as compared to firms audited by non-specialist Big 4 auditor.***

4. Research design

To test the relationship between ERC and audit quality, this study uses specialization as a proxy for audit quality. Initially the paper runs the following regression model:

$$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 NATSPEC + \beta_3 EARN_{it}*NATSPEC \;\;.......(Model\ 1)$$

RET_{it} is the return adjusted for lag in which the financial statements are available for public scrutiny. $EARN_{it}$ is the ratio of net profit after tax with market value. NATSPEC is a dummy variable where 1 = the audit firm is a specialist within the industry at the national level and 0 = the audit firm is non-specialist within the industry at the national level. A detailed description of all the variables is provided later. It is expected from the above equation that β_1 will be positive, since return is positively correlated with earnings. Specialization is expected to improve audit quality, hence β_2 should also be positive as improved quality should ideally translate into better return. The third variable, β_3, is expected to be significantly positive as it reflects earnings of firms which have been audited by industry specialist auditors.

After running the initial regression to test the relationship between returns, earnings and specialization; several controls are brought in to ascertain the effect of other factors which can influence the return. Hence the following regression equation is formulated:

$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 NATSPEC + \beta_3 EARN_{it}*NATSPEC + \beta_4 LOSS + \beta_5 MB + \beta_6 LMV + \beta_7 LEV + \beta_8 EARN_{it}*LOSS + \beta_9 EARN_{it}*MB + \beta_{10} EARN_{it}*LMV + \beta_{11} EARN_{it}*LEV$ …………..(Model 2)

Existing literature on auditor industry specialization suggests that city-level specialization may be more relevant than national-level specialization. This is supported by Ferguson, Francis and Stokes (2003) who states that being a national level specialist does not guarantee a fees premium and city-level specialization may play a more important role. To account for this, two more regression analysis are performed by substituting national-level specialization with city-level specialization. Hence the following regression is used:

$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 CITYSPEC + \beta_3 EARN_{it}*CITYSPEC$ …….(Model 3)

The above regression is similar to model 1 but I substitute NATSPEC with CITYSPEC, which is a dummy variable where 1 infers an industry specialist auditor at the city level and 0 otherwise.

After running model 3, we extend the regression by adding control variables in accordance with model 2. Hence the following is formulated:

$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 CITYSPEC + \beta_3 EARN_{it}*CITYSPEC + \beta_4 LOSS + \beta_5 MB + \beta_6 LMV + \beta_7 LEV + \beta_8 EARN_{it}*LOSS + \beta_9 EARN_{it}*MB + \beta_{10} EARN_{it}*LMV + \beta_{11} EARN_{it}*LEV$ …………..(Model 4)

This will allow for testing both national level and city level auditor specialization and how they compare.

4.1 Explanation of variables

Return (RET): The return variable is calculated using the following equation-

$$RET_{it} = \frac{RI_{it} - RI_{it-1}}{RI_{it-1}}$$

Where RI = Total Return Index.

i = Firm

t = The date 3 months after financial year end.

RET is used as an indicator of changes in the market return for an organization. The RI is adjusted to 3 months after the financial year end so as to allow for the lag between actual financial year end and the date on which the financial statements are available to the public. We use this adjusted 3 months time (t) as investors react to the published earnings after scrutinizing the annual report, which is not immediately available at the FYE. Hence the response (by investors) to the published earnings is delayed. Therefore a lag of 3 months is considered as an average for delayed response to earnings.

Earnings (EARN): Earnings is calculated by the following method:

$$EARN_{it} = \frac{NPAT_{it}}{MV_{it-1}}$$

Where NPAT = Net profit after tax

MV = Market value

i = Firm

t = Current financial year

Earnings is calculated as the net profit after tax for the year divided by the market value of the organization for the previous year.

Auditor Industry Specialization: Two different types of auditor industry specialization are used in this study; national level specialization and city level specialization. To measure specialization, auditor dominance is observed in the various industries. An audit fee based specialization measure is used (Habib and Bhuiyan, 2011) and is outlined as follows:

$$ADTR\_MS_{ik} = \frac{\sum\limits_{j=1}^{Jik} AF_{ijk}}{\sum\limits_{i=1}^{Ik} \sum\limits_{j=1}^{Jik} AF_{ijk}}$$

Where AF is the audit fees received by the audit firms. The numerator is identified as the sum of all audit fees by clients *(J_{ik})* paid to the audit firm *(i)* within a particular industry *(k)*. The denominator is the sum of audit fees paid by clients *(J_{ik})* within a particular industry *(k)* for all audit firms *(I_k)* engaged in auditing services within the industry. Using this we code specialization when the audit firm meets the following criteria:

(i) The audit firm has the largest market share in terms of audit fees within the particular industry.

(ii) The market share of the audit firm in terms of audit fees is at least 10% greater than the audit firm with the second highest market share within the particular industry.

Audit firms meeting these criteria are encoded as 1(denoting industry specialization) and those failing to do so are encoded 0 (denoting non-specialists). This method is used to encode both national level specialization (NATSPEC) and city level specialization (CITYSPEC). For NATSPEC, clients are grouped according to industry regardless of their location. In the case of CITYSPEC, clients are grouped firstly according to their city of operation and secondly in accordance with their industry classification.

Loss (LOSS): Companies reporting a loss for the financial year is encoded as 1 and 0 otherwise. This is used as a control variable as it is expected that negative earnings will generate a different response from the market as investors will be cautious about companies which have reported a loss. Previous research (Hayn,1995) shows that the earnings response co-efficient is negatively affected when an organization reports a loss in its financial statement. Hence this variable is used as a control to account for incidences of change in ERC which can be attributed to negative earnings.

Growth (MB): Market to Book value is used as a proxy for growth. The higher the market to book value, the higher is the estimated growth for the organization. This is consistent with previous research (Collins and Kothari, 1989; Teoh and Wong, 1993; Hackenbrack and Hogan, 2002; Balsam, Krishnan and Yang, 2003)

Firm size (LMV): Firm size is included as a control variable by measuring the natural logarithm of the market of value for the organizations. Teoh and Wong (1993) includes LMV as a proxy for firm size although they state that the rationale for using firm size is unclear and previous research suggests that it may not be important. It is still included as a control variable for possible missing factors.

Leverage (LEV): This is calculated as the ratio between total debt and equity for an organization. Previous research shows that higher leverage is associated with lower ERC (Dhaliwal et al., 1991; Core and Schrand, 1999). A higher leverage signals the acquirement of more debt which can have a potential negative impact on investor return if the benefit from

the debt finance does not outweigh its repayment. This information can lead to cautionary market behavior.

5. Sample

This study initially uses 728 firm year observations from 2000 to 2009. The companies were chosen from the New Zealand stock exchange listed companies. The companies encompass the following industries:

Figure 2

Industry-wise breakdown of companies

Industry	Number of Companies
Agriculture and Fishing	7
Forestry	1
Building	3
Energy	5
Leisure and Tourism	4
Consumer	18
Media and Communication	3
Food	5
Textile and Apparel	1
Intermediaries and Durables	12
Property	7
Transport	4
Ports	3
Mining	2

Specialization measures were calculated as per the classification of companies based on the industries in figure 2. The finance and investment industry was excluded as they are bound by rules and regulations which are distinctly different from other industries, thereby

resulting in earnings and market behaviour which is not consistent. Only companies audited by Big N auditors were chosen for the purpose of this research and non-Big N auditors were excluded due to the difference in audit quality. A total of 64 companies were identified which met this criteria. Certain firm years for these 64 companies had to be excluded due to delisting from the New Zealand stock exchange or because of the unavailability of data. Hence 413 usable firm years were identified for the purpose of this research. Data on audit fees, net profit, sales, total debt and total assets was collected manually from the annual reports of the company which were retrieved from the NZX deep archive. Data on return (total return index), earnings per share and number of shares was collected through Datastream.

6. Descriptive Statistics

Table 1 Panel A shows the audit firm specialist for the various industries used in this study. It can be observed that for national level specialization, PWC dominates the specialization measure by being the specialist auditor for 7 industries. They are followed by KPMG, who are the specialized auditor for 4 industries and Deloitte, specialized auditor for 2 industries. The food industry has no clear specialized auditor using the measure for specialization which states that the leading audit firm must be 10 percentile points higher than the second largest auditor. Earnest and Young (E&Y) does not appear as the specialist auditor in any industry when it comes to national level specialization measure.

The city level specialization measure is displayed according to the base of operations for the companies used in the study. It is observed that the sample population of companies hail from 6 cities; Auckland, Christchurch, Dunedin, Hamilton, Tauranga and Wellington. Auckland is the base of operations for the largest number of companies used in this study,

thereby making an appearance in all 14 industries. The Agriculture and Fishing industry displays the most diversity in respects to city of operation with companies in that industry hailing from all 6 cities observed in the sample population. It is followed by the consumer industry which has companies hailing from 5 different New Zealand cities.

Table 2 Panel B shows the descriptive statistics for the variables. It can be seen that amongst the sample observation, 44.5% of the observations are attributed to national level industry specialists (NATSPEC mean 0.4455). This is relatively smaller than the incidences of city level specialization which shows a prevalence of 69.4% (CITYSPEC mean 0.6937). 12% of the observations report negative earnings (LOSS mean 0.1206). The mean for RET shows a positive value (0.1158) which indicates that return on average for the whole sample set increases with each financial year. The average market to book value ratio is 2.16 (mean 2.1588) and the LMV (size of firm) shows a mean of 5.2431 which implies that the average market value for firms in the sample population is approximately 175,000 NZ$.

Table 1 Panel C represents the correlation matrix of the variables. RET_{it} and $EARN_{it}$ shows a positive correlation of 0.410 and is significant at better than 1% level. NATSPEC and CITYSPEC are both negatively correlated with return at -0.052 and -0.001 respectively but the correlation is not significant. This implies that even though auditor industry specialization may not be positively correlated with return, as expected, the combined variable of $EARN_{it}*NATSPEC$ and $EARN_{it}*CITYSPEC$ might play a more important role as they denote the earnings of clients which have been audited by industry specialist auditors.

Table 1 Panel A

Industry Distribution of Auditor Industry Specialization

Industry	National level specialization	City level specialization
Agriculture & Fishing	PWC	Auckland: PWC Christchurch: KPMG Dunedin: PWC Hamilton: KPMG Tauranga: PWC Wellington: PWC
Mining	PWC	Auckland: PWC Wellington: KPMG
Forestry	PWC	Auckland: PWC
Building	KPMG	Auckland: KPMG Wellington: PWC
Energy	KPMG	Auckland: KPMG Wellington: KPMG
Food	-	Auckland: PWC Wellington: Deloitte
Textiles & Apparel	KPMG	Auckland: KPMG
Intermediate & Durables	PWC	Auckland: PWC Christchurch: Deloitte Dunedin: Deloitte
Property	PWC	Auckland: PWC Christchurch: Deloitte Dunedin: Deloitte Wellington: E&Y
Transport	Deloitte	Auckland: Deloitte Christchurch: PWC Wellington: KPMG
Ports	Deloitte	Auckland: Deloitte Tauranga: PWC
Leisure & Tourism	PWC	Auckland: PWC Christchurch: E&Y
Consumer	PWC	Auckland: PWC Christchurch: KPMG Dunedin: Deloitte Tauranga: KPMG Wellington: PWC
Media & Communications	KPMG	Auckland: PWC Wellington: KPMG

Panel B

Descriptive Statistics

	Mean	Median	Std. Deviation	Minimum	Maximum
RET_{it}	.1158	.0936	.48450	-.88	4.28
$EARN_{it}$	.0803	.0706	.17770	-.54	.97
NATSPEC	.4455	.0000	.49760	.00	1.00
LOSS	.1206	.0000	.32610	.00	1.00
MB	2.1588	1.4618	2.25048	.08	28.71
LMV	5.2431	5.2304	.75349	3.31	7.06
LEV	.6054	.3821	.96288	.00	10.80
CITYSPEC	.6937	1.0000	.46148	.00	1.00

Panel C: Correlation matrix

Variables	RET_{it}	$EARN_{it}$	NATSPEC	LOSS	MB	LMV	LEV	CITYSPEC
RET_{it}	1							
$EARN_{it}$	.410**	1						
NATSPEC	-.052	-.020	1					
LOSS	-.248**	-.530**	-.031	1				
MB	.030	-.207**	.091	.193**	1			
LMV	.082	.096*	.404**	-.239**	.150**	1		
LEV	-.139**	-.141**	.175**	.147**	.321**	.142**	1	
CITYSPEC	-.001	.107*	.565**	-.078	.056	.193**	.055	1

** represents correlation significant at the 0.01 level (two-tailed test)

 * represents correlation significant at the 0.05 level (two-tailed test)

Variable definition: RET_{it} is the indicator of change in the market return.

$EARN_{it}$ is the net profit after tax divided by market value of the firm for the previous year

NATSPEC is a dummy variable where 1 = national level audit specialist and 0 otherwise

LOSS is a dummy variable where 1 = negative earnings and 0 otherwise

MB is the Market to Book value ratio which serves as a proxy for growth and persistence

LMV is the log of market value of the firm which serves as a proxy for firm size

LEV is the financial leverage (Debt to equity ratio)

CITYSPEC is a dummy variable where 1 = City level specialist and 0 otherwise.

LOSS is negatively correlated with RET (-0.248) as expected, implying lesser return when the company reports negative earnings. Pair-wise correlation between the independent variables reveal a significant negative correlation (-0.239) between LMV (size) and LOSS (negative earnings). LMV also shows a strong positive correlation with NATSPEC and CITYSPEC at 0.404 and 0.193 respectively thereby implying that bigger firms opt to hire industry specialist auditors more often than smaller ones. It can be observed that the independent variables are significantly correlated with each other, this gives rise to concerns of multi-co-linearity although as Gujarati (1995, pg. 335) states that multi-co-linearity is likely to be a concern only when the pair wise correlation between independent variables exceed 0.80.

7. Regression Result and analysis

7.1 National level Specialization measure

Table 2 shows the regression results for model 1 which establishes the relationship between return and national level auditor specialization without control variables. The regression model shows an adjusted R-square value of 0.166 which implies that the independent variables explain 16.6% of the variations in the dependent variable RET. The independent variable $\beta_1 EARN_{it}$ is statistically significant with RET at p-value 0.00.

NATSPEC and $EARN_{it}$*NATSPEC does not show a statistically significant relationship with return with p-values of 0.642 and 0.311 respectively. Moreover both NATSPEC and $EARN_{it}$*NATSPEC report a negative coefficient implying that companies audited by national level specialist auditors in New Zealand report a lower return than companies audited by non-specialists. This is in contrast to previous research which has

consistently shown a positive relationship between auditor specialization and earnings response coefficient.

Table 2: Model 1 results

$$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 NATSPEC + \beta_3 EARN_{it}*NATSPEC$$

Model 1		
Variables	Coefficient	t-statistics
$EARN_{it}$	0.438**	8.348
NATSPEC	-0.023	-0.465
$EARN_{it}*NATSPEC$	-0.057	-1.015
Adjusted R^2	0.166	

** represents significance at the 0.01 level

 * represents significance at the 0.05 level

Variable definition: RET_{it} is the indicator of change in the market return.

$EARN_{it}$ is the net profit after tax divided by market value of the firm for the previous year

NATSPEC is a dummy variable where 1 = national level audit specialist and 0 otherwise

The relationship in model 1 is expanded further by bringing in control variables resulting in the regression model 2. Table 3 shows the results of model 2. The adjusted R-square increases to 0.256 compared to model 1 which has an r-square of 0.166. The explanatory power of model 2 is hence 25.6% after bringing in the control variables. Table 3 shows that once control variables are brought in $\beta_1 EARN_{it}$ is no longer statistically significant in its relationship with RET with a p-value of 0.227, $\beta_3 EARN_{it}*NATSPEC$ shows an improved p-value from equation 1 of 0.179 although it is still not statistically significant. $\beta_3 EARN_{it}*NATSPEC$ still shows a negative co-efficient and t-statistics (-0.084 and -1.347) which is in contrast to the expected result that auditor specialization is associated with increased returns. Negative earnings ($\beta_4 LOSS$) shows a statistically significant association

with RET at 1% level with a p-value of 0.009. The coefficient and t-statistics for LOSS are -0.172 and -2.610, this is expected as return for companies reporting a loss for the financial year will experience a reduction in market return as negative earnings is perceived as bad news by shareholders.

Table 3: Model 2 results

$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 NATSPEC + \beta_3 EARN_{it}*NATSPEC + \beta_4 LOSS + \beta_5 MB + \beta_6 LMV + \beta_7 LEV + \beta_8 EARN_{it}*LOSS + \beta_9 EARN_{it}*MB + \beta_{10} EARN_{it}*LMV + \beta_{11} EARN_{it}*LEV$

Model 2		
Variables	Coefficient	t-statistics
$EARN_{it}$	0.131	1.210
$NATSPEC$	-0.014	-0.262
$EARN_{it}*NATSPEC$	-0.084	-1.347
$LOSS$	-0.172**	-2.610
MB	0.224**	4.538
LMV	-0.004	-0.083
LEV	-0.124*	-2.567
$EARN_{it}*LOSS$	-0.173*	-2.347
$EARN_{it}*MB$	0.242**	3.828
$EARN_{it}*LMV$	0.291**	3.014
$EARN_{it}*LEV$	-0.055	-0.873
Adjusted R^2	0.256	

** represents significance at the 0.01 level

 * represents significance at the 0.05 level

Variable definition: RET_{it} is the indicator of change in the market return.

$EARN_{it}$ is the net profit after tax divided by market value of the firm for the previous year

NATSPEC is a dummy variable where 1 = national level audit specialist and 0 otherwise

LOSS is a dummy variable where 1 = negative earnings and 0 otherwise

MB is the Market to Book value ratio which serves as a proxy for growth and persistence

LMV is the log of market value of the firm which serves as a proxy for firm size

LEV is the financial leverage (Debt to equity ratio)

MB, with a p-value of 0.00 is highly significant and displays a positive coefficient of 0.224 and t-statistic value of 4.538. This result can be explained as; companies experiencing faster growth (MB as a proxy for growth) will also get better return as a high level of growth is perceived as a positive indicator of the companies' performance. Financial leverage (β_7LEV) has a statistically significant relationship with RET at the 5% level with a p-value of 0.011. LEV has a negative coefficient of -0.124 with a t-statistic of -2.567. The result implies that a decrease in the debt to equity ratio leads to a positive response in return. This can be explained as shareholders losing confidence when the company incurs more debt as it increases the liability and risk thereby increasing speculations of the companies' future earnings. This result is expected since investors, if they are uncertain about the companies' ability to repay its debt, will be cautious about investing in the company. Amongst the combined variables β_8EARN$_{it}$*LOSS, β_9EARN$_{it}$*MB and β_{10}EARN$_{it}$*LMV all show a statistically significant relationship with RET. EARN$_{it}$*LOSS has a coefficient of -0.173 and t statistics of -2.437. EARN$_{it}$*MB and EARN$_{it}$*LMV both display a positive coefficient of 0.242 and 0.249. Hence companies which have high reported earnings as well as relatively higher growth rate influence a positive reaction from the market. Similarly companies which are relatively bigger and report higher earnings also generate more confidence from investors.

From the above analysis it can be seen that national level specialization in New Zealand does not seem to have a statistically significant impact on the return of companies. Recent studies suggest that city level auditor specialization has a greater impact on audit quality as they possess deeper personal client knowledge (Francis et al, 2005; Reichelt and Wang, 2009). Hence this study provides additional analysis using city level specialization measure in the next section.

7.2 City level specialization measure

Table 4 shows the result for regression model 3, which is similar to model 1 but national level specialization is substituted for city level specialization. The explanatory power of the regression is 0.165 or 16.5%. This is almost identical to the R-square of model 1 which is 0.166 or 16.6%.

Earnings ($\beta_1 EARN_{it}$) shows a statistically significant relationship to RET with a p-value of 0.00 although there is a drop in coefficient to 0.371 in equation 3 as compared to 0.438 in equation 1. City level specialization ($\beta_2 CITYSPEC$) is not significantly related to RET and shows a negative coefficient. The combined variable of $\beta_3 EARN_{it}*CITYSPEC$ has a p-value of 0.557, which is not statistically significant, but in contrast to model 1, the combined variable of earnings and city level specialization shows a positive coefficient of 0.053 with RET.

Table 4: Model 3 results

$$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 CITYSPEC + \beta_3 EARN_{it}*CITYSPEC$$

Model 3		
Variables	Coefficient	t-statistics
$EARN_{it}$	0.371**	4.282
CITYSPEC	-0.055	-1.155
$EARN_{it}*CITYSPEC$	0.053	0.588
Adjusted R^2	0.165	

** represents significance at the 0.01 level

 * represents significance at the 0.05 level

Variable definition: RET is the indicator of change in the market return.

$EARN_{it}$ is the net profit after tax divided by market value of the firm for the previous year

CITYSPEC is a dummy variable where 1 = City level specialist and 0 otherwise

The regression equation in model 3 is expanded by bringing in the control variables that were used in model 2. The result is shown in table 5.

The explanatory power (R-square) of model 4 is 0.257 i.e. 25.7%. The combined variable of earnings and city level specialization ($\beta_3 EARN_{it}*CITYSPEC$) shows a slightly improved statistical significance of 0.153 as compared to national level specialization measure which had a p-value of 0.179. It is seen that city level specialization also results in a negative coefficient of -0.157 with a t statistics of -1.431. This is not consistent with previous research in other countries which have found a statistically significant positive relation between audit specialization and return.

Table 5: Model 4 results

$RET_{it} = \beta_0 + \beta_1 EARN_{it} + \beta_2 CITYSPEC + \beta_3 EARN_{it}*CITYSPEC + \beta_4 LOSS + \beta_5 MB + \beta_6 LMV + \beta_7 LEV + \beta_8 EARN_{it}*LOSS + \beta_9 EARN_{it}*MB + \beta_{10} EARN_{it}*LMV + \beta_{11} EARN_{it}*LEV$

Model 4		
Variables	Coefficient	t-statistics
$EARN_{it}$	0.230	1.681
$CITYSPEC$	-0.012	-0.252
$EARN_{it}*CITYSPEC$	-0.157	-1.431
$LOSS$	-0.167*	-2.562
MB	0.219**	4.448
LMV	-0.011	-0.228
LEV	-0.143**	-2.999
$EARN_{it}*LOSS$	-0.208*	-2.465
$EARN_{it}*MB$	0.258**	4.115
$EARN_{it}*LMV$	0.313**	3.189
$EARN_{it}*LEV$	-0.085	-1.511
Adjusted R^2	0.257	

** represents significance at the 0.01 level

* represents significance at the 0.05 level

Variable definition: RET_{it} is the indicator of change in the market return.

$EARN_{it}$ is the net profit after tax divided by market value of the firm for the previous year

LOSS is a dummy variable where 1 = negative earnings and 0 otherwise

MB is the Market to Book value ratio which serves as a proxy for growth and persistence

LMV is the log of market value of the firm which serves as a proxy for firm size

LEV is the financial leverage (Debt to equity ratio)

CITYSPEC is a dummy variable where 1 = City level specialist and 0 otherwise

Similar to model 2; β_4LOSS, β_5MB, β_7LEV and the combined variables of $\beta_8EARN_{it}*LOSS$, $\beta_9EARN_{it}*MB$, $\beta_{10}EARN_{it}*LMV$ all show a statistically significant relation with RET. The coefficients of the independent variables are also similar to those reported in table 3 and does not exhibit any major change when city level specialization is brought into consideration.

7.3 Effect of specialization on return in New Zealand

The results of the 4 models in the study are summarised in table 6. Auditor industry specialization, both at the national and city level do not appear to exert any significant impact on the ERC of companies in New Zealand. Although adjusted earnings ($EARN_{it}$) shows a highly significant correlation at the 0.01 level in the case of both specialization measures, when control variables are added the correlation fails to be of significance.

The result of this study shows that auditor industry specialization in New Zealand is not a significant factor which influences market response to published earnings. Other variables such as negative earnings, size of companies and leverage account for variations in

the market return. Hence the hypothesis of this study; H_1: *The earnings response coefficient is greater for a firm audited by an industry specialist Big 4 auditor as compared to firms audited by non-specialist Big 4 auditor* does not hold up to scrutiny in New Zealand.

Table 6: Effect of specialization on Return

Specialization measure	Without control variables	With control variables
National level specialization		
EARN$_{it}$	0.438**	0.131
	(8.348)	(1.210)
NATSPEC	-0.023	-0.014
	(-0.465)	(-0.262)
EARN$_{it}$*NATSPEC	-0.057	-0.084
	(-1.015)	(-1.347)
City level specialization		
EARN$_{it}$	0.371**	0.230
	(4.282)	(1.681)
CITYSPEC	-0.055	-0.012
	(-1.155)	(-0.252)
EARN$_{it}$*CITYSPEC	0.053	-0.157
	(-0.588)	(-1.431)

** represents correlation significant at the 0.01 level

 * represents correlation significant at the 0.05 level

EARN$_{it}$ is the net profit after tax divided by market value of the firm for the previous year

NATSPEC is a dummy variable where 1 = national level audit specialist and 0 otherwise

CITYSPEC is a dummy variable where 1 = City level specialist and 0 otherwise

Control variables are not reported for sake of brevity

The finding is in contrast to similar research done in other countries (Teoh and Wong, 1993; Balsam, Krishnan and Yang, 2003) which found audit quality as a factor that influences ERC. The market environment in New Zealand does not recognize a relationship between auditor industry specialization of Big 4 firms and ERC.

8. Limitations

Although the research was conducted carefully, there are certain limitations. Firstly this study uses a model which was developed by American researchers (Balsam, Krishnan and Yang, 2003) to study the U.S. audit market. The U.S. market is characterized by large number of audit firms, large geographic distribution and a comparatively higher number of companies. As to how this model applies to New Zealand, with its unique market structure, is of concern.

Secondly, this study uses total return index figure adjusted for 3 months after financial year end to take into account the delayed response to earnings in the market after financial statements are made available to the public. The time period of 3 months is taken as an average, as calculating the total return index on the exact date the annual report is published for each firm and their individual firm year is highly time consuming. This may have an effect on the result, although it is highly unlikely to skew the findings by a large margin so as to warrant a change in the final result.

Thirdly, this study excludes unexpected earnings figure as used in the original model by Balsam, Krishnan and Yang (2003) and instead uses adjusted earnings, which is calculated as the net profit after tax for the year divided by the market value of the organization for the previous year. This is unavoidable as earnings forecast figures needed to estimate unexpected earnings are not readily available in New Zealand.

Lastly, results can also be biased based on sample selection, time period chosen, extreme values of the independent variables and the use of proxy for auditor industry specialization.

9. Conclusion

Previous researches in other countries have found a positive correlation between audit quality and ERC (Teoh and Wong, 1993; Balsam, Krishnan and Yang, 2003). This study extends this area of audit quality literature and found no significant relationship between auditor industry specialization (as a proxy for audit quality) and ERC in New Zealand. This paper has argued that industry specialization is positively attributed to higher audit quality and greater audit assurance. As per existing literature on the subject, this should lead to higher earnings quality. The finding of this study shows that in New Zealand, such a connection between increased audit quality and earnings is not observed.

Although the result of this study does not match the findings of previous research in the field, it is not entirely surprising. Previous audit specialization research done in New Zealand has also failed to find a significant relationship with other variables. Kwong (2011) documented no relationship between auditor industry specialization and audit fees in New Zealand. Furthermore Hay and Jeter (2008) found that although there exists a relationship between audit fees premium and city level specialization in New Zealand, the relationship between the two is quite complex. These findings can be attributed to the unique setting of the New Zealand market which is characterized by smaller audit firms, lesser geographical distribution and relatively small number of companies listed in the New Zealand stock exchange. Although auditor industry specialization exists in New Zealand, its impact may not be as pronounced as observed in countries with a larger market environment. A smaller market setting, leading to greater competition between audit firms, has the potential to eliminate some of the advantages enjoyed by industry specialist auditors.

There is a scarcity of auditor industry specialization research in New Zealand. Existing research have studied the relationship industry specialization has with audit fees,

audit fee premium and audit report lag. A large gap in literature still exists within the New Zealand context. Future research should focus on studying the effect of auditor industry specialization in New Zealand on disclosure quality, earnings restatements and earnings quality through discretionary accruals. This is required to obtain a more comprehensive understanding about industry specialization in New Zealand so as to determine how it is differentiated from industry specialization in larger market environments such as the U.S.

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