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Measuring the Relationship between Audit Committee Characteristics and Earnings Management:

Evidence from New Zealand Listed Companies

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A dissertation submitted in partial fulfilment of the requirements for the
Degree of Bachelor of Commerce with Honours

at

Lincoln University

by

Moau Yong Toh

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Lincoln University

2013

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The recent corporate accounting scandals, such as the Enron scandal in 2001 and the WorldCom scandal in 2002, have increasingly drawn the attention of regulators around the globe to the monitoring role of audit committees in the financial reporting process. The purpose of this study is to investigate the relationship between the NZX's recommendations on audit committee characteristics and earnings management in NZX listed companies. In particular, this study examines the relationships between earnings management and audit committee size, independence, financial expertise and diligence, as per the NZX's recommendations. This study finds that the NZX's recommendations that audit committees should comprise a majority of independent directors and at least one financial expert are associated with lower earnings management. Besides, companies whose audit committees meet at least quarterly report lower earnings management. Since the NZX does not recommend best practice for audit committee meetings, this finding has implications for New Zealand regulators and practitioners that meeting at least quarterly is a key criterion of audit committee effectiveness, hence, a change to corporate governance rules and principles may be necessary. However, this study finds that audit committee size is not related to lower earnings management, suggesting that detection and control of earnings management relies more on the independence, financial expertise and

diligence of audit committees to generate quality discussions and monitoring duties. Except for the U.S.A., the results of this study do not differ materially from other major countries, such as Australia. This study contributes to the existing literature by providing evidence about the relationship between audit committee characteristics, as per the NZX's recommendations, and earnings management in countries with similar institutional and legal environment to New Zealand.

Keywords: Earnings management, discretionary accruals, audit committee, corporate governance

Acknowledgments

I would like to acknowledge the following people who made this dissertation possible. First, I would like to show my deepest gratitude to my supervisor, Dr. Sidney Weil for his guidance, advice and encouragement throughout the whole year of this research. I have known Dr. Sidney Weil for nearly three years. His knowledge, patience and humility have encouraged me to undertake my research with him. Thank you so much for your supervision and for editing my work relentlessly. I would also like to show my appreciation to Dr. Baiding Hu, who assisted me in understanding the statistical analysis involved in my research.

Besides, I would like to thank my family, especially my parents, for bringing me up and accompanying me for 23 years. I would not have done well in my study and life during these four years of my abroad study without their emotional support and love.

Finally, I would like to offer my regards and blessings to all of my friends here, especially Kevin, Emily, Wendy, Wee and Nalini. Many thanks to Kevin who helped me in the data collection and analysis process. I could not have run my statistical analysis efficiently using software without his assistance. Emily, Wendy, Wee and Nalini have contributed to my colourful and enjoyable study life in New Zealand. Thanks a lot to them for inviting me for travels and dining out, as well as for their study advice and career advice. Also, thanks to all my friends whom I do not name here for being part of my life and memories.

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Chapter 1 Introduction

1.1 Introduction

The transparency and reliability of financial information through reporting and disclosure practices is of paramount importance in corporate governance, as it allows stakeholders to make informed decisions to protect their interests (Securities and Exchange Commission (SEC), 2002; Securities Commission New Zealand (SCNZ), 2004). Since the corporate collapses of Enron in 2001 and WorldCom in 2002, there has been much criticism of and questions asked about the effectiveness of audit committees in overseeing the corporate reporting process and in monitoring the independence of external auditors. Meanwhile, earnings management has become a specific area of concern in quality financial reporting practices (Drever et al., 2007). Earnings management is defined as the use of management's discretion over operating decisions and accounting choices to decrease, stabilize or increase reported earnings for various purposes, such as beating financial analysts' forecasts, increasing managers' compensation and avoiding takeover attempts (Brealey, Myers, & Allen, 2011; Drever et al., 2007). Earnings management hides the true corporate performance from stakeholders and destroys organizational value; hence, it is an agency cost within the company.

To restore investor confidence in the quality of financial information in the wake of the recent accounting scandals, in July 30, 2002, the Securities and Exchange Commission in the U.S.A. amended the Securities Exchange Act of 1934 and introduced the Sarbanes-Oxley Act of 2002 (SOX) which has required, for the first time at a statutory level, all issuers in the U.S.A. to establish an audit committee as a subcommittee of the board of directors and has revised the requirements for the composition and responsibilities of the audit committees in the issuers in

order to protect the interests of shareholders and other stakeholders (SEC, 2002). For instance, Section 301(3) requires all audit committee members to be independent directors of the issuer, and Section 202(1) requires the audit committee of the issuer to pre-approve all auditing services and non-audit services provided by the external auditor of the issuer for the purpose of ensuring the auditor's independence and the objective oversight of the financial reporting process and audits of the financial statements of the issuer. Following SOX, corporate governance reforms have been undertaken in many countries across the world, with the key provisions of SOX for audit committees adopted at either a mandatory or a voluntary level (PricewaterhouseCoopers, 2003). These reforms include the U.K. Corporate Governance Code, issued by the Financial Reporting Council (FRC) (2012), the Principles of Good Corporate Governance and Best Practice Recommendations, issued by the Australian Securities Exchange Corporate Governance Council (ASX CGC) (2003), and the Malaysian Code on Corporate Governance, issued by the Securities Commission Malaysia (SCM) (2012).

New Zealand has a regulated market and public reporting regime, and has generally been perceived as the least corrupt nation in the world (Transparency International (NZ), 2010). Yet, when reviewing New Zealand corporate failures between 2001 and 2010, it is found that over 36 listed companies were put into liquidation or receivership (Peursem & Chan, 2012). Those companies showed very little predictability or advance warning about their going concern problems until the years of their liquidation. For example, in the Feltex Carpets Limited case, an unqualified audit opinion was issued on its last financial statements, that were the 2005 first half year financial statements, by its auditor, Ernst & Young, before the company went into liquidation (Gregor, 2010). The likelihood of its collapse was unknown, which would otherwise

have allowed its investors to make informed decisions to avoid huge losses. This scenario sends a signal to New Zealand regulators and practitioners that New Zealand listed companies are not as ethical as perceived and that improvements on corporate governance regulations and principles are necessary from time to time.

To keep New Zealand's security markets on a par with other developed countries' security markets, the New Zealand Stock Exchange (NZX) issued rule changes to corporate governance, which incorporate the NZX Corporate Governance Best Practice Code (the Code) and a number of amendments to the NZX Listing Rules in 2003 (Wu, 2012). In particular, paragraph 3.6 of the Listing Rules requires all issuers to have an audit committee comprising at least three members, with a majority of independent directors, and at least one member of the committee should have an accounting or financial background (NZX Limited, 2012). In New Zealand, the establishment of audit committees in issuers follows the voluntary "comply or explain" approach, because the Code recognizes differences in corporate size and culture (Sharma, Sharma, & Ananthanarayanan, 2011; NZX Limited, 2012). This means that, despite compliance with the Code being voluntary and flexible, issuers are required to explain the reasons for not establishing audit committees. This requirement is especially stated under NZX Listing Rule 10.5.5 (h) that requires annual reports to include a statement of any corporate governance policies, practices and processes adopted or followed by the issuer, and under NZX Listing Rule 10.5.5 (i) that requires a statement on whether and, if so, how the corporate governance principles adopted or followed by the issuer differ materially from the Code (NZX Limited, 2012). Furthermore, in order to assist boards of directors of all types of New Zealand entities to achieve consistently high standards in carrying out their corporate governance duties and responsibilities, the Financial

Markets Authority (FMA) released Corporate Governance in New Zealand Principles and Guidelines (the Principles) in February 2004 (SCNZ, 2004)[1]. The Principles do not impose any new legal obligations on New Zealand issuers, because the corporate governance principles and guidelines, including those related to audit committee independence and expertise set out in Principle 3.4, are consistent with the Code and the NZX Listing Rules.

1.2 Research Background

Following the global corporate governance reforms, much corporate governance research has focused on audit committee effectiveness in financial reporting areas, such as earnings management, audit qualification and restatement. Amongst these, the relationship between audit committee characteristics and earnings management is the most popular research topic, with most literature situated in the U.S.A. For example, Klein (2002) finds a negative relationship between earnings management and audit committees with a majority of independent directors, but fails to observe an association between earnings management and wholly independent audit committees. In contrast, Bedard, Chtourou and Courteau (2004) find that aggressive earnings management is negatively related to audit committees with solely independent directors and with at least one financial expert. However, they do not find an association between earnings management and the frequency of meetings and size of audit committees. In addition, Xie, Davidson and DaDalt (2003) report that the size and independence of audit committees are not associated with earnings management, but the financial background of committee members and the frequency of committee meetings are negatively associated with earnings management.

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[1] The Financial Markets Authority (FMA) replaced the Securities Commission New Zealand on 1 May 2011.

Similar to the U.S.A. empirical studies, studies outside the U.S.A. also produce mixed evidence about the relationship between audit committee characteristics and earnings management. Research in Australia by Davidson, Stewart and Kent (2005) finds a negative association between earnings management and audit committees with a majority of independent directors, but they do not observe any association for fully independent audit committees, audit committee size and frequency of committee meetings. In addition, Baxter and Cotter (2009) find that a greater proportion of financial experts in audit committees is associated with lower earnings management for Australian listed companies. Earnings management is not found to be related to the size, independence and frequency of meetings of the committees. Nevertheless, their results contradict with those of Kent, Routledge, & Stewart (2010) who find negative associations between earnings management and the size, independence and frequency of meetings of audit committees. In Malaysia, Saleh, Iskandar and Rahmat (2007) find that earnings management is negatively related to wholly independent audit committees.

Studies of audit committees and earnings management for New Zealand companies are scarce. The only relevant study in this area is Kuang's (2007) study that examines the relationships between aggressive earnings management and audit committee independence, expertise, multiple directorships and members' shareholdings, based on 150 NZX listed companies, for the financial years ending in 2004 and 2005. He reports negative associations between aggressive earnings management and audit committees with a majority of independent directors and at least one financial expert. He also finds positive associations between aggressive earnings management and audit committee members' shareholdings and multiple directorships. However, wholly

independent audit committees and audit committee size are not found to be associated with aggressive earnings management for the New Zealand listed companies.

1.3 Statement of Research Problem

New Zealand is chosen as the study setting because it has a relatively small public capital market compared to other developed countries like the U.S.A., the U.K., Canada and Australia. The scale of and participation in the New Zealand public capital market is limited by two main reasons (Capital Market Development Taskforce Secretariat, 2012). First, New Zealand publicly-traded companies are smaller in size than public companies in overseas markets, leading to a relatively small total market capitalization. Second, the New Zealand larger companies are mostly owned by overseas companies and central or local governments. This has made those companies less available for investment in equity markets (Capital Market Development Taskforce Secretariat, 2012).

Furthermore, New Zealand is chosen because its litigious jurisdiction associated with corporate ethical conduct and accounting failures is less stringent compared to the U.S.A., the U.K. and Australia (Transparency International (NZ), 2010; Sharma et al., 2011). For instance, although bribery is a crime under the Crimes Act 1961, New Zealand citizens or residents engaging in bribery of foreign government officials can receive an imprisonment term of up to seven years, while, in Australia, the maximum jail term for bribing a foreign official is ten years (Transparency International (NZ), 2010). Also, while the U.S.A. laws protect whistleblowers, there is no such regulation in New Zealand (Sharma et al., 2011). Consequently, effective corporate governance systems may not be in place and the incentives for corporate managers to

take risks and manage earnings may be greater. According to Transparency International (NZ) (2010), only 72 percent of NZX 50 companies have systems in place to protect whistleblowers and to encourage employees to report breaches of code of ethics. The lack of a whistleblower culture within New Zealand companies could hamper the detection of earnings management.

In summary, the smaller, less litigious and less regulated environment in New Zealand suggests that corporate directors may have fewer incentives and powers to safeguard the integrity of financial reporting than directors in larger markets do (Kuang, 2007). Many prior studies about the relationship between audit committee characteristics and earnings management have referred to large and regulated capital markets, and found significant relationships between earnings management and some of the audit committee characteristics (Baxter and Cotter, 2009; Bedard et al., 2004; Klein, 2002; Saleh et al., 2007; Xie et al., 2003). Whether or not these findings can be generalized to the small and unique New Zealand market requires further research. Since not many studies have been conducted to examine the effectiveness of audit committees in overseeing financial reporting processes in New Zealand, this study aims to examine audit committee effectiveness in the context of earnings management in NZX listed companies.

1.4 Statement of Research Objectives

An effective audit committee requires qualified members with the authority and resources to protect stakeholder interests by ensuring reliable financial reporting, internal controls, and risk management through its diligent oversight efforts (DeZoort, Hermanson, Archambeault, & Reed, 2002). This definition highlights four dimensions of audit committee effectiveness, namely composition, authority, resources and diligence, which are essential for the fulfilment of the audit

committee's basic fiduciary responsibility assigned by the board of directors and for the protection of stakeholder interests[2]. The NZX Listing Rules address these dimensions by recommending that an issuer's audit committee has a minimum of three members, a majority of the members are independent and at least one member should have an accounting or financial background (NZX Limited, 2012). Besides, an audit committee should meet regularly in the process of discharging its responsibilities, which often requires the members to work together to monitor and review the independent external and internal auditing practices, to review and question management's financial reporting judgment, to provide an information flow among the board of directors, internal auditors, external auditors and company management, and to appoint and remove external auditors. Hence, the objectives of this study are:

i. to examine the relationships between audit committee size, independence, financial expertise and diligence per the NZX's recommendations and earnings management in NZX listed companies;

ii. to provide recommendations on audit committee attributes for policy makers and practitioners to best meet the expectations placed on audit committees by various stakeholders.

1.5 Research Importance and Contribution

This study contributes to the existing literature by providing evidence on the effectiveness of audit committee characteristics per the NZX's recommendations in influencing earnings management in New Zealand issuers. To date, the only relevant literature in this area is Kuang's (2007) study, which examined the relationships between aggressive earnings management and audit committee independence, expertise, multiple directorships and members' shareholdings,

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[2] See DeZoort et al. (2002) for a discussion of the four dimensions of audit committee effectiveness.

based on 150 NZX listed companies, for the financial years ending in 2004 and 2005. In his additional analysis, the measurements of audit committee independence and expertise adopted in the main analysis were altered according to the NZX's recommendations to allow a further investigation into the relationships between aggressive earnings management and audit committee size, independence and expertise per the NZX's recommendations. He found that aggressive earnings management is negatively related to audit committees that have a majority of independent directors and at least one financial expert. This study extends Kuang (2007)'s study by recognizing and examining the moderating effect of audit committee diligence on the likelihood of earnings management by New Zealand issuers. Furthermore, this study differentiates itself from Kuang (2007)'s study by measuring earnings management as a continuous variable, rather than categorizing earnings management into only two groups, which are aggressive earnings management and unaggressive earnings management. Measuring earnings management as a continuous variable has an advantage over using a binary measure, because it retains the variance in earnings management that would otherwise be removed as a result of grouping earnings management into two broad categories. In this study, a continuous variable of earnings management is used in an effort to shed new light on the relationships between earnings management and audit committee characteristics.

This study provides assistance to policymakers, academics and corporate practitioners both overseas and in New Zealand, because there is limited research on the monitoring role of audit committee in earnings management in small equity markets. The study fills this gap in the literature by providing empirical evidence of how the audit committee attributes consistent with the NZX's recommendations are effective or ineffective in moderating earnings management

practices and ensuring the integrity of financial reporting in companies traded in small equity markets. The findings of this study, hence, can serve as a benchmark for corporate governance and regulation setting in small countries with similar institutional and legal environments to New Zealand.

1.6 Dissertation Outline

The remainder of this dissertation is organized as follows. Chapter 2 will provide the literature review and hypotheses. Chapter 3 details the research methodology, which includes the measurements of the variables and the processes of sample selection and data collection. Chapter 4 discusses the findings of the descriptive and substantive analyses of the research. The dissertation is concluded in the last chapter, with a discussion of the limitations of the study and possible future areas for research.

Chapter 2 Literature Review and Hypotheses

2.1 Introduction

This chapter provides the literature review of earnings management and the audit committee characteristics of size, independence, financial expertise and diligence. A hypothesis will be developed after the literature review of each audit committee characteristic. At the end of this chapter, a summary of empirical research on the effectiveness of audit committee characteristics in monitoring earnings management is provided.

2.2 Earnings Management

Earnings management is defined as the use of managers' discretion over operating decisions and accounting choices to present favourable financial performance of a company by reducing, stabilizing or increasing reported earnings (Drever et al., 2007). This definition highlights the fact that earnings management can be of an income-deceasing or income-increasing nature, and is primarily achieved by management actions through operating decisions and accounting choices from among Generally Accepted Accounting Practice (GAAP) (McKee, 2005). Examples of operating decisions would be whether or not to provide a sales discount, hire additional employees or invest in new machinery near the end of a reporting year; these decisions will directly influence the reported earnings for the year. In this study, earnings management through accounting choices is of interest. Under GAAP, reporting entities are required to prepare financial statements using the accrual basis of accounting. The nature of the accrual basis, however, leaves accounting records open to opportunistic manipulation by the company management. In contrast to the cash basis, under the accrual basis the effects of

transactions are recognized and reported in the financial statements of the periods in which they occur, regardless of when the cash or its equivalent is received or paid (NZICA, 2012). This creates an opportunity for corporate managers who have an information asymmetry advantage to manage earnings creatively by bringing revenues into years of "need" and deferring expenses into subsequent years while still complying with GAAP[3]. This practice of earnings management is also known as creative accounting. An example of this practice is, in New Zealand, managers can switch from a non-current assets' depreciation method to another as long as they can justify why applying the new accounting policy provides more reliable and relevant information and they make the necessary disclosures according to NZIAS 8, paragraph 29 (NZICA, 2012).

In the context of publicly-listed companies, earnings management is primarily used for beating financial analysts' forecasts. In public capital markets, financial analysts spend a considerable amount of resources analyzing corporate performances and issue predictions about upcoming performances (Drever et al., 2007). The capital markets offer substantial rewards for publicly-listed companies that beat the forecasts and penalties for companies that miss the forecasts. Thus, beating analyst's forecasts is particularly important for those companies because their share returns depend on how well they perform relative to the expectations, which will also influence the ability of those companies to raise funds from the debt and equity markets (Brealey et al., 2011; Jensen, Murphy, & Wruck, 2004). In addition, in many publicly-listed companies, top management's compensation is linked to the company's performance metrics, such as share performance, as part of the incentive compensation package to align the interests of managers and shareholders (Brealey et al., 2011). However, such incentive plans may tempt managers to

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[3] Information asymmetry refers to a situation in which some parties have access to certain relevant information that is not available to others (Deegan & Samkin, 2011).

use their discretion over financial reporting practices to manipulate earnings upwards to conceal poor underlying company performance, for their own interests. Hence, earnings management creates a potential agency cost when managers focus more on the short-term wealth of the company, rather than on its long-term wealth.

Prior studies also reveal that managers are tempted towards earnings management in takeover and management buyout settings (Easterwood, 1998; Guan, Wright, & Sun, 2004; Begley, Eaton, & Peck, 2003; Wu, 1997). Managers of takeover targets have greater incentives to manage earnings upwards to inflate stock prices and deal value prior to takeover offers in an attempt to inhibit the takeover and to dissuade the shareholders from supporting the takeover (Easterwood, 1998; Guan et al., 2004). This managerial behaviour serves to protect managers from being dismissed after the takeover. In a management buyout, however, managers are inclined to make the company performance less favourable or to manage earnings downwards in the periods preceding the management buyout to reduce the company's value and the acquisition price of the company (Begley et al., 2003; Wu, 1997). This again, illustrates that earnings management is an agency problem because, for the sake of managers, it distorts the transparency of financial information and prevents shareholders from making informed decisions for their own short-term and long-term interests.

2.3 Audit Committee Size

A large audit committee improves financial reporting quality in two main ways. DeZoort et al. (2002), in synthesizing the empirical literature on audit committee effectiveness, identified resources as one of the key factors contributing to audit committee effectiveness in overseeing the financial reporting process. They allege that, to have sufficient resources, an audit committee should have an adequate number of members to generate a substantive discussion and to consider emerging issues, especially those raised by external auditors, in audit committee meetings. Hence, firstly, a large audit committee will bring diverse perspectives to the questioning of the management and external auditors and will encourage shared knowledge among the members, who may have unequal access to inside information of the company, thereby allowing effective monitoring by the audit committee in the preparation of the financial statements (Krishnamoorthy, Wright, & Cohen, 2002). Secondly, it is more difficult for managers to exert pressure on a large audit committee to make the committee agree with their judgments on material issues and to resist adjustments proposed by external auditors (Pucheta-Martinez & Fuentes, 2007). A large audit committee better serves as an intermediary between managers and external auditors than does a small committee, because a large audit committee has a greater organizational status and is more powerful in solving disagreements between managers and external auditors (Braiotta, Colson, & Robert, 2010). Thus, the likelihood of earnings management being practised by managers can be minimized.

Despite some literature reporting a significant positive association between audit committee size and financial reporting quality, there are also many studies suggesting no positive relationship between audit committee size and financial reporting quality (Davidson et al., 2005; Saleh et al.,

2007; Pucheta-Martinez & Fuentes, 2007). Davidson et al. (2005) study the effectiveness of internal governance structures in monitoring earnings management using a broad, cross-sectional sample of 434 ASX listed companies for the financial year ending in 2000. Using two different models of earnings management, namely the cross-sectional modified Jones model and small increases in earnings, the findings of both models confirm that audit committee size has no significant association with earnings management[4]. They argue that audit committee size is not a powerful proxy for audit committee effectiveness. However, a limitation of their study is a problem in their sample selection that could lead to potential bias in their findings. The sample fails to exclude firms in the mining, oil, gas and utilities industries. Similarly to firms in the finance industry, these firms have a unique nature of operations and some firms are controlled to a great extent by the governments. The nature of their operations will directly influence the exercise of earnings management over the undertaking and the reporting of business activities, which cannot be effectively captured by the Jones model, because the model is specifically designed for firms in standard industries (Klein, 2002; Wells, 2002). In Davidson et al.'s (2005) study, firms from those industries represent approximately 33 percent of the sample, which could have a material impact on the robustness of their findings.

Consistent with Davidson et al.'s (2005) findings, Saleh et al. (2007), who employ the cross-sectional Jones model, also cannot find a negative association between earnings management and audit committee size in Malaysian public companies[5]. While a large audit committee has greater monitoring capacity, Pucheta-Martinez and Fuentes (2007) also assert that the benefit might be outweighed by the marginal cost of poorer coordination, communication and the decision

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[4] Davidson et al. (2005) operationalized audit committee size into the number of members in the committee.
[5] Saleh et al. (2007) also operationalized audit committee size into the number of members in the committee.

making process if the audit committee is oversized[6]. This allows managers to easily influence the judgment of audit committee members in favour of the managers. The mixed findings of the prior studies, however, suggest that an audit committee should be large enough to generate a balance of views and expertise, yet small enough to operate efficiently.

Given the NZX's recommendation that an audit committee of each issuer should have at least three members, this study hypothesizes that (stated in the alternative form):

H1: The presence of an audit committee with at least three members is negatively related to earnings management.

2.4 Audit Committee Independence

Regulations in some countries, such as SOX in the U.S.A., have moved towards the international best practice that an audit committee should be comprised solely of independent directors, while some countries like Australia and New Zealand require a majority of audit committee members to be independent directors (SEC, 2002; ASX CGC, 2003; NZX Limited, 2012). According to the NZSX listing rules, a director is deemed independent when he or she is not an executive officer of the issuer and has no direct or indirect interest or relationship that could reasonably influence, in a material way, his or her decisions in relation to the issuer (NZX Limited, 2012).

The prior literature suggests that audit committee independence is essential to ensure the effectiveness of the audit committee's oversight function for three reasons. First, independent members are better able to adopt a probing attitude and to challenge management's judgment in

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[6] Pucheta-Martinez and Fuentes (2007) find that downsizing an audit committee reduces the likelihood of receiving a qualified audit report in Spanish firms.

financial matters in an unrestricted manner, because they do not have any financial or psychological ties to the management that may interfere with their objective judgment (PricewaterhouseCoopers, 2003). Second, independent audit committee members generally have a good reputation as financial monitors in the company, so they tend to suffer from greater reputational damage from lawsuits than non-independent members do when an accounting failure occurs (Abbott, Parker, & Peters, 2004). Thus, they are more motivated to demonstrate their monitoring capability of the financial reporting process in order to build their reputations (Abbott et al., 2004; Goodwin, 2003). Third, audit committees with independent directors can strengthen the position of the internal auditors, by serving as an independent forum for them to report matters that affect managers, thereby improving the effectiveness of the internal audit function in discovering and controlling financial reporting problems (Braiotta et al., 2010; Raghunandan, Read, & Rama, 2001). It is also found that highly independent audit committees work closer and meet more regularly with internal auditors to overcome the problem of information asymmetry when reviewing financial statements and internal audit work, because independent audit committees do not have direct access to the same level of information as managers do (Goodwin & Yeo, 2001).

Prior studies have shown a significant negative relationship between earnings management and audit committee independence, using various measurements of independence. Using a sample of 687 large, publicly-traded U.S.A. firms in 1992 and 1993, and the cross-sectional Jones model to measure earnings management, Klein (2002) finds that the magnitude of earnings management is lower for companies that have audit committees comprised of a majority of independent directors. Interestingly, Klein (2002) finds no significant association between earnings

management and 100% audit committee independence. This finding is consistent with Kuang (2007), who finds a negative relationship between earnings management and audit committees with a majority of independent directors, but not with audit committees with solely independent directors, in New Zealand issuers. In contrast, Bedard et al. (2004) find a significant negative relationship between an audit committee with all independent directors and earnings management. Bedard et al. (2004) rank 3,451 U.S.A. firms in 1996 based on the size of abnormal accruals and select 100 firms with the highest income-increasing abnormal accruals (signifying aggressive earnings management), 100 firms with the highest income-decreasing abnormal accruals (also signifying aggressive earnings management), and 100 firms with the lowest abnormal accruals (low earnings management). They then compare the two groups with aggressive earnings management with the group with low earnings management. Their findings support the SOX 2002 requirement that an audit committee should comprise solely independent directors. Furthermore, prior studies find that the greater the proportion of independent directors in the audit committee, the more effective is the committee in controlling earnings management (Xie et al., 2003).

Given the NZX's recommendation on audit committee independence, the expectations above lead to the second hypothesis of this study:

H2: The presence of an audit committee with a majority of independent members is negatively related to earnings management.

2.5 Audit Committee Financial Expertise

As with the SOX and the U.K. Corporate Governance Code, the NZSX listing rules recommend that an audit committee should have at least one member with an adequate accounting or financial background (SEC, 2002; FRC, 2012; NZX Limited, 2012).) An audit committee member is deemed to have an adequate accounting or financial background if "he or she is a member of NZICA, or has held a Chief Financial Officer position at an issuer for a period greater than 24 months, or has successfully completed a course approved by the NZX for audit committee membership, or has the experience and/or qualifications deemed satisfactory by the board" (NZX Limited, 2012, p.45). This requirement implies that the audit committee member must not only be financially literate, but must also possess financial expertise.

Audit committee financial expertise is a critical component of audit committee effectiveness in two ways. First, financial expertise is associated with a greater ability to resolve problematic reporting issues. Audit committee members with professional accounting or finance qualifications have greater competency in handling grey areas and will not just blindly follow GAAP (Krishnamoorthy et al., 2002). Such financial experts possess the necessary knowledge about technical auditing and accounting matters, hence they are inclined to invest more effort in areas critical to financial reporting quality to detect potential accounting issues. They are prompted to ensure effective internal control and risk management is in place, require greater external audit scope and make better comprehension and judgments when reviewing financial statements and the work of the internal and external auditors (Abbott et al., 2004; Krishnamoorthy et al., 2002). This quality assists audit committees to monitor and detect earnings management.

Second, audit committee financial expertise leads to greater support for auditors in auditor-management disagreements. DeZoort and Salterio (2001) examine factors influencing the judgments of 68 Canadian audit committee members in a dispute between the external auditor and corporate management over a material accounting policy choice. Their study finds that audit committee members equipped with auditing knowledge will better understand the external auditor's judgment and are more likely to support the auditor in an auditor-corporate management dispute. This finding is further supported by a U.S.A. survey study conducted by Krishnamoorthy et al. (2002), who find that an audit committee lacking financial experts has reduced ability to mediate disagreements between management and the external auditors. This, again, suggests that audit committee expertise is an essential element in its monitoring role.

Previous research finds that audit committee expertise plays a vital role in monitoring earnings management. Bedard et al. (2004) and Kuang (2007) report a negative association between aggressive earnings management and audit committees with at least one financial expert. Furthermore, Xie et al. (2003) and Baxter and Cotter (2009) find earnings management is negatively related to the proportion of financial experts in the committees. Collectively, these studies suggest that the effectiveness of an audit committee in its oversight process is primarily affected by the expertise of its members in the areas of financial reporting, internal control and auditing. Thus, this study posits that:

H3: The presence of an audit committee with at least one member possessing accounting or financial expertise, as per the NZX's recommendation, is negatively related to earnings management.

2.6 Audit Committee Diligence

While audit committee size, independence and expertise are the primary inputs to audit committee effectiveness, the audit committee is not effective if the committee lacks diligence in its oversight process (DeZoort et al., 2002). The most common proxy for audit committee diligence used in previous research is the frequency of audit committee meetings (DeZoort et al., 2002; Abbott et al., 2004). The NZSX listing rules require issuers' audit committees to meet regularly in order to effectively discharge their responsibilities, yet they do not specify the number of committee meetings per year that is optimal to carry out the committee's duties (NZX Limited, 2012). Despite the frequency of audit committee meetings being dependent on the objectives, scope of activities, size and nature of the company, it should coincide with the company's reporting and audit cycles. Thus, PricewaterhouseCoopers (2003) suggests that audit committee meetings of at least three to four times a year are preferable.

A number of prior studies show that the frequency of audit committee meetings is positively associated with financial reporting quality (Abbott et al., 2004; McMullen & Raghunandan, 1996; Xie et al., 2002). Xie et al. (2002) examine the role of the board and audit committee in monitoring earnings management based on 282 firms listed in the S&P 500 Index in the years 1992, 1994 and 1996. Their study finds that audit committees in U.S.A. firms meet, on average, three to four times a year, and that audit committee meeting frequency is negatively associated with earnings management. Similarly, it is found that audit committees of firms with financial restatements meet less frequently than those of firms without restatements (Abbott et al., 2004). All these findings support the assertion that regular meetings provide opportunities to audit committee members to review and discuss financial and control-related matters on a timely basis

and to keep them informed of the progress of material issue resolution, thereby actively functioning audit committees have a greater ability to detect earnings management (McMullen & Raghunandan, 1996).

Nevertheless, some studies show that the frequency of audit committee meetings does not contribute to audit committee effectiveness in monitoring earnings management. In Bedard et al.'s (2004) study, the frequency of audit committee meetings is measured with a dummy variable, which equals 1 if the audit committee holds at least three meetings a year, or 0 otherwise. They fail to find a significant negative relationship between the frequency of audit committee meetings and earnings management in U.S.A. companies. This finding is consistent with that of Saleh et al.'s (2007) study of Malaysian public companies, and to that of Davidson et al.'s (2005) study of ASX listed companies[7].

The mixed research findings in this area suggest that the frequency of audit committee meetings may not be an effective proxy for audit committee diligence or activity, despite its widespread use in the research. This is because the proxy lacks meaningful substance when audit committee diligence is only quantified by the frequency of meetings (Saleh et al., 2007; Wu, 2012). For instance, the number of meetings does not capture the extent of work accomplished and the level of participation in the meetings. Despite the limitations of this proxy, as with prior studies, this study will employ the frequency of audit committee meetings as a proxy for audit committee diligence, because audit committee meetings in all NZX listed companies are expected to be an

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[7] Saleh et al. (2007) and Davidson et al. (2005) operationalized audit committee diligence into the number of audit committee meetings in the study year.

effective measure of diligence, as they are facilitated by agendas[8]. Detailed written agendas, specifying the topics to be addressed in the audit committee meetings, are prepared and distributed to the members prior to the meetings to enable them to prepare (Wu, 2012). This will ensure that each meeting's objectives are accomplished and unsolved issues from the previous meeting can be followed up. In this way, the problems of work overload and unsolved issues that may be faced by audit committees in the year-end peak reporting period can be prevented, thereby reducing the likelihood of earnings management (PricewaterhouseCoopers, 2003).

Since the NZX does not define "regular meetings", this study uses the best practice suggested by PricewaterhouseCoopers (2003) that audit committee meetings should be conducted at least three to four times per year, and hypothesizes that:

H4: An audit committee that meets at least quarterly is negatively related to earnings management.

2.7 Summary

There have been a number of empirical studies investigating the relationships between audit committee characteristics and earnings management for different countries and different results have been reported. Table 2.1 gives a summary of the empirical studies. These studies find conflicting results in the U.S.A, Australia and Malaysia. This can be due to the different measures of earnings management and audit committee characteristics adopted in those studies.

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[8] In the study of audit committee effectiveness in NZX listed companies by Wu (2012) , all interviewees (audit committee members) indicate that audit committee meetings in their companies are facilitated by agendas to ensure the committee members are effective in carrying out their tasks in the meetings. This forms the expectation in this study that the meetings of audit committees in NZX listed companies are effective and can signify the level of work accomplished by actively functioning audit committees. Hence, the frequency of audit committee meetings can be an effective proxy for audit committee diligence in this study.

In New Zealand, the single prior study shows that audit committee independence and financial expertise are negatively related to aggressive earnings management (Kuang, 2007). However, there is still a lack of research about the monitoring effect of other audit committee characteristics, such as diligence, on earnings management. There is a need to investigate this issue for New Zealand companies.

Table 2.1: Summary of Empirical Research on the Relationship between Audit Committee Characteristics and Earnings Management

Authors	Period	Country	Audit committee related variables				
			Size	**Independence**	**Financial expertise**	**Diligence**	**Other**
Kent et al. (2010)	2004	Australia	• Negative association with the number of audit committee members	• Negative association with the proportion of independent audit committee members	• No association with the proportion of financial experts on audit committees	• Negative association with the frequency of audit committee meetings	
Baxter & Cotter (2009)	2001	Australia	• No association with the number of audit committee members	• No association with the proportion of independent audit committee members	• Negative association with the proportion of financial experts on audit committees	• No association with the frequency of audit committee meetings	
Kuang (2007)	2004 to 2005	New Zealand	• No association with audit committees with at least three members	• Negative association with audit committees with a majority of independent directors • No association with fully independent audit committees	• Negative association with audit committees with at least one financial expert • Negative association with the proportion of financial experts on audit committees		• Positive association with audit committee members' shareholdings and multiple directorships

Table 2.1 (Continued)

Authors	Period	Country	Audit committee related variables				
			Size	**Independence**	**Financial expertise**	**Diligence**	**Other**
Koh, Laplante, & Tong (2007)	1998 to 2000	Australia		• Negative association with audit committees comprising a majority of non-executives		• Negative association with the frequency of audit committee meetings	
Saleh et al. (2007)	2001	Malaysia	• No association with the number of audit committee members	• Negative association with fully independent audit committees	• No association with the proportion of financial experts on audit committees	• No association with the frequency of audit committee meetings	• Negative association with the interaction of financial expertise and diligence of audit committees
Rahman & Ali (2006)	2002 to 2003	Malaysia		• No association with the proportion of independent audit committee members	• No association with audit committees with at least one financial expert	• No association with the frequency of audit committee meetings	

Table 2.1 (Continued)

Authors	Period	Country	Audit committee related variables				
			Size	**Independence**	**Financial expertise**	**Diligence**	**Other**
Davidson et al. (2005)	2000	Australia	• No association with the number of audit committee members	• Negative association with audit committees comprising a majority of non-executives • No association with audit committees comprised solely of non-executives		• No association with the frequency of audit committee meetings	
Yang & Krishnan (2005)	1996 to 2000	The U.S.A	• Negative association with the number of audit committee members	• No association with the proportion of independent audit committee members	• No association with audit committees with at least one financial expert	• No association with the frequency of audit committee meetings	• Negative associations with the average number of outside directorships held by and the average tenure of audit committee members • Positive association with the percentage of stock ownership by audit committee members

Table 2.1 (Continued)

Authors	Period	Country	Audit committee related variables				
			Size	**Independence**	**Financial expertise**	**Diligence**	**Other**
Bedard et al. (2004)	1996	The U.S.A	• No association with audit committees with at least three members	• Negative association with fully independent audit committees	• Negative association with audit committees with at least one financial expert	• No association with audit committee meetings of at least three times per year	• Negative association with the governance expertise of audit committee members • No association with firm-specific expertise of audit committee members
Xie et al. (2003)	1992, 1994 and 1996	The U.S.A	• No association with the number of audit committee members	• No association with the proportion of independent audit committee members	• Negative association with the proportion of financial experts on audit committees	• Negative association with the frequency of audit committee meetings	
Klein (2002)	1992 to 1993	The U.S.A		• Negative association with audit committees with a majority of independent members. • No association with fully independent audit committees			

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Chapter 3 Research Methodology

3.1 Introduction

This chapter contains four sections. The first section describes the measurements of the variables used in the testing model. The variables include earnings management, audit committee variables and control variables. The second section describes the multiple linear regression model to be used as the testing model of this study, in both the main analysis for the NZX Main Board companies and the additional analysis for the combined NZX Main Board and the Alternative Market companies. The third section will describe the sample selection process for the main analysis and the additional analysis, while the last section explains the data collection approach and the diagnostics tests for the data.

3.2 Measurement of Variables

3.2.1 Measurement of Earnings Management

As noted by Kuang (2007) and Davidson et al. (2005), established proxies for earnings management used in the previous research include the assessment of accounting policy changes, specific accounting transactions, small profits or small changes in earnings and discretionary accruals (*DAC*). However, in contemporary earnings management research, *DAC* models have become the dominant measure of earnings management. The two most popular *DAC* models are the cross-sectional Jones *DAC* model (Jones, 1991) and the modified cross-sectional Jones *DAC* model (Dechow, Sloan, & Sweeney, 1995). These two *DAC* models define *DAC* or abnormal accruals as the difference between total accruals and non-discretionary accruals. The Jones model uses only two independent variables, namely changes of revenues and gross property,

plant and equipment (*PPE*), to estimate changes in normal or non-discretionary accruals caused by changing underlying economic conditions of the company (Jones, 1991). Changes of revenues are objective measures of changes in the economic environment of the company, and hence, are included in the Jones model to control for their effect on working capital accruals. *PPE* is included to control for the portion of total accruals related to nondiscretionary depreciation expense. However, a key limitation underlying the Jones model is that corporate managers can still use credit sales to manage earnings by recognizing the sales revenue in the desired period. Thus, Dechow et al. (1995) modified the Jones model by deducting the change in receivables from the change in revenues, improving the power of the Jones model in detecting discretionary accruals. While the ability of these two *DAC* models in measuring earnings management has been challenged, because they neglect many factors, such as the size, debt and growth of the company, which will also affect accruals, the modified Jones model is still the best approach to detect earnings management since there are no better alternatives in the present research (Chen, 2011). Hence, this study will adopt the cross-sectional modified Jones model to estimate earnings management for NZX listed companies. In employing the modified Jones model, total accruals (*TAC*) are decomposed into non-discretionary accruals (*NDAC*) and discretionary accruals (*DAC*), as shown in equation (1). *NDAC* are estimates that represent changes in the underlying economic performance of the company, while *DAC* are open to managers' discretion and hence are operationalized as a proxy for earnings management.

$$TAC_{i,j,t} = NDAC_{i,j,t} + DAC_{i,j,t} \tag{1}$$

where $TAC_{i,j,t}$ is the total accruals for company i in industry j in year t; $NDAC_{i,j,t}$ and $DAC_{i,j,t}$ are the non-discretionary accruals and the discretionary accruals respectively for company i in industry j in year t. $TAC_{i,j,t}$ is computed using the cash flow approach, instead of the balance

sheet approach. The cash flow approach provides more accurate accruals' estimates, because measurement errors in accruals estimates introduced by the balance sheet approach can be substantial when non-operating activities like mergers and acquisitions, divestitures and foreign currency translations are present (Hribar & Collins, 2002)[9]. The cash flow approach involves deducting the operating cash flows ($OCF_{i,j,t}$) from the net income ($NI_{i,j,t}$).

$$TAC_{i,j,t} = NI_{i,j,t} - OCF_{i,j,t} \tag{2}$$

To eliminate industry-specific effects on the accrual behaviour of each company, the Jones model is applied for each industry portfolio to estimate the industry specific regression coefficients, $\alpha_{j,t}$, $\beta_{1j,t}$ and $\beta_{2j,t}$ in Equation (3) (Dechow et al., 1995; Rahman & Ali, 2006; Davidson et al., 2005). Based on previous findings, the average estimate of $\beta_{1j,t}$ is predicted to be positive because changes in revenues are expected to be positively related to working capital accruals, while $\beta_{2j,t.}$ is expected to be negative as the level of *PPE* will drive depreciation expenses, and hence, is related to income-decreasing accruals (Jones, 1991; Davidson et al., 2005; Saleh et al., 2007). All variables of the regression are deflated by the lagged total assets ($TA_{i,j,t-1}$) to reduce heteroskedasticity because lagged total assets are assumed to be positively associated with the variance of the error term, $\varepsilon_{i,j,t}$ (Jones, 1991).

$$\frac{TAC_{i,j,t}}{TA_{i,j,t-1}} = \alpha_{j,t}\left(\frac{1}{TA_{i,j,t-1}}\right) + \beta_{1j,t}\left(\frac{\Delta REV_{i,j,t}}{TA_{i,j,t-1}}\right) + \beta_{2j,t}\left(\frac{PPE_{i,j,t}}{TA_{i,j,t-1}}\right) + \varepsilon_{i.j.t} \tag{3}$$

Then, $DAC_{i,j,t}$ is computed as the difference between $TAC_{i,j,t}$ and $NDAC_{i,j,t}$, using Equation (4), where *NDAC* is calculated using the modified Jones model.

$$DAC_{i,j,t} = \frac{TAC_{i,j,t}}{TA_{i,j,t-1}} - \{\alpha_{j,t}\left(\frac{1}{TA_{i,j,t-1}}\right) + \beta_{1j,t}\left(\frac{\Delta REV_{i,j,t} - \Delta REC_{i,j,t}}{TA_{i,j,t-1}}\right) + \beta_{2j,t}\left(\frac{PPE_{i,j,t}}{TA_{i,j,t-1}}\right)\} \tag{4}$$

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[9] Hribar and Collins (2002) demonstrate that in the cases of mergers, acquisitions, divestitures and foreign currency translations, the balance sheet working capital changes do not articulate with accruals from the income statement that are reflected in the statement of cash flows. The biases can create substantial errors when the balance sheet approach is used to estimate accruals. Thus, in this study, the cash flow approach is used.

where:

$TA_{i,j,t-1}$ is the total assets for company i in industry j at the end of the prior year;

$\Delta REV_{i,j,t}$ is the change in revenue for company i in industry j between year t and t-1;

$\Delta REC_{i,j,t}$ is the change in receivables for company i in industry j between year t and t-1;

$PPE_{i,j,t}$ is the gross property, plant and equipment for company i in industry j in year t;

$\alpha_{j,t}$, $\beta_{1j,t}$ and $\beta_{2j,t}$ are the industry-specific estimates of coefficients obtained from Equation (3)

3.2.2 Measurement of Audit Committee Variables

The independent variables of this study, namely audit committee size (*ACSIZE_3*), independence (*ACINDP51*), financial expertise (*ACEXPERT_1*) and frequency of committee meetings (*FMEETING_4*), and their measurements are summarized in Table 3.1. The measurements of audit committee size, independence and financial expertise are consistent with the NZX recommendations. *ACSIZE_3* is a dummy variable taking the value of 1 if the audit committee consists of at least three members, and 0 otherwise. *ACINDP51* is a dummy variable with a value of 1 if 51-99% of audit committee members are independent directors, and 0 otherwise. *ACEXPERT_1* is a dummy variable with a value of 1 if the audit committee has at least one member with accounting or finance expertise per the NZX's definition, and 0 otherwise. Since the NZX does not recommend an ideal frequency of audit committee meetings in a year, this study uses the best practice suggested by PricewaterhouseCoopers (2003) that audit committee meetings should be conducted at least three to four times per year, by measuring *FMEETING_4* as a dummy variable taking the value of 1 if the audit committee meets at least four times a year, and 0 otherwise.

Table 3.1: Summary of Variable Operationalization and Expected Sign of Hypothesis Testing

Variables	Definition	Operationalization	Expected sign	Test
Independent variables				
_ACSIZE_3_	Audit committee size	A dummy variable with a value of 1 if the audit committee consists of at least 3 members, and 0 otherwise	-	H1
ACINDP51	Audit committee independence	A dummy variable with a value of 1 if 51-99% of audit committee members are independent directors, and 0 otherwise	-	H2
_ACEXPERT_1_	Audit committee expertise	A dummy variable with a value of 1 if the audit committee has at least one member with accounting or finance expertise per NZX's definition, and 0 otherwise	-	H3
_FMEETING_4_	Frequency of audit committee meetings	A dummy variable with a value of 1 if the audit committee meets at least four times a year, and 0 otherwise	-	H4
Control variables				
BIG4	External auditor	A dummy variable with a value of 1 if the company is audited by Big 4 auditors, and 0 otherwise	-	
SIZE	Firm size	Natural log of total assets	-	
ROA	Firm performance	Absolute net income divided by total assets	+	
LEV	Firm leverage	Total liabilities to total assets ratio	+	

3.2.3 Measurement of Control Variables

Besides showing the independent variables, Table 3.1 also summarizes the measurements of the control variables that will be included in the model used in this study. In choosing control variables, the earnings management literature has been reviewed to identify any governance and firm-related variables that could possibly affect earnings management. In this study, four control variables are chosen and will be controlled for their effect on earnings management.

Consistent with prior studies, external auditor (*BIG4)* is controlled for (Davidson et al., 2005; Rahman & Ali, 2006). Companies employing Big 4 auditors tend to report lower levels of abnormal accruals than companies employing non-Big 4 auditors, because Big 4 auditors have better accounting expertise, are more likely to detect questionable accounting practices, and to some extent may compel managers to make necessary adjustments to their accounting practices to comply with the accounting standards [10] (Krishnan, 2003). Hence, this study expects companies that employ Big 4 auditors to be less likely to engage in earnings management.

This study will also control for three firm-related variables that have been found to be associated with earnings management in the prior research. The size of the sample company (*SIZE*), which is represented by the natural log of book value of total assets, is controlled because smaller firms are less scrutinized by external governance bodies, such as regulators and rating agencies, and are more inclined to manipulate earnings (Davidson et al., 2005; Rahman & Ali, 2006; Saleh et

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[10] Krishnan (2003) examines the link between earnings management and Big 6 auditors' expertise for the 10-year period from 1989 to 1998. Note that one of the Big 6 auditors, Coopers and Lybrand merged with Price Waterhouse to form PricewaterhouseCoopers in 1998, whereas Arthur Andersen was removed from the Big 5 auditors list in 2002 after the revelation of the Enron accounting fraud. This leaves the Big 4 auditors in the market today.

al., 2007). *SIZE* is therefore expected to be negatively related to earnings management. This study also controls for the effect of company performance (*ROA*), measured by absolute net income divided by total assets, because estimated discretionary accruals are greater in companies that perform very poorly or in a very superior way. So, *ROA* is expected to be positively associated with earnings management (Kothari, Leone, & Wasley, 2005). Leverage (*LEV*), measured by the total liabilities to total assets ratio, is controlled because companies experiencing financial difficulties, or when they are close to debt covenant violations, face higher bankruptcy risks, so they have a greater incentive to manage earnings (Klein, 2002; Saleh et al., 2007).

3.3 Multiple Linear Regression Model

A multiple linear regression model is used in this study because the analysis involves only one quantitative dependent variable and at least two predictor variables (Nieuwenhuis, 2009). The functional form of the regression model can be expressed as:

$$DAC = f\,(ACSIZE\_3,\,ACINDP51,\,ACEXPERT\_1,\,FMEETING\_4,\,BIG4,\,SIZE,\,ROA,\,LEV) + \varepsilon$$

where *DAC* is the absolute value of estimated discretionary accruals in order to include the combined effect of income-increasing and income-decreasing earnings management. ε is an error term, while the independent and control variables are defined in Table 3.1. The expected association for each hypothesis test is also stated in Table 3.1. This testing model is used in both the main analysis for the NZX Main Board and the additional analysis for the combined NZX Main Board and the Alternative Market.

3.4 Sample Selection

This study involves a cross-sectional analysis of companies listed on the NZX. For the main analysis of this study, the sample - which is pooled - is selected from all companies listed on the NZX Main Board for the financial years ending in 2011 and 2012. Pooling of data is acceptable, because the relationships being estimated are expected to be temporarily stable over the two-year period (Kuang, 2007; Wooldridge, 2012). Due to the small size of the New Zealand public equity market, the sample size of this study is initially the whole population of listed companies on the NZX Main Board, which is 225 companies, after excluding 20 overseas companies. All companies are categorized according to the NZX industry descriptors (see Appendix A). This study excludes companies in the Finance, Investment, Mining and Energy industries, leaving a sample size of 158. Companies in the Finance and Investment industries are excluded because these companies are highly regulated and have a unique and different working capital structure that affects their accrual practices (Klein, 2002; Kuang, 2007). Companies in the Mining and Energy industries are excluded because their operation is greatly influenced by government regulations, such as the Electricity Industry Act 2010 (Parliamentary Counsel Office, 2012; Wells, 2002). Their incentives and opportunities to manage earnings are different from standard companies and cannot be captured effectively by the DAC model (Peasnell, Pope, & Young, 2001; Rahman & Ali, 2006). Furthermore, industries with less than ten companies will be eliminated from the sample, because of insufficient observations in each industry to estimate the industry-specific coefficients of the regression in Equation 3 (Dechow et al., 1995; Bedard et al., 2004; Kothari et al., 2005). This reduces the sample size to 126. The final sample of 82 is determined after removing companies with unavailable annual reports, financial data or governance information. A summary of the sample selection is shown in Table 3.2.

Table 3.2: Summary of Sample Selection for Main Analysis

	Number
Total companies listed on the NZX Main Board for the 2011 and 2012 years	225
Less Companies in Finance industry	(14)
Less Companies in Investment industry	(32)
Less Companies in Energy industry	(14)
Less Companies in Mining industry	(9)
Less Industries with less than 10 observations	
Media and Telecommunications	(7)
Building Materials and Construction	(6)
Leisure and Tourism	(8)
Food and Beverages	(5)
Textiles and Apparel	(4)
Less Companies with unavailable annual reports or missing data	(44)
Final sample	**82**

In consideration of the small sample size used in the main analysis, an additional analysis is conducted, with a larger sample comprised of companies listed on both the NZX Main Board and the Alternative Market. The main analysis does not include companies in the Alternative Market in the sample, because these firms are subject to different listing rules and regulations, such as flexible reporting and corporate governance requirements, that the empirical model may fail to consider, affecting the precision of the model. A further reason for repeating the main analysis with companies listed on both the NZX Main Board and the Alternative Market is to permit comparisons of this study's results with those of Kuang (2007).

As in the main analysis, a similar sample selection approach is used in this analysis. Companies in the Finance, Investment, Energy and Mining industries are excluded because their working capital structure and operational regulations are different from standard companies and cannot be effectively captured by the DAC model (Peasnell, Pope, & Young, 2001; Rahman & Ali, 2006). Furthermore, industries with less than ten companies will be eliminated from the sample due to insufficient observations in each industry to estimate industry-specific coefficients (Dechow et

al., 1995; Bedard et al., 2004; Kothari et al., 2005). Companies with unavailable annual reports, financial data or governance information, and outlier and influential observations are also removed. Table 3.3 shows how the final sample size of 102 is obtained.

Table 3.3: Summary of Sample Selection for Additional Analysis

	Number
Total companies listed on the NZX Main Board and the Alternative Market for the 2011 and 2012 years[a]	270
Less Companies in Finance industry	(18)
Less Companies in Investment industry	(44)
Less Companies in Energy industry	(18)
Less Companies in Mining industry	(11)
Less Industries with less than 10 observations	
Building Materials and Construction	(6)
Textiles and Apparel	(4)
Less Companies with unavailable annual reports or missing data	(62)
Less Outlier and influential observations[b]	(5)
Final sample	**102**

[a] See Appendix A for the breakdown of the total listed companies by industry.
[b] An observation is deemed to be an outlier and influential and will be deleted if its standardized residual $> \pm2$, leverage $> 3(k+1)/n$ and covariance ratio $< 1-[3(k+1)/n]$, where k is the number of predictor variables and n is the number of observations (Field, 2009).

3.5 Data Collection and Diagnostic Tests

The financial data and the audit committee and other governance information are hand-collected from each company's annual report for the financial year ending in 2011 and 2012, as published on the NZX or company website. This study period is chosen because it provides the most recent empirical evidence on the effectiveness of the NZX recommendations on audit committees in monitoring earnings management.

The robustness of the linear regression model used in this study relies on three main assumptions of the ordinary least squares (*OLS*) method, namely linearity, homoskedasticity and normality

(Field, 2009). The linearity of the dataset is tested using the *RESET* test; homoskedasticity is tested using the *Breusch-Pagan* test, while normality is examined using skewness, kurtosis and the *Jarque-Bera* test. The *RESET* and *Breusch-Pagan* tests show that the linearity and homoskedasticity assumptions of *OLS* are not satisfied in this study. For a standard normal distribution, the skewness value is zero and the kurtosis value is three (Hill, Griffiths, & Lim, 2011). However, the dataset illustrates a skewness of 3.126 and a kurtosis value of 19.671. Also, examination of the data using the *Jarque-Bera* test indicates that non-normality exists in the residuals of the regression at the 1% significance level. The natural log transformation of the dependent variable is, therefore, applied to fulfil the assumptions of *OLS*. Other transformations such as square root and reciprocal transformations were undertaken, but the natural log transformation produces better estimation because this transformation best repairs non-normality, non-linearity and heteroskedasticity of the data in this study. Furthermore, the main advantage of using the natural log transformation of the dependent variable is that it allows interpretation of the regression coefficients in a natural way, in terms of percentage changes (Nieuwenhuis, 2009).

Chapter 4 Results and Discussion

4.1 Introduction

This chapter contains three sections. The first two sections discuss the findings in the main analysis of the study, whereas the last section reports the results in the additional analysis. The first section commences with the descriptive statistics for the estimated regression coefficients of the Jones model and for the regression variables used in the multiple linear regression model of the study. A correlation matrix is also prepared to assess the multicollinearity of the variables. The second section of the chapter provides the results for and discussion of the hypothesis testing conducted for the companies listed on the NZX Main Board, whereas the last section reports the findings of the hypothesis testing conducted for both the NZX Main Board and the Alternative Market companies, undertaken to validate the robustness of the findings in the main analysis and to allow comparisons of this study's results with those of Kuang.

4.2 Descriptive Statistics

To assess the modified Jones model's ability to partition total accruals into their discretionary and non-discretionary components, Table 4.1 provides the descriptive statistics of the model's coefficients. The average β_1 coefficient (change in revenues) is negative, which is inconsistent with prior studies (Davidson et al., 2005; Jones, 1991). This situation can be explained by the minimum β_1 coefficient (-0.254), which substantially pulls down the positive mean value to negative. As noted by Jones (1991), the expected sign for the change in revenues' coefficient is not obvious, because a given change in revenue can cause income-increasing working capital accruals, such as increases in accounts receivable, and income-decreasing working capital accruals, such as increases in accounts payable. Despite the negative mean value found in this

study, 66.67% of the observations are positive, which is consistent with prior studies (Saleh et al., 2007). This implies that 66.67% of industries exhibit a positive association between changes in revenues and total accruals. The β_2 coefficient of property, plant and equipment is negative, as expected, with all the industries showing a negative association between property, plant and equipment and total accruals. Therefore, it appears as if the model is reasonably specified and has produced plausible estimates for discriminating non-discretionary accruals from total accruals.

Table 4.1: Descriptive Statistics for Estimated Regression Coefficients ($n=6$)[a]

	Minimum	Maximum	Mean	Std. Deviation	% positive
α coefficient	-2810	2196	-1440	1888	16.67
β_1 coefficient	-0.254	0.091	-0.018	0.121	66.67
β_2 coefficient	-39.722	-0.012	-6.670	16.193	0.00

[a] The descriptive statistics presented above are for the estimated multiple regression equation:

$$\frac{TAC_{i,j,t}}{TA_{i,j,t-1}} = \alpha_{j,t}\left(\frac{1}{TA_{i,j,t-1}}\right) + \beta_{1j,t}\left(\frac{\Delta REV_{i,j,t}}{TA_{i,j,t-1}}\right) + \beta_{2j,t}\left(\frac{PPE_{i,j,t}}{TA_{i,j,t-1}}\right) + \varepsilon_{i.j.t}$$

where:

$TAC_{i,j,t}$ is total accruals for company i in industry j in year t;

$TA_{i,j,t-1}$ is the total assets for company i in industry j at the end of the prior year;

$\Delta REV_{i,j,t}$ is the change in revenue for company i in industry j between year t and $t-1$;

$PPE_{i,j,t}$ is the gross property, plant and equipment for company i in industry j in year t;

$\varepsilon_{i,j,t}$ is the error term for company i in industry j in year t;

n is the number of industries.

Table 4.2 provides the descriptive statistics for the regression variables used in the model of this study. Panel A shows the descriptive statistics for the continuous variables, while Panel B reports the frequency of the dummy regression variables.

Table 4.2: Descriptive Statistics for Regression Variables[a]

Panel A: Continuous regression variables

Variable	Mean	S.D.	Minimum	Maximum
Absolute discretionary accruals (DAC)[b]	0.050	0.065	0.001	0.475
Firm size (*SIZE*)	12.624	1.365	9.828	16.558
Firm performance *(ROA)*	0.065	0.053	0.002	0.276
Firm leverage (*LEV*)	0.428	0.180	0.003	0.842

Panel B: Dummy regression variables

Variable	Frequency of 1's	Frequency of 0's
Audit committee size (*ACSIZE_3*)	78 (95.1%)	4 (4.9%)
Audit committee independence (*ACINDP51*)	52 (63.4%)	30 (36.6%)
Audit committee expertise (*ACEXPERT_1*)	68 (82.9%)	14 (17.1%)
Frequency of audit committee meetings (*FMEETING_4*)	43 (52.4%)	39 (47.6%)
External auditor (*BIG4*)	70 (85.4%)	12 (14.6%)

[a] $n = 82$. All variables are defined in Table 3.1.
[b] Scaled by lagged total assets.

Panel A indicates that the average firm has discretionary accruals of 0.050 in absolute terms, suggesting that, overall, NZX listed companies are exposed to relatively low earnings management. The firm size, measured by the natural log of total assets, has a mean value of 12.624 and a range from 9.828 to 16.558. Furthermore, the average firm has a reported absolute return on total assets ratio of 6.5% and a leverage ratio of 42.8%. Panel B indicates that 95.1% of firms have established audit committees of at least three members, 63.4% of firms have a majority of independent directors on the audit committee, 82.9% of audit committees have at

least one financial expert, and 52.4% of audit committees meet at least quarterly. This suggests that a majority of NZX listed companies comply with the NZX Corporate Governance Best Practice Code. Panel B also shows that 85.4% of firms are audited by Big 4 audit firms.

Table 4.3 reports the correlations between the independent variables in the regression model. The main purpose of doing the correlation matrix is to examine the extent to which each independent variable is related to the others. A multicollinearity problem exists when there is a high correlation between two or more independent variables in the regression model, causing the estimates of the regression coefficients to become unstable and the standard errors for the coefficients to become very inflated (Field, 2009). Independent variables are said to be very highly correlated if the correlation is above 0.80. In this study, the highest correlation is between firm performance (*ROA*) and firm size (*SIZE*), with the absolute value of the correlation coefficient 0.417. Thus, the correlation matrix suggests that there is no multicollinearity among the independent variables, since none of the variables correlates above 0.80. Nevertheless, multicollinearity in the data is further assessed using variance inflation factor (*VIF*) and tolerance statistics, which involve running an auxiliary regression of each independent variable on the remaining independent variables. As shown in Appendix B, eight auxiliary regressions are run because eight independent variables are used in the study. Multicollinearity is a concern when the *VIF* value is greater than 10 and its reciprocal (1/*VIF*), tolerance statistics, is below 0.10 (Field, 2009). Also, collinearity creates a concern if the R^2 from the auxiliary model is above 0.80 (Hill et al., 2011). Appendix B shows that, for all of the auxiliary regression models, the R^2 is below 0.80, the *VIF* values are all below 10 and the tolerance statistics are well above 0.10, confirming that multicollinearity is not a concern in this study.

Table 4.3: Pearson Correlation Matrix of Independent Variables[a]

	ACSIZE_3	ACINDP51	ACEXPERT_1	FMEETING_4	BIG4	SIZE	ROA	LEV
ACSIZE_3	1.000							
ACINDP51	0.298[**]	1.000						
ACEXPERT_1	0.048	-0.143	1.000					
FMEETING_4	0.124	-0.014	0.022	1.000				
BIG4	0.227[*]	0.187	0.179	0.089	1.000			
SIZE	0.278[*]	-0.064	0.200	0.162	0.297[**]	1.000		
ROA	-0.127	-0.165	-0.092	0.034	-0.262[*]	-0.417[**]	1.000	
LEV	0.092	0.064	0.038	0.241[*]	-0.017	0.155	0.018	1.000

** Correlation is significant at the 1% level (2-tailed).
* Correlation is significant at the 5% level (2-tailed).
[a] All variables are defined in Table 3.1.

The correlation analysis in Table 4.3 also demonstrates that large-sized companies are more likely to have audit committees with at least three members and to be audited by Big 4 audit firms. These findings suggest that larger companies have greater ability to support the costs of large audit committees and Big 4 audit firms, so they emphasize audit quality more in terms of audit committee size and external audit than do small companies. These findings are consistent with Kuang's findings (2007). Also, an audit committee with at least three members generally has a majority of independent directors on the committee (correlation coefficient = 0.298, p-value<0.01). Furthermore, audit committees tend to meet at least quarterly when the companies have a high leverage ratio. This relationship can be explained by the agency theory perspective of monitoring that, in situations with high agency costs of debt, greater monitoring efforts by audit committees are needed to monitor the situation, and these monitoring needs will drive audit committee diligence (Collier & Gregory, 1999)[11]. Furthermore, consistent with Davidson et al. (2005), the correlation matrix shows that firm performance, measured by the absolute value of *ROA*, is negatively correlated with firm size and the use of Big 4 audit firms. In other words, very good or very bad firm performance is more likely to exist in small companies and in companies that employ non-Big 4 audit firms.

4.3 Substantive Statistics

Table 4.4 reports the multiple linear regression results for the 82 NZX Main Board companies. The *F*-statistic shows that the model is statistically useful at the 1% significance level, with an

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[11] The agency costs of debt occur if, when a party lends funds to another organization, the borrower undertakes activities that reduce or even eliminate any likelihood of the funds being repaid (Deegan & Samkin, 2011). These costs relate to the behaviour of the borrower diverging from that of the lender.

adjusted R^2 of 0.242. This means that about 24.2% of the variation in discretionary accruals is explained by the model.

Of the four control variables included in the model, two are statistically significant at the 1% level. Earnings management is negatively associated with firm size (*SIZE*) and positively associated with firm leverage (*LEV*). These results are as predicted. However, no association between earnings management and the firm performance (*ROA*) or the use of Big 4 audit firms (*BIG4*) is found.

Table 4.4: Multiple Linear Regression Results (*n=82*)

Variable[b]	Expected sign	Coefficient	*t*-Statistic	*p*-value[a]
Intercept	n/a	0.172	0.130	0.897
Audit committee variables				
ACSIZE_3	-	0.185	0.342	0.367
ACINDP51	-	-0.448	-2.044	0.022**
ACEXPERT_1	-	-0.485	-1.621	0.055*
FMEETING_4	-	-0.346	-1.559	0.062*
Control variables				
BIG4	-	0.434	0.963	0.169
SIZE	-	-0.338	-3.773	0.000***
ROA	+	2.736	1.085	0.141
LEV	+	1.602	2.378	0.010***
Adjusted R^2		0.242		
F-statistic		4.225		
p-value		0.000		

[a] *, ** and *** indicate significance at the 10%, 5% and 1% levels (one-tailed), respectively.
[b] The dependent variable of the regression is the natural log transformation of discretionary accruals, while all predictor variables are defined in Table 3.1.

The results of the regression model show that the coefficient for audit committee size (*ACSIZE_3*) is not significant (coefficient = 0.185, *p*-value is 0.367), thus Hypothesis 1 of a negative relationship between audit committee size and earnings management is not supported.

This implies that there is no significant difference in the monitoring effect on earnings management between audit committees with at least three members and audit committees with less than three members. This result is not unexpected, because many prior studies have found that audit committee size does not play an important role in reducing earnings management in some countries, for instance, the U.S.A. (Xie et al., 2003), Australia (Davidson et al., 2005), Malaysia (Saleh et al., 2007) and New Zealand (Kuang, 2007).

The second hypothesis relates to the relationship between audit committee independence and earnings management. The coefficient for audit committee independence (*ACINDP51*) is negative and significant at the 5% significance level (coefficient = -0.448, *p*-value = 0.022). This provides support for Hypothesis 2 that earnings management is negatively associated with audit committees comprised of a majority of independent directors. This result supports the NZX recommendation on audit committee independence and the findings of Klein (2002), Kuang (2007) and Davidson et al. (2005). These prior studies, however, do not find a negative relationship between earnings management and audit committees comprised of fully independent directors, as Saleh et al. (2007) and Bedard et al. (2004) do. The proposition that an entirely independent audit committee has a negative relationship with earnings management will be tested and reported later in this section.

Hypothesis 3 infers that earnings management is negatively associated with the presence of at least one financial expert on the audit committee. The coefficient for the financial expertise of audit committees (*ACEXPERT_1*) is negative – as expected - and significant at the 10% significance level (coefficient = -0.485, *p*-value = 0.055). Hypothesis 3 is thus supported,

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indicating that audit committees with at least one financial expert are negatively associated with earnings management. In other words, an audit committee must have at least one financial expert to monitor and reduce earnings management effectively in a New Zealand setting (Kuang, 2007).

Audit committee effectiveness also relies on diligent oversight efforts, as measured by the frequency of committee meetings in a year. Hypothesis 4 is supported, as the coefficient for audit committee diligence (*FMEETING_4*) is negative and significant at the 10% significance level (coefficient = -0.346, *p*-value = 0.062). This means that, for New Zealand companies, earnings management can be reduced effectively when audit committees meet at least quarterly to discharge their responsibilities. Such frequent meetings keep the committees well informed about accounting and control-related matters and send a signal that the committees intend to remain vigilant and informed (McMullen & Raghunandan, 1996). This result is consistent with the prior empirical evidence of Xie et al. (2003) and Koh et al. (2007).

As part of the main analysis, this study is interested in examining the associations between earnings management and different threshold levels of audit committee independence and diligence for companies listed on the NZX Main Board. The regression output is presented in Appendix C. The first test re-performs the regression model with an alternative measure of audit committee independence. As previous research has found contradictory results about fully independent audit committees, *ACINDP51* is replaced with *ACINDP100*, a dummy variable taking the value of 1 if the audit committee comprises of 100 percent independent directors, and 0 otherwise. Consistent with the findings of the prior New Zealand study by Kuang (2007), this additional test finds that the coefficient for the alternative measure is not significant (coefficient = 0.113, *p*-value = 0.327), confirming that there is no association between earnings management

and a fully independent audit committee, although a majority of independent directors on the committee is related to a reduction in earnings management in New Zealand. This result also suggests that the stricter regulatory requirement of 100% independence for audit committees in the U.S.A. is not necessary in New Zealand. This finding might be attributable to the reduction or loss of inside information accessible by a fully independent audit committee, as independent directors do not have as much direct access to information as executive directors do. An audit committee with a majority of independent directors (and a minority of executive directors) has value added in terms of an information asymmetry advantage (Klein, 1998).

While the NZX does not define "regular audit committee meetings", this study further examines the sensitivity of audit committee meetings to another cut-off by substituting *FMEETING_4* with *FMEETING_3*, a dummy variable taking the value of 1 if the committee meets at least three times per year and 0 otherwise. The coefficient is negative, but not significant (coefficient = -0.277, p-value = 0.126). The result suggests that while meeting at least three times annually appears to reduce earnings management, the effect is not significant. For NZX listed companies, the quality of audit committee diligence can only be preserved when the committee meets at least quarterly. Since the NZX does not specify a benchmark for the meeting frequency of audit committees, these findings suggest that audit committees should convene at least four times per year to better realize their monitoring efforts and thereby to better meet stakeholders' expectations of audit committees. This additional insight into audit committee diligence should become an important input for regulators and practitioners to prepare new corporate governance regulations and practices that relate to the frequency of audit committee meetings.

To summarize the findings of the study so far, the coefficient for *ACSIZE_3* is not statistically significant at either the 5% or 10% level, while the coefficients for *ACINDP51*, *ACEXPERT_1* and *FMEETING_4* are statistically significant, although those for *ACEXPERT_1* and *FMEETING_4* are significant at the lowest significance level of 10%. These results reflect that audit committee effectiveness in monitoring earnings management in a New Zealand setting does not rely heavily on audit committee size, but on the qualities of the members, which include independence and financial expertise, as well as their diligence or efforts in the process of discharging their responsibilities. It is the quality of the members, but not necessarily the committee size, that generates substantive discussions on financial reporting matters in the meetings and leads to effective control over earnings management. In other words, the results suggest that it is important for New Zealand listed companies to comply with the NZX's recommendations on audit committee independence and financial expertise, and hold at least four times per year, but the recommendation that audit committees comprised of at least three members may not be necessary. As reported by Kuang (2007), the result with respect to audit committee size can provide some consolation to companies that are structurally or financially constrained to meet the corporate governance recommendations. Nevertheless, this study does not deny the importance of having at least three members in an audit committee, because this brings diverse skills, expertise and independence to the committee, all of which can enhance its monitoring ability.

It is alleged that the smaller capital market and less stringent jurisdiction associated with corporate ethical conduct and accounting failures in New Zealand encourage oversight and monitoring negligence by company directors and misconduct of management in financial reporting (Kuang, 2007). While New Zealand has a high reputation for ethical practices

generally, Transparency International (NZ) (2010) reports that many of New Zealand's largest listed companies do not adopt adequate fundamental governance practices to justify the confidence of stakeholders. For instance, according to Transparency International (NZ) (2010), only 18 percent of companies listed on the NZX 50 have policies on regulating facilitation payments, and only 44 percent of the NZX 50 have policies prohibiting bribery. This does not compare favourably with the percentage of companies prohibiting bribery in Australia (47%), the U.S.A. (69%) and the U.K. (72%) (Transparency International (NZ), 2010). The existence of poorer code of conduct systems in New Zealand listed companies could put a lot at risk, including shareholder wealth, employees' jobs and New Zealand's reputation, unless there are effective monitoring mechanisms, including the board of directors, for evaluating practice against the code (Transparency International (NZ), 2010; Securities Commission New Zealand, 2004). Ultimately, because of deficiencies in corporate governance systems, the responsibility for protecting stakeholders' interests falls on the board of directors and its committees. This study reports similar findings on audit committee size, independence, financial expertise and diligence as studies conducted in larger markets, such as Australia, which underscores the importance of the quality and diligence of audit committee members in moderating earnings management and other agency problems (Davidson et al., 2005; Koh et al., 2007; Baxter & Cotter, 2009). New Zealand requires strict audit committee requirements that are in line with larger countries' governance practices, except for the requirement of 100% independence. Complying with the current NZX recommendations on audit committees is important as a means of strengthening the monitoring role that audit committees play in the financial reporting process.

4.4 Additional Analysis

This additional analysis, whose sample population is the combined NZX Main Board and the Alternative Market, is conducted to validate the robustness of the main analysis, particularly because of the small sample size in the main analysis, and also for purposes of comparison with the prior New Zealand study by Kuang (2007), who combined both markets. Table 4.5 presents the multiple linear regression results in the analysis conducted for 102 companies listed on the NZX Main Board and the Alternative Market. The increased sample size produces similar results to the initial findings. The F-statistic shows that the revised model remains statistically useful at the 1% significance level, with the adjusted R^2 increasing slightly from 0.242 to 0.245. This means that about 24.5% of the variation in discretionary accruals is explained by the revised model.

Of the four control variables included in the model, three are statistically significant. The coefficient for firm size (*SIZE*) remains negative and significant, supporting the negative relationship between firm size and earnings management. Earnings management is also positively associated with firm leverage (*LEV*), as predicted. In this additional analysis - unlike in the main analysis - the coefficient for firm performance (*ROA*) becomes significant at the 1% level. The inclusion of more firms in the model, therefore, suggests that firms with either very poor or very superior financial performance are prone to the practice of earnings management. However, similarly to the initial findings, the use of Big 4 audit firms (*BIG4*) is again not associated with earnings management.

Table 4.5: Multiple Linear Regression Results (*n*=102)

Variable[b]	Expected sign	Coefficient	*t*-Statistic	*p*-value[a]
Intercept	n/a	-2.131	-2.487	0.015**
Audit committee variables				
ACSIZE_3	-	0.197	0.543	0.294
ACINDP51	-	-0.297	-1.480	0.071*
ACEXPERT_1	-	-0.338	-1.454	0.075*
FMEETING_4	-	-0.511	-2.605	0.005***
Control variables				
BIG4	-	0.286	1.204	0.116
SIZE	-	-0.161	-2.193	0.015**
ROA	+	6.115	3.681	0.000***
LEV	+	1.008	1.858	0.033**
Adjusted R^2		0.245		
F-statistic		5.096		
p-value		0.000		

[a] *, ** and *** indicate significance at the 10%, 5% and 1% levels (one-tailed), respectively, when direction is predicted, otherwise two-tailed.
[b] The dependent variable of the regression is the natural log transformation of discretionary accruals. All predictor variables are defined in Table 3.1.

As shown in Table 4.5, the coefficient for audit committee size (*ACSIZE_3*) remains not significant (coefficient = 0.197, *p*-value = 0.294). Hypothesis 1 is thus rejected, confirming that audit committee size does not play an important role in monitoring earnings management in New Zealand. The magnitude of the estimated effect (coefficient) for audit committee independence (*ACINDP51*) reduces from -0.448 (main findings) to -0.297, but is statistically significant at the 10% level. Hypothesis 2 of a negative relationship between earnings management and a majority of independent directors on the audit committee is thus supported.

Furthermore, the financial expertise of audit committees (*ACEXPERT_1*) remains negatively related to earnings management at the 10% significance level, suggesting that audit committees with at least one financial expert are a necessary governance factor in reducing earnings

management. Hypothesis 3 is supported. All of the findings about audit committee size, independence and financial expertise in this analysis are consistent with those of Kuang (2007).

As mentioned previously, this study provides evidence about the relationship between audit committee diligence and earnings management in New Zealand for the first time, as there is no such empirical evidence for New Zealand. Compared to the initial findings, the revised model increases the significance of the estimated effect of audit committee diligence (*FMEETING_4*), with the estimate becoming significant at the 1% level (coefficient = -0.511, *p*-value = 0.005), whereas previously it was significant at the 10% level. Hypothesis 4 is, hence, supported. The monitoring effect of audit committees on earnings management appears to become more obvious when audit committees meet at least quarterly.

Chapter 5 Conclusion

This study examines the relationships between earnings management and audit committee size, independence, financial expertise and diligence per the NZX's recommendations for NZX listed companies. The findings support the NZX's recommendations regarding independence and financial expertise. The presence of a majority of independent directors in an audit committee is associated with reduced earnings management. Acknowledging that the environment within which New Zealand companies are operating is different from that of other developed countries, the study finds that stricter regulatory requirement of 100 percent independence on audit committees in the U.S.A. is not necessary in New Zealand. In addition, this study observes a negative relationship between earnings management and the presence of at least one financial expert on the audit committee. The result for audit committee diligence also suggests that audit committees that meet at least quarterly are more effective than those that do not meet at least quarterly, in moderating earnings management. Although the evidence does not support the current NZX's recommendation concerning audit committee size, this study recognizes the importance of having at least three members on an audit committee, because this contributes diverse skills, expertise and independence to the committee. The result for audit committee size, however, can provide some consolation to companies that are structurally or financially constrained from meeting the corporate governance recommendations.

The evidence from this study has implications for policy makers and corporate practitioners who are concerned about strengthening the corporate governance of New Zealand companies with respect to earnings management and financial reporting quality. In particular, the NZX may wish to revise its recommendation on the frequency of audit committee meeting by encouraging

meetings to be held at least quarterly, rather than using the term "regularly" in the NZX Corporate Governance Best Practice Code. It is also not necessary for New Zealand companies to have an audit committee with all independent directors. Furthermore, policy makers and practitioners should place greater emphasis on encouraging governance practices that foster audit committee independence, financial expertise and diligence in order to achieve value enhancement in financial reporting.

This study contributes to policy makers', corporate practitioners' and academics' understanding of the effectiveness of the NZX's recommendations for audit committees in monitoring earnings management practices and in ensuring the integrity of financial reporting in companies operating in small public equity markets such as New Zealand. The findings of this study, hence, can serve as a benchmark for corporate governance and regulation setting in small countries with a similar institutional and legal environment to New Zealand.

The findings of this study are subject to several limitations. First, audit committee independence, expertise and diligence are difficult to observe directly, so reliance on the suggested proxy measures is subject to criticism. For instance, audit committee members may be independent by the NZX's definition, but they may not be independent in mind and are more likely to support management's judgments if they have a private incentive to stay in the committee for a longer tenure. An evaluation of members' expertise is based largely on publicly available proxies, such as certifications and prior job titles, rather than on more complete assessments of true expertise, such as problem-solving ability in finance and accounting (DeZoort et al, 2002). The problems associated with the use of the frequency of audit committee meetings as a proxy for diligence

have been explained previously, that is, it does not necessarily correspond to the level of work accomplished and the participation of members in the meetings. Second, the small sample size used in the study, limited by the population from which it is drawn, may have reduced the power of the regression model and the precision of the findings. Lastly, since this study focuses primarily on NZX listed companies, the findings cannot be generalized to domestic non-listed companies, to listed companies in industries that are excluded from this study, and to other developed countries with large capital markets. Future research is needed to understand the relationships between earnings management and the interactions between the audit committee characteristics. For example, an investigation into the interactive effect between audit committee diligence and financial expertise on earnings management can be conducted. In addition, future research should move beyond considering only the financial expertise of audit committee members, by examining other expertise and skill sets, such as industry expertise, which can potentially be key attributes for an audit committee to operate effectively.

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Appendix A

NZX Listed Companies by Industry for the 2011 and 2012 Years[a]

Industry	Main Board	Main Board and Alternative Market
Agriculture, Fishing and Forestry	18	26
Building Materials and Construction	6	6
Consumer	33	33
Energy Processing	14	18
Finance and Other Services[b]	31	35
Food and Beverages	5	11
Intermediate and Durables	22	22
Investment	32	44
Leisure and Tourism	8	10
Media and Telecommunications	7	14
Mining	9	11
Ports and Transport	16	16
Property	20	20
Textiles and Apparel	4	4
Total companies listed on the NZX for the 2011 and 2012 years	**225**	**270**

[a] 20 foreign companies which are cross-listed on the NZX Main Board and 2 on the Alternative Market are excluded because they are subject to overseas governance regulation.
[b] In this industry, 14 companies on the Main Board and 18 companies on the Main Board and the Alternative Market provide banking, financial, investment or insurance services, which are to be excluded from the final sample in Section 3.4.

Source: NZX Limited (2013).

Appendix B

Multicollinearity Diagnostics

No.	Dependent variable	Independent variable	R^2	Collinearity statistics	
				Tolerance	VIF
1	*ACSIZE_3*	*ACINDP51* *ACEXPERT_1* *FMEETING_4* *SIZE* *ROA* *LEV* *BIG4*	0.195	0.881 0.916 0.911 0.707 0.762 0.907 0.825	1.136 1.091 1.097 1.414 1.313 1.103 1.212
2	*ACINDP51*	*ACSIZE_3* *ACEXPERT_1* *FMEETING_4* *SIZE* *ROA* *LEV* *BIG4*	0.205	0.892 0.943 0.908 0.703 0.790 0.917 0.845	1.121 1.061 1.102 1.423 1.266 1.091 1.184
3	*ACEXPERT_1*	*ACSIZE_3* *ACINDP51* *FMEETING_4* *SIZE* *ROA* *LEV* *BIG4*	0.084	0.806 0.819 0.907 0.669 0.759 0.908 0.839	1.241 1.222 1.103 1.495 1.318 1.101 1.192
4	*FMEETING_4*	*ACSIZE_3* *ACINDP51* *ACEXPERT_1* *SIZE* *ROA* *LEV* *BIG4*	0.094	0.810 0.797 0.916 0.670 0.766 0.952 0.822	1.235 1.255 1.091 1.492 1.306 1.051 1.216
5	*SIZE*	*ACSIZE_3* *ACINDP51* *ACEXPERT_1* *FMEETING_4* *ROA* *LEV* *BIG4*	0.338	0.861 0.844 0.925 0.918 0.908 0.929 0.846	1.162 1.184 1.081 1.090 1.102 1.077 1.181

No.	Dependent variable	Independent variable	R^2	Collinearity statistics	
				Tolerance	*VIF*
6	*ROA*	*ACSIZE_3*	0.241	0.809	1.237
		ACINDP51		0.828	1.207
		ACEXPERT_1		0.916	1.091
		FMEETING_4		0.915	1.093
		SIZE		0.792	1.263
		LEV		0.912	1.096
		BIG4		0.830	1.205
7	*LEV*	*ACSIZE_3*	0.093	0.805	1.242
		ACINDP51		0.804	1.244
		ACEXPERT_1		0.917	1.090
		FMEETING_4		0.951	1.051
		SIZE		0.678	1.475
		ROA		0.763	1.311
		BIG4		0.825	1.212
8	*BIG4*	*ACSIZE_3*	0.182	0.812	1.231
		ACINDP51		0.821	1.218
		ACEXPERT_1		0.939	1.065
		FMEETING_4		0.911	1.097
		SIZE		0.685	1.460
		ROA		0.769	1.300
		LEV		0.915	1.093

Appendix C

Results for Alternative Audit Committee Variable Measures (*n*=82)

Table A.1: Audit committee independence

Variable[b]	Expected sign	Coefficient	*t*-Statistic	*p*-value[a]
Intercept	n/a	-0.324	-0.234	0.816
Audit committee variables				
ACSIZE_3	-	-0.108	-0.186	0.426
ACINDP100	-	0.113	0.4512	0.327
ACEXPERT_1	-	-0.408	-1.358	0.089[*]
FMEETING_4	-	-0.324	-1.413	0.081[*]
Control variables				
BIG4	-	0.369	0.739	0.231
SIZE	-	-0.303	-3.237	0.001[***]
ROA	+	3.419	1.355	0.090[*]
LEV	+	1.490	2.202	0.015[**]
Adjusted R^2		0.209		
F-statistic		3.683		
p-value		0.001		

Table A.2: Audit committee diligence

Variable[b]	Expected sign	Coefficient	*t*-Statistic	*p*-value[a]
Intercept	n/a	0.227	0.179	0.859
Audit committee variables				
ACSIZE_3	-	0.233	0.420	0.338
ACINDP51	-	-0.487	-2.155	0.017[**]
ACEXPERT_1	-	-0.512	-1.751	0.042[**]
FMEETING_3	-	-0.277	-1.153	0.126
Control variables				
BIG4	-	0.449	0.987	0.164
SIZE	-	-0.338	-3.901	0.000[***]
ROA	+	2.316	0.932	0.177
LEV	+	1.535	2.276	0.013[**]
Adjusted R^2		0.228		
F-statistic		3.997		
p-value		0.001		

[a] [*], [**] and [***] indicate significance at the 10%, 5% and 1% levels (one-tailed), respectively.
[b] The dependent variable of the regression is the natural log transformation of discretionary accruals, whereas all predictor variables are defined in Table 3.1.