THE PRODUCTION OF AUDIT SERVICES IN THE NEW ZEALAND PUBLIC SECTOR: AN INVESTIGATION INTO THE EFFECTS OF POLITICAL RISK AND CORPORATE GOVERNANCE ON AUDIT EFFORT.

By

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This research is dedicated to all working mothers for their courage and strength.

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CANDIDATE'S DECLARATION

This is to certify that the research carried out for my Doctoral Thesis entitled: "The Production of Audit Services in the New Zealand Public Sector: An Investigation into the Effects of Political Risk and Corporate Governance on Audit Effort" in the School of Accountancy, Massey University, Palmerston North Campus, New Zealand is my own work and that the thesis material has not been used in part or in whole for any other qualification.

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RE	Declaration

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RE Declaration

'The Production of Audit Services in the New Zealand Public Sector: An Investigation into the Effects of Political Risk and Corporate Governance on Audit Effort' by Nives Botica Redmayne

I verify that:

i. Reference to work other than that of the candidate, has been appropriately acknowledged,

ii. Research practice, ethical and genetic technology policies have been complied with as appropriate, and

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Professor Steven Cahan

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ABSTRACT

This study examines the effects of political risk and corporate governance on the production of audit services in the New Zealand public sector. It represents one of several studies that are classified as recent extensions of the research in the economics of auditing.

While the economics of auditing literature is extensive, most studies have focussed on audit fees as a means of explaining audit markets and audit services rather than audit production. Early audit production studies, however, found that audit fees are a noisy proxy for audit production as they are used by audit firms as a strategic tool for achieving a competitive position in an audit market.

This study extends the existing body of knowledge on audit production in two ways. Firstly, this study examines the determinants of audit effort for public sector corporate entities audits in New Zealand over a period of three years (1998-2000). Therefore, it follows the recommendation of previous audit production studies for research in audit production across auditors, additional industries, different auditing settings and time periods. Secondly, this study extends the existing body of knowledge in audit production by using two previously unused determinants of audit effort. It considers the effects of political risk and corporate governance on audit production/effort.

Whether political risks and political costs will affect the audit production in any setting has not been examined yet. In this study, it is expected that auditors will expend more audit effort in auditing public sector entities that have high levels of political risk.

The effect of corporate governance mechanisms (such as boards of directors) on audit effort has also received very little attention in professional standards or in the academic literature. The strength of corporate governance is expected to affect the audit risk of a current or potential audit client and to influence the auditors' risk assessments and audit production/effort.

To test the hypotheses in this study, I use a sample of 275 entity/year observations related to public sector companies in New Zealand for the years 1998-2000.

After controlling for other factors affecting audit effort, this study finds strong evidence supporting the political risk hypothesis as applied to the audit environment. This finding supports evidence from the empirical financial accounting research of political risk/cost and suggests that the implications of the political cost hypothesis are more widespread than previously believed.

This study also provides evidence that board effectiveness when measured by board size can have an impact on audit effort. However, there is no evidence of

a consistent relationship between other measures of board effectiveness – specifically, the presence of busy directors, the presence of the CEO on the board and the existence of an audit committee – and audit production.

While the evidence related to board effectiveness is mixed, this study is the first to link the corporate governance literature and the audit production research. This type of research is particularly important given that some recently enacted laws and regulatory requirements (e.g., the Sarbanes-Oxley Act in the US and new NZX listing requirements regarding audit committees in New Zealand) are based on the assumption that a more rigorous audit function is needed in the post-Enron environment.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION AND PURPOSE OF THE STUDY

This study investigates the effects of client characteristics on audit production in the New Zealand public sector.

New Zealand public sector corporate entities have many similarities to private sector entities. However, two aspects make them unique relative to entities used in previous audit production research. First, New Zealand public sector entities face significant political pressure. Secondly, lacking alienable residual rights, boards of directors in New Zealand public sector entities play a predominant role in monitoring the internal control environment.

In this study, I examine whether political pressure and the level of governance affect the production of audits for New Zealand public sector entities. Namely, it is expected that the auditor will expend more audit effort in auditing public sector corporate entities that are in the public/political spotlight compared to those that are politically less visible. Furthermore, strong corporate governance should reduce control risk and audit risk more generally. For example, it could reduce the auditor's sample sizes and reduce the extent of costly substantive testing, leading to a lower level of audit effort. Thus, audit effort should be inversely related to corporate governance effectiveness.

1.1 MOTIVATION

This study examines the effects of political risk and corporate governance on the production of audit services in the New Zealand public sector. It represents one of several studies that are classified as recent extensions of the research in the economics of auditing. The economics of auditing has been a source of research interest for nearly three decades. Numerous researchers have developed and examined various audit fee and audit quality models. Most studies have examined private sector audit fees, but more recently, a number of replications of private sector studies in public sector settings have contributed toward the development of public sector audit fee/audit quality models.

While the economics of auditing literature is extensive, most studies have focused on audit fees as a means of explaining audit markets and audit services rather than audit production. Early audit production studies, such as Dhaliwal and Palmrose (1985), Palmrose (1986) and Wallace (1989), found that audit fees are a noisy proxy for audit production as they are used by audit firms as a strategic tool for achieving a competitive position in an audit market.

However, the difficulty of research into audit production is twofold. Firstly, there is no theory of production from which a specific empirical model of audit production can be deducted. Secondly, researching audit production requires going beyond audit fees and developing a proprietary database with cooperation from auditors.

In spite of these difficulties, audit services production has been researched so far from two different but related points of view. One point of view has focused on studying audit production/effort, measured in audit hours, by reference to the use of the audit risk model (ARM) in the audit planning process.

The ARM is the prevailing framework for evidential planning in auditing as based on professional auditing standards (SAS 47 in the US and AS-402 in New Zealand). The ARM has been criticised in recent years for its potential limitations (Cushing et al 1995, US Public Oversight Board 2001) as there is little empirical evidence that the ARM framework is descriptive of the actual audit practice.

Generally, ARM studies can be classified into either archival studies (e.g., Bedard 1989, Mock and Wright 1993, DiPietro et al 1994, Waller 1993, Davidson and Gist 1996, Quadackers et al 1996, Mock et al 1999) or experimental studies (e.g., Biggs et al 1998, Bedard and Wright 1998, Wright 1988, Bedard and Wright 1994, Hill 1995).

These studies provide conflicting results on determinants of audit effort in audit planning and their effects on audit service production. Experimental studies provide evidence that auditors are sensitive to client characteristics, particularly risk factors, in their audit planning and decision-making. The evidence of such experimental studies suggests that auditors utilise the audit risk model in their decision making process. The archival studies, on the other hand, using propriety data from audit firms, do not provide strong evidence that audit risk model is fully utilised in the practice and that audit effort is adjusted for audit risk factors.

Mock and Wright (1999) suggest that prior archival studies on the ARM have used a too narrow set of audit risk indicators and propose that researchers consider a broader set of risks in their quest to understand the actual audit effort. They also suggest that in order to understand markets for audit services (e.g., the type and level of competition, audit quality differentiation, audit fee determination) it is important to determine the degree to which actual audit efforts are driven by client risk. They assert that risk adjusted audits should affect audit effort and the cost of the audit.

The second source of audit production evidence comes from studies on how client characteristics affect the production of audit services where audit effort is measured in audit hours. Conceptually, this type of study examines relationships between varying client characteristics (such as size, complexity and risk) as the production input and varying levels of auditing effort as the production output. This type of production study, unlike the ARM studies, is not limited to just one of the phases of the auditing process (such as say, planning phase of an audit), but they examine audit production through total audit effort either measured in aggregate audit hours or disaggregated audit hours (by rank and/or type of audit procedure) for an audit engagement.

Similar to the ARM line of research, the number of studies in the audit production/effort category is also low (see O'Keefe et al 1994, Stein, Simunic and O'Keefe 1994, Davidson and Gist 1996 Hackenbrack and Knechel 1997, Knechel and Payne 2001, Niemi 2002, Dopuch et al 2003).

The first and the most comprehensive study of client characteristics' effect on audit production (as in total audit service production rather than production of one phase of the audit process) is O'Keefe at al (1994). They provide evidence that client size and complexity, similarly to audit fee studies, explain most of the cross-sectional variation in audit production/effort measured in audit hours. Following from O'Keefe et al (1994), Stein et al (1994) examine the effect of industry on audit production and find weak support for applicability of the O'Keefe et al's (1994) production model across all industries. In their conclusion Stein et al (1994, p. 134) propose: "This line of research needs to be expanded in many directions before a complete picture of audit production emerges. Extensions across auditors, additional industries, different auditing environments and time periods appear to be fruitful areas for future research".

It is the extensions suggested by Mock and Wright (1999) and Stein et al (1994) that motivate this study. This thesis extends the existing body of knowledge on audit production in two ways.

Firstly, this study examines the determinants of audit effort for public sector corporate entities audits in New Zealand over a period of three years (1998-2000). Therefore, it follows the recommendation of Stein et al (1994) for research in audit production across auditors, additional industries, different auditing settings and time periods.

Secondly, this study extends the existing body of knowledge in audit production by using two previously unused determinants of audit effort. It considers the effects of political risk and corporate governance on audit production/effort. Thus, this study follows Mock and Wright's (1999) suggestion to consider a broader set of audit risks that might affect audit effort.

The effects of political risk and corporate governance, as audit risk variables, on audit production are expected to be particularly pronounced in the public sector, which is the setting in this study. This is because public sector entities in many countries operate in specific audit risk environments. In New Zealand, public sector corporations were established in 1980s and 1990s from government departments. Duncan and Bollard (1989), in their review of the effects of corporatisation and privatisation in the New Zealand public sector, find that ministerial and official involvement with public sector corporate entities has been intrusive.

Whether political risks and political costs will affect the audit production in any setting has not been examined yet. In this study, it is expected that auditors will expend more audit effort in auditing public sector entities that have high levels of political risk.

The effect of corporate governance mechanisms (such as boards of directors) on audit effort has also received very little attention in professional standards or in the academic literature. One study, Krishnan (2001), documents an association between the quality of the corporate governance and the incidence of internal control problems, which is an element of audit risk. Therefore, the strength of corporate governance may affect the audit risk of a current or potential audit client and may influence the auditors' risk assessments and audit production/effort.

Because New Zealand public sector entities lack alienable rights (i.e., tradable shares), internal corporate governance mechanisms take on a heightened importance in these entities. Accordingly, New Zealand public sector companies provide a setting in which this study can powerfully examine the relationship between board of director effectiveness and audit production/effort.

Thus, this study provides empirical evidence on the relationship between audit effort and political risk and corporate governance in the New Zealand public sector.

1.2 Major Findings

After controlling for other factors affecting audit effort, this study finds strong evidence supporting the political risk hypothesis as applied to the audit environment. Namely, auditors do expend more effort (hours) in audit production of public sector corporate entities that are more politically visible compared to those that are less politically visible. This finding supports evidence from the empirical financial accounting research of political risk/cost (e.g., Cahan 1992, Hall 1993, Cahan et al 1997, Key 1997) and suggests that the implications of the political cost hypothesis are more wide spread than previously believed.

This study also provides evidence that board of directors effectiveness, when measured by board size, can have an impact on audit effort. However, there is no evidence of a consistent relationship between other measures of board effectiveness – specifically the proportion of busy directors, the presence of the CEO on the board and the existence of an audit committee – and audit production.

1.3 SIGNIFICANCE OF THE STUDY

This study contributes to the literature in several areas. Firstly, it uses archival data on actual audit hours to examine audit production/effort. Very few prior studies use audit hour data. The data used in this study, reflecting actual hours involved in auditing New Zealand public sector companies, is proprietary data acquired from the New Zealand Auditor-General.

Secondly, this study extends the audit risk model and the audit production studies by examining two new determinants of audit effort (i.e., political risk and governance). The finding that political risk affects audit production suggests that the application of political risk/cost hypothesis goes beyond the earnings management perspective that has been documented previously in the literature.

This study also provides the first empirical evidence based on archival data on the link between the corporate governance and audit production. Although the results in this study of the effect of corporate governance on audit production/effort are mixed, this link is of interest to both legislators and corporate boards given recent legislation (e.g. the Sarbanes-Oxley Act in the US) and regulation (e.g., new NZX listing requirements related to audit committees in New Zealand) that strengthen the relationship between corporate governance mechanisms and auditors.

Thirdly, this study provides evidence on the robustness of the audit production model first used by O'Keefe et al (1994) by applying it to a public sector setting. In that way, this study follows on from Stein et al (1994) recommendation for more audit production studies from various settings and, in doing so, makes a valuable contribution to the existing audit production research.

1.4 THESIS ORGANISATION

The remainder of the thesis is organised as follows. The next chapter draws on existing literature to provide a framework for audit production, political risk and corporate governance research. Chapter 3 discusses the institutional settings of the study. It provides a review of both public sector reporting and auditing in New Zealand. Chapter 4 provides the conceptual model that is the basis of the study and develops the study's hypotheses. Chapter 5 discusses the research design while Chapter 6 presents the empirical results. Chapter 7 concludes the study with a review of the thesis, a summary of its major findings and implications, a discussion of the study's limitations and suggestions for the future research.

CHAPTER 2

LITERATURE REVIEW

2.0 INTRODUCTION

This study draws on several streams of accounting research. This study examines the economics of auditing generally and focuses on the production of audits and audit effort more specifically. Because the production of audits will be affected by audit risk, this study also draws on literature that examines the audit risk model. Within this context, two factors that may affect audit risk are the client's political exposure and the client's corporate governance system. While these two factors have not been examined in the previous audit production/effort literature, this study draws on the political cost and corporate governance research more generally. In addition, the setting of this study is unique, i.e., New Zealand public sector corporations. Therefore, this study also draws on literature examining audit production in the public sector and other New Zealand-based audit research.

This chapter reviews the relevant literature. Section 2.1 discusses studies in the economics of auditing. Section 2.2 examines research related to the audit risk model and its role in audit production. Section 2.3 examines literature on political risk and political costs. Section 2.4 provides an overview of the research on corporate governance. Section 2.5 gives a brief overview of public sector audit market research, while section 2.6 summarises and concludes this chapter.

2.1 Research on Audit Production and Audit Effort

The research on audit production and audit effort is part of a larger body of literature that examines the economics of auditing. Interest in the economics of auditing came from concerns that large auditing firms (resulting from mergers of public accounting firms in the 1980s) would dominate the audit supply market and prevent effective competition or that the destructive competition (resulting from a less regulated audit market) would erode auditor independence.[1] Early studies (i.e., Simunic 1980, Dopuch and Simunic 1980) focus on audit fees and search for evidence that large audit firms collude and raise fees above what would exist in a competitive equilibrium.

In a seminal study, Simunic (1980) develops a model for explaining the cost of a client's reporting system where the reporting system includes the internal audit and external audit cost and the auditor's share of any losses arising from defects in the audited financial statements. Using this model Simunic shows that it is possible to differentiate between monopoly and production economy pricing when the auditor's liability is controlled for. To control for the auditor's liability, Simunic uses variables related to the client including firm size, complexity of operations, level of receivables and inventories, industry, profit, and auditor's opinion (i.e., if a 'subject to' opinion was given). In addition, he controls for differences in the auditor's production functions by including the audit tenure (i.e., number of years on the client has used the current auditor) to capture a learning effect. Overall, Simunic provides no evidence of collusion amongst audit service providers in the US audit market.[2]

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[1] For example the "Staff Study" of the Subcommittee on Reports, Accounting and Management of the Senate Committee on Government Operations (1977) accuses the "Big Eight" accounting firms of monopolising the market for audits. Further, Bernstein (1978) and Hobgood and Sciarrino (1972) provide anecdotal evidence and some concentration statistics on the US auditing market in the 1970s.

[2] Simunic (1980) also finds no evidence of learning effects and concludes that auditors might pursue multi-period pricing policies. He does find evidence of economies of scale for Big Eight auditing firms that are passed on as lower prices to some audit clients. Further, by using the same

In his theoretical model, Simunic (1980) notes that focusing on audit fees is problematic. The difficulty in explaining audit fees and generalising about them lies mainly in the fact that the number of hours worked on audits and the billing rates per hour are largely unobservable. Further, audit services are somewhat unique for each auditee, and it is difficult to assess exactly how the characteristics of a particular client affect the final audit fee charged. In other words, a specific aspect of the client's environment may affect the number of hours worked, the cost per hour of the audit service, or both.

Nonetheless, Simunic (1980) also runs his model using the audit fee (deflated by total assets) as the dependent variable. He finds that the number of subsidiaries, the operating diversity, the existence of foreign operations, the levels of receivables and inventories, the level of profits, existence of a loss, and a 'subject to' qualification are all significantly related to audit fees. Numerous subsequent studies find that Simunic's model is able to explain 70-80 percent of the cross-sectional variation in audit fees in the US as well as other countries.[3]

Subsequent to Simunic's (1980) study, there has also been a fair degree of discussion in the literature on the nature of audit services. Nearly all of the studies in this area analyse the issue from either the demand or supply side.[4]

Studies such as Simunic (1980), Francis (1984), Firth (1985), Palmrose (1986), Francis and Stokes (1986), Francis and Simon (1987), Simon and Francis

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variables used for explaining external audit fees to explain cross-sectional variations in internal audit costs, he finds that liability avoidance is not a primary factor in designing internal control systems.

[3] For example, in Australia, Francis (1984), Francis and Stokes (1986); in the UK, Chan, Ezzamel and Gwilliam (1993), Pong, and Wittington (1994); in New Zealand, Firth (1985) and Johnson, Walker and Westergaard (1995); in India, Simon, Ramanan and Dugar (1986); in Singapore and Hong Kong, Low, Tan and Koh (1990), Simon, Teo and Trompeter (1992).

[4] Except for some more recent studies such as Copley et al (1994), Copley et al (1995) and Gaver and Gaver (1995) where supply and demand are examined using simultaneous equations.

(1988), Gist (1994) and Johnson et al (1995) examine auditing from the audit supply side. These studies use audit fees to explain competitive behaviour of audit services suppliers in auditing markets, and to produce evidence of economies of scale, product differentiation and diversification of services among audit service suppliers. Consistent with Simunic (1980), subsequent audit supply studies find that the high market concentration of suppliers is generally not a result of collusive behaviour but is the result of underlying market conditions. These studies do, however, provide evidence of economies of scale in the large-client market segment that are industry specific.

In addition, a number of studies examine pricing premiums for large audit firms (such as Craswell and Taylor 1991, Craswell, Francis and Taylor 1995, Francis, Anderson and Stokes 1999, DeFond, Francis and Wong 2000, Ferguson and Stokes 2002, Ferguson, Francis and Stokes 2003). These studies provide some evidence of fee premiums for specialist auditors, which suggests that the audit product market is differentiated. However, the results of these studies depend on the definition of a specialist auditor, which (to this day) has not been clearly defined in the literature.

On the other hand, the demand for auditing has been researched by examining auditees who switch auditors or by examining the choice of auditor by firms making initial public offerings. These studies generally rely on the agency/contracting costs paradigm. According to the agency and contracting literature (e.g. Watts 1977, Watts and Zimmerman 1986, Simunic and Stein 1987), as agency costs increase there is a demand for higher quality audits, which are voluntarily undertaken by managers as a bonding mechanism or are externally imposed as a monitoring mechanism by shareholders and debt holders (Watts and Zimmerman 1986, Simunic and Stein 1987). Following this argument, high quality audits are an efficient solution for agency or contracting problems.

De Fond (1992), Francis and Wilson (1988), Palmrose (1986), Dopuch and Simunic (1980) and Becker et al (1995) provide empirical evidence for an agency cost/audit quality linkage. They find that auditor changes can result from changes in the auditee's agency costs that can arise from factors including changes in management ownership and leverage. Thus, they provide evidence that high quality audit firms can mitigate agency problems within the auditee firm.

Focusing on initial public offerings, studies such as Libby (1979), Shockley (1981), Titman and Trueman (1986), Shockley and Holt (1983), Healy and Lys (1986), Beatty (1989), Eichenseher and Shields (1989), Johnson and Lys (1990), Albrecht (1991), Feltham, Hughes and Simunic (1991) and Clarkson and Simunic (1994) search for evidence that differences in audit firms' reputations can serve as a signal to investors. Results of these studies indicate that companies which select one of the Big 8 (Big 4) as auditors are generally growing companies and less risky. These findings support the hypothesis that there is the differentiated demand for audit services.

Cahan and Redmayne (1998), on the other hand, explore effects of agency costs on actual audit fees. They combine the audit pricing literature with agency cost/auditor switch literature by basing their assumption of effects of agency costs on audit fees and using Simunic's (1980) audit pricing model. Simunic (1980) asserts that audit fees, to a large extent, depends on the quality of audit services purchased by the auditee/client, the per-unit cost to the auditor and the share of the residual loss arising from defective audited financial statements, which is borne by the auditor.

Following on from Simunic's (1980) model, Cahan and Redmayne (1998, p. 354) hypothesise that auditors would charge higher audit fees for clients with

more managerial opportunism (i.e. high agency costs). They assert that this relationship between agency costs and audit fees exists because "clients with high agency costs demanding more audit services in order to achieve an effective level of monitoring, and as agency costs rise, the auditor's share of possible losses due to defects in the audited financial statements also rise." They find that four variables representing agency costs (ownership structure, leverage, investment opportunity set and new issues of securities and debt) have incremental explanatory power in the audit pricing/fee model above the traditional pricing variables.

There is, however, a problem with assumption that a rise in agency cost would be reflected in audit fee/cost. The problem with audit fees in the demand studies is that the fees are often used by auditing firms as tools for firms' pricing policies and for strategic market positioning, rather then accurately reflecting the audit effort based on underlying client characteristics.

In this study, the main focus is on whether audit effort is affected by firm specific risks associated with political costs and corporate governance. While Simunic (1980) recognises the limitations of using audit price, several studies specifically examine the adequacy of audit fees as an appropriate measure of client related audit risks on an empirical basis. For example, Dhaliwal and Palmrose (1985) find that the assessment of audit risk and subsequent audit risk effort are far more tied to the extent of audit work (measured in actual audit hours) than to the pricing behaviour (i.e., audit fees) of auditors.

Wallace (1989) also investigates whether audit fees are sufficiently adjusted for the probability that an auditor will suffer loss to his professional practice due to litigation (arising from malpractice). She analyses audit fees and relevant auditor business risk factors for 117 entities, as well as actual audit hours for 35 entities. Wallace (1989) finds that audit fees are not sufficiently risk adjusted

and that audit firms in competitive, price-searching environments cannot raise prices merely due to increased cost. Instead she concludes that billing rates and audit fees are used by audit firms as a strategic tool in achieving a competitive position in an audit market.

Palmrose (1986, 1989) conducts two other studies where she substitutes audit fees with audit hours. In her 1986 study on audit fees and auditor size, she finds evidence that increased actual audit hours (in particular by Big 8/4 auditors) reflect higher productive activities in evidence acquisition in order to provide higher level of assurance, and therefore higher quality of service to clients. Palmrose (1989) investigates the relationship between audit contract type (fixed fee contract vs. cost-reimbursement contract) and audit fees as well as actual audit hours. She finds that audit hours are not significantly affected by contract type while audit fees are significantly lower in fixed fee contracting situations. In other words, she finds that audit service pricing is adjusted to the contract type while the actual audit effort (measured by audit hours) is not affected by contract type and its strategic market implications.

Therefore, Dhaliwal and Palmrose (1985), Palmrose (1986, 1989) and Wallace (1989) provide empirical evidence that compared to audit fees, audit hours are a better measure of audit risk. Thus, in this study, my primary tests focus on audit hours rather than audit fees.

Audit hours are determined by the audit production process. One of the first, and most comprehensive, studies that focus exclusively on audit production is O'Keefe et al (1994). O'Keefe et al (1994) hypothesise that the amount of audit effort, measured by audit hours, devoted to an audit will be a function of varying client characteristics (such as size, complexity and risk). They provide evidence, from one major audit firm, on the relationship between client

characteristics and audit production/effort.[5] O'Keefe et al (1994) find that audit client characteristics associated with previous research in cross-sectional variation of audit fees (client size, industry, complexity and risk) are positively associated with variation in total audit hours. Further, their results show that client size, industry affiliation and risk measures are also associated with changes in the mix of labour inputs. However, they find other variables such as reliance on client internal controls, auditor tenure and joint production of non-audit services have no systematic effect on the level or mix of labour inputs.

Following on from O'Keefe et al (1994), Stein and Simunic (1994) examine the effects of industry differences for financial services entities and industrial entities in the production of audit services. They find, consistent with O'Keefe et al (1994), that client size and complexity of client operations are the major determinants of audit production/effort in both industries. They also find that leverage and equity and/or debt securities are good measures of risk for industrial audit clients while operating losses are the best measure for financial audit clients. Further, in Stein and Simunic (1994) internal controls strength had negligible effects on audit production for industrial clients but had significant effect on audit hours for financial services clients. Their findings provide evidence of the limited applicability of the O'Keefe et al (1994) audit production model across industries. They close by citing the need for more audit production studies across different settings, auditors and time lines.

Hackenbrack and Knechel (1997) also use the data from one major international audit firm to examine the empirical relationship between selected engagement characteristics and audit labour hours by staff category and by audit activity. That is, they further disaggregate the audit hours data by various audit activities

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[5] They find that audit hours are an excellent measure of audit effort/input, where using actual audit hours rather than audit fees (particularly from a single major audit firm) eliminates potential confounding effects of audit firm pricing policies and effects of possible economic rents in audit pricing.

in the auditing process, from audit planning to audit review and finalisation of an audit. They find that client size is again strongly and positively associated with audit effort (measured in audit hours) and that larger clients demand more substantive testing and review of critical audit objectives. They further find a positive association between both complexity and client risk and audit hours, where complexity drives an increase in staff numbers and client risk increases consumption of high grades of audit labour in planning, review and interaction with client.[6] In addition, similar to O'Keefe et al (1994), Hackenbrack and Knechel (1997) find no association between internal-control reliance and audit hours.[7]

More recently, Knechel and Payne (2001) use the data on incremental audit effort (measured in audit hours) to examine audit production in terms of time to produce the audit. Specifically, they examine the determinants of audit report lag (the time period between a company's fiscal year end and the date of the audit report). They posit that the more hours an audit engagement consumes, the longer the audit report lag. Therefore, the incremental audit effort, measured in engagement hours that exceed or are less than the average hours to complete an audit, affects the audit fieldwork lag. However, they also expect that, when a required level of audit effectiveness is achieved, additional audit hours increase the audit report lag without increasing overall audit quality. Their results support a positive correlation between the incremental audit effort and the audit report lag. They also find that the presence of contentious tax issues and the use of less experienced audit staff are positively correlated with

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[6] Hackenbrack and Knechel (1997) use client categorisation into public versus private company as a measure of client risk, where a public company audit is deemed to be a riskier audit engagement than private company audit due to the potential legal liability arising through wider ownership of public companies.

[7] They did, however, find that purchases of management advisory services (MAS) from the auditor resulted in an increase in demand for high grades of audit hours in planning and client-interaction activities. They explain this with the notion that partners and managers help implement and explain the implications of MAS projects to clients.

audit report lag while the potential synergistic relationship between non-audit services and audit services decreases audit report lag.

In another recent study, Niemi (2002) uses audit hours to explore the existence of risk premiums in audit fees of the four Big Six auditing firms in Finland. He finds evidence that when an auditor's client-specific business risk is comparatively high (e.g., when the client is a listed company, has incurred a loss during the last three years or has high debt-to-equity ratio), there is a significant increase in audit fees that exceeds the increase in audit effort/hours, suggesting that the audit fees contain a risk premium. This finding is contrary to previous audit risk premium studies (Wallace 1989, Simunic and Stein 1996, Bell et al 2001) that find no evidence supporting the existence of a risk premium.[8]

Finally, Dopuch et al (2003) use audit hours to examine the relative efficiency of audit production by one of the Big 6 public accounting firms in US for audits performed by that firm in 1989. They use the data on audit effort/labour hours and client characteristics on size, complexity, risk, auditor learning and knowledge spillover from the data set used in O'Keefe et al (1994) study. In that way they extend O'Keefe et al's (1994) study (the first study that analysed determinants of audit effort) as they examine whether the audit effort/labour hours used in the sample are the minimum levels needed to produce an audit of a given quality.

Using data envelopment analysis, they find there are relative inefficiencies in audit production and that the average audit is produced at about 88 percent efficiency level relative to the most efficient audits in the sample. They further

find that the inefficiencies are correlated with audit firm's realisation rates when the average billing rate per hour falls as the inefficiencies increase. They conclude that there is the likelihood of inefficiencies in the production of many audits (including audits produced by other firms) and that such inefficiencies are economically costly to the auditing firm.[9]

Dopuch et al's (2003) findings also provide further insights about audit pricing. They find that the provision of large amount of non-audit services to audit clients increase audit fees but not the audit effort which they explain by auditors having greater bargaining power in such engagements that enables them to generate economic rents in auditing. They also find the same effect in respect of audit fees and audit effort of large clients. They conclude that economic rents in audit fees charged to large clients arise because such clients have fewer auditors to choose from. These findings suggest that audit firms' behaviour is inconsistent with purely competitive market for auditing services (as previously suggested in the literature on economics of auditing) but is more consistent with the behaviour of some form of oligopolistic competition (Chan 1999, Chan et al 2001).[10]

The limited number of studies in audit production, as discussed above, provide first insight into what actually affects the production of audit services (as

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[9] Dopuch et al's (2003) results also provide some interesting additional evidence that audit fee realisation rates are lower in the first and second years of audit engagements. These findings are consistent with prior empirical studies of price-cutting or low-balling in the initial years of audit engagements. However, their evidence shows that despite the price-cutting the audit hours are not reduced in the early years of audit engagements and they conclude that price-cutting has no apparent adverse effect on audit quality.

[10] Further two studies that use audit effort/hours but are not directly concerned with audit production are Davis et al (1993) and Davidson and Gist (1996). Davis et al (1993) research the relationship between selected engagement characteristics, audit fees and total engagement hours with a particular focus on the effects of non-audit services on audit fees and audit effort. They find that client characteristics previously found to have significant effect on audit fees (such as client size, complexity and joint production of non-audit services) also explain well the cross-sectional variation in total audit hours. Davidson and Gist (1996) follow on from Davis et al (1993) and investigate the distribution of audit effort in auditing planning process. They provide evidence that effort devoted by auditors to audit planning reduces total audit effort.

opposed to just the pricing of audit services). The studies on audit production show that while audit fees are affected by both quantities of audit effort and price factors, audit effort measured in audit hours is largely affected by client size and complexity. These studies also confirm the concerns of Simunic (1980) and the findings in earlier studies (e.g., Palmrose 1986, 1989, Wallace 1989) that audit fees are a noisy proxy for audit effort.

This study extends previous studies of audit production. It examines the determinants of audit effort for public sector corporate audits in New Zealand public sector. It contributes to the existing body of knowledge on audit production in several ways. First, it provides empirical evidence on determinants of audit effort in a setting that has not been tested before. A number of similarities but also differences exist between New Zealand public sector corporate entities and previously researched private sector companies and that provides for an interesting comparison of audit effort determinants across fundamentally different settings. In that way, this study answers Stein et al (1994) call for further research on audit production in various settings.

Second, this study combines the research on audit production with research on the auditing risk model (ARM). The ARM has been criticised lately for its potential limitations (Cushing et al 1995, US Public oversight Board 2001), as there is little empirical evidence that ARM framework is descriptive of the actual audit practice. In this study, I examine the effect of two additional risk factors – i.e., political risk and corporate governance risk – on audit effort.

Consequently, I next review the relevant ARM literature. I then review the political risk/political cost literature and follow this with an overview of the pertinent research in corporate governance.

2.2 RESEARCH INTO THE AUDIT RISK MODEL (ARM)

The research of audit effort at the audit procedure level has been largely performed within the ARM framework with emphases on investigating its usefulness for the audit planning process.

The ARM was established in 1980s by the United States Generally Accepted Auditing Standards (GAAS) as a "model" for carrying out audits that requires auditors to use their judgement in assessing risks and then in deciding what procedures to carry out. The model allows auditors to take a variety of circumstances into account in selecting an audit approach. The model calls for auditors to have an understanding of the client's business and industry, the systems employed to process transactions, the quality of personnel involved in accounting functions, the client's policies and procedures related to the preparation of financial statements, etc. The ARM also requires auditors to gain an understanding of a company's internal control, and to test the effectiveness of controls if the auditor intends to rely on them when considering the nature, timing and extent of the substantive tests to be carried out.

Based on the auditor's assessment of various risks and any tests of controls, the auditor makes judgements about the kinds of evidence (from sources that are internal or external to the client's organisation) needed to achieve "reasonable assurance." Technically, US Statement on Auditing Standard (SAS) 47, on audit risk and materiality in conducting an audit, provided the high-level conceptual underpinning for the audit risk model as we know it today.[11] New Zealand

[11] Looking at the historical perspective the audit risk model was first established in US GAAS (although not by name) in SAS 47. The Auditing Standards Board issued SAS 47 in 1983, which was amended in 1997 by SAS 82. Prior to SAS 47, many auditors employed some of the model's concepts in practice, albeit they were not explicitly codified and embedded in GAAS. There is, however, no clear record of exactly what practice was in this area prior to SAS 47. Generally, it is believed that, while auditors' judgements entered into the audit process, many auditors employed "procedural" approaches that were not fully supported by strict conceptual underpinnings. In other

auditing practice follows many of the US GAAS pronouncements and incorporates risk based auditing and the audit risk model into many New Zealand auditing promulgations, e.g., Auditing Standard (AS) 7 on accounting systems and internal control issued in 1986, AG-14 on materiality and audit risk issued in 1987 and AG-21 on inherent and control risk assessments issued in 1990.

In New Zealand, the ARM is currently imbedded in AS-402, which closely follows US GAAS on audit risk. In terms of definitions, AS-402 defines audit risk (AR) as the risk that the auditor may unknowingly fail to appropriately modify his/her opinion on financial statements that are materially misstated. Audit risk is the product of the following three interrelated factors:

IR = Inherent risk is the risk that an assertion is susceptible to a material misstatement, assuming there are no related controls;

CR = Control risk is the risk that a material misstatement that could occur in an assertion will not be prevented or detected on a timely basis by the entity's internal control;

DR = Detection risk is the risk that the auditor will not detect a material misstatement that exists in an assertion.

The "mathematical" depiction of the audit risk model in simple terms is:

AR = IR x CR x DR.

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words, audits tended to be conducted using a variety of substantive testing approaches with less reliance on judgements about risk. Testing of internal control, primarily by testing individual transactions, was common and sometimes extensive.

Cushing et al (1995) attribute the conception of the risk based auditing and the audit risk model to the introduction of selective testing in US in the early 1960's. Selective testing resulted in consideration of sampling and combined with the desire by the auditors in an increasingly litigatious environment to formalise the audit process and exercise better control over audit outcomes, in an emphasis on statistical sampling in audit practice. Later on in 1970s and 1980s an overriding analytical structure for the auditing process emerged with audit risk assessment and evaluation playing a major part in the formalisation of the audit risk model.

Despite the precision implied by rendering the model in mathematical terms, in reality it is highly judgemental. The objective in an audit is to limit audit risk to a low level as judged by the auditor.

The importance of the assessments of inherent and control risk is highlighted by their effects on detection risk. The effects can be depicted in mathematical form by the equation:

$$DR = AR / (IR \times CR).$$

The auditor mitigates or compensates for the assessed levels of risk by designing and performing procedures to detect material misstatements. The greater the inherent and control risks, the lower the detection risk needs to be, resulting in "more" audit procedures ("more" includes their nature and timing as well as their extent) that the auditor would need to carry out. Ultimately, the objective is to limit audit risk to an appropriately low level, this enabling the auditor to achieve reasonable assurance that the financial statements are free of material misstatement.

There are, however, some important limitations to the audit risk model. First, the model subsumes the concept of "materiality". Auditors do not have to concern themselves with every possible misstatement of a financial statement that might occur. Consequently, the concept of materiality enters into the risk assessment process, and the selection of the nature, timing and extent of the audit procedures is an integral part of the model. Furthermore, the model calls for auditors to make "fraud risk" assessments that encompass attributes of both inherent and control risk.

Lastly, the auditor is exposed to risks that are not embraced in the audit risk model. For example, auditors may be exposed to loss or injury to their professional practice from litigation, adverse publicity or other events arising in connection with financial statements they audited and reported on. This exposure

is present even though the auditor has performed the audit in accordance with auditing standards and has reported appropriately on the financial statements. Even if the auditor assesses this exposure as low, the auditor is not permitted to perform less extensive procedures than otherwise would be appropriate under auditing standards. The "risks" that fall outside of the audit risk model generally are referred to as "engagement risk", "business risk" (e.g., a risk for the auditor of being in the business of auditing), "client risk" or "client continuance (or acceptance) risk".

Since the 1980s auditors have been required to employ the audit risk model. Anecdotal evidence indicates that many (but not all) audits continue to be performed using substantive testing approaches with little or no attention paid to the results of the risk assessments called for by the model (US Public Oversight Board, Panel On Audit Effectiveness Report 2003, Appendix A - Audit Risk Model). This phenomenon perhaps is facilitated by the fact that the model permits "defaulting" to an assumption that risks are at a maximum level.

This anecdotal evidence on apparent audit process inefficiencies led in the last twenty years to a number of studies on the use of the audit risk model (ARM) in the audit practices. Most of ARM studies used audit effort (measured in audit hours) to explain the use of ARM in audit planning and have produced conflicting results. Generally ARM studies can be classified into either archival studies (e.g., Bedard 1989, Mock and Wright 1993, DiPietro et al 1994, Waller 1993, Davidson and Gist 1996, Quadackers et al 1996, Mock et al 1999) or experimental studies (Biggs et al 1988, Bedard and Wright 1998, Wright 1988, Bedard and Wright 1994, Hill 1995).

Bedard (1989) provides the earliest archival findings of evidential planning in practice. She examines data on audit effort from audits in the accounts receivable, inventory and accounts payable area. Bedard (1989) finds that

auditors are generally reluctant to increase audit testing even when it appears necessary due to the competitive environment. Mock and Wright (1993) gather audit testing and risk assessment data over a two-year period on audits in the accounts receivable and accounts payable of manufacturing and merchandising clients. Their results also do not show a strong association between the nature of audit tests and the level of audit risks. Many audit tests, in their study, are applied across a broad spectrum of engagements. They further examine the responsiveness of evidential plans to changes in audit risk and find that evidential planning is not adaptive to changes in audit risk.

DiPietro et al (1994) follow Mock and Wright (1993) to investigate whether audit programmes are tailored to the client's industry and associated risks. They find that the nature of tests varies significantly between industries but planning decisions are not strongly associated with the level of changes in audit risk.

Quadackers et al (1996) use both archival and interview techniques in their examination of the responsiveness of audit plans to client risks and find risk assessments somewhat varied between clients but not between assertions. Waller (1993) studies inherent and control risk assessments of auditors at accounts receivable, inventory and accounts payable assertion level. He confirms that in practice, as in the prescribed audit risk model, the inherent and control risk assessments are independent but they do not vary across assertions, suggesting that they are assessed at the greatest level and then all other assessments are anchored to the first assessment. Waller therefore provides evidence that the effectiveness and efficiency of risk assessments at the individual assertion level are at issue.

Finally, Mock and Wright (1999) examine the audit tests responsiveness to changes in a number of risk factors (such as liquidity, profitability and inherent risks) related to the existence assertions. They find that the extent of audit

procedures is strongly related to the prior year audit procedures, but not to changes in audit risk. They conclude that audit programme plans are not clearly related to client risks, as outlined in the audit risk model.

In summary, archival studies of audit production within the ARM framework provide evidence that planned audit procedures are often not adjusted for client related audit risks.[12]

On the other hand, findings of experimental studies that use the audit risk model framework suggest that auditors are sensitive to the client's risk characteristics. For example, Biggs et al (1998) examine the use of analytical procedures by auditors in modifying audit plans in response to clients' risks. They find that audit effort does increase at least in experimental conditions, when audit risks are considered to increase. Wright (1998) investigates whether prior working papers have an anchoring effect that impairs audit effectiveness through failure to adapt to client risk changes. His results indicate excessive reliance on prior audit working papers. His finding is further confirmed by Bedard and Wright (1994) where they find that although experienced auditors are sensitive to both current-

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[12] The archival studies using actual propriety data from audit firms do not provide strong evidence that audit programmes are risk adjusted. The lack of evidence on the utilisation of the ARM, prompted, among other issues, the US Public Oversight Board (POB) to conduct a comprehensive review and evaluation on the way independent audits of financial statements of publicly traded companies in US are performed and to assess the effects of current trends in auditing (POB, 2000). The US Public Oversight Board published its findings in August 2000 where it said:

"The Board is satisfied that the audit risk model is appropriate, but needs enhancing and updating. It embraces judgment in an organised and logical way. Input from the Panel's survey and other activities disclosed that the model is widely accepted, although some evidence suggested that the model is somewhat out-of-date and inconsistently implemented. Some participants suggested that the model is out-of-date for purely technical reasons, such as its failure to include the concept of engagement risk, it is not clearly including fraud risk within the concepts of inherent risk or control risk, and because it does not adequately address the greater uncertainties resulting from increasingly complex transactions and events. Others suggested that the model is not sufficiently specific and rigorous, does not call for a deep understanding of business processes and related risks, and thus cannot be applied consistently" (POB, 2000, p. 12).

year and prior-year errors, their planning decisions are not always closely related to client related audit risk assessments.

Hill (1995), however, in her experiment of the impact of prior errors on evidential planning finds that the presence or absence of prior error information significantly impacts audit programmes, while Bedard and Wright (1998) find that presence of risk factors is associated with higher audit risk assessments and more effective audit planning, albeit only in experimental settings.

Thus, based on these experimental studies, auditors are sensitive to client characteristics, particularly risk factors, in their audit planning decision-making. Further, their behaviour suggests that auditors do utilise the audit risk model.

The inconsistency in the results of the archival and the experimental studies has caused Mock and Wright (1999) to suggest that prior archival studies on ARM have used a too narrow set of audit risk indicators and they propose that researchers consider a broader set of risks in their quest to understand the actual audit effort. Further, in order to understand markets for audit services (e.g. the type and level of competition, audit quality differentiation, audit fee determination), they propose that it is important to determine the degree to which actual audit efforts measured in actual audit hours are driven by client risks. They hypothesise and provide some evidence that risk driven and adjusted audits do reflect the actual audit effort and the actual cost of performing an audit engagement.

Therefore, this study contributes to the research on audit production by studying the effect of two new audit risk factors – i.e., political risk and corporate governance – on audit production/effort. In the next two sections, I review the relevant research related to political risk/costs and corporate governance respectively.

2.3 Research on Political Risk and Political Cost

The examination of the effects of political risk, as a determinant of audit risk, on audit production/effort is in this study motivated by Zimmerman's (1977) positive theory of accounting and auditing in public sector. Zimmerman suggests that public sector entities are exposed to intense political forces or political risks which may affect their accounting choices. Zimmerman's theory is based on political cost hypothesis (Watts and Zimmerman 1978, 1986), which suggests that firms that are more politically visible will make accounting decisions that minimise this visibility.

Political risk, exposure or visibility can be described as the probability that an entity will be scrutinised by the government and its agencies, general public and organised groups. This makes firms with high political exposure a potential target for the imposition of political costs. Political costs are wealth transfers away from the firm to the government and other sectors of the economy (Whittred and Zimmer 1990). Because politicians are likely to use accounting numbers in choosing political targets and imposing wealth transfers on them, Watts and Zimmerman (1978) predict managers of highly politically visible firms will choose accounting strategies that reduce the expected value of the wealth transfer.

Watts and Zimmerman (1978) and a large number of subsequent studies use firm size to measure the firms' political risk or vulnerability to political costs. The usual result in such studies is a positive relation between firm size and the use of income decreasing accounting methods. This had been interpreted as supporting evidence of the political risk/cost hypothesis. However, there is evidence that is contrary to political risk/cost hypothesis (Bowen et al 1981, Moyer 1990, Zimmer 1986).

Also, some researchers (e.g., Ball and Foster 1982) note that the firm size is a crude proxy for political visibility and therefore political risk/cost (Ball and Foster 1982). Watts and Zimmerman (1990) in their review of ten years of positive accounting research also stress the importance of developing more precise proxy variables for testing political cost hypothesis. As Cahan (1992) points out, the objective is to find an alternative measures that better map political process than firm size, and studies such as Cahan (1992), Hall (1993), Han and Wang (1998), and Key (1997) identify firms where high political costs can be documented. For example, Cahan (1992) uses a sample of firms that were under monopoly antitrust investigations while Hall (1993) and Han and Wang (1998) focus on firms in the oil industry. They all provide support for political cost hypothesis using various alternative measures.

Watts (1977) proposes that political actions by politicians follow a complex decision process and that their actions are largely based on the presence of "crises". He argues that, based on Jensen and Meckling (1976), politicians have incentives to create crises and then come to the rescue with simple legislative "solutions". Such "solutions" lead to the increase in resources controlled by government and also the resources controlled by politicians who created the "crises" in the first place so to maximise their own self-interests (i.e., expected utilities).

Jensen (1976) in his theory of the press proposes that press often creates "new crises" or provides coverage for "crises" that have already been identified and/or created by politicians. This is, according to Jensen (1976), due to the fact that the primary demand facing the press is to provide entertainment and ratings rather than accurate information. According to Jensen (1976), people love crises because of their entertainment value and since crises increase TV and radio audiences and newspaper and magazine readership, the media/press cannot remain passive bystanders in the reporting process. The press has strong

incentives to foster crises and sensationalism rather than calmly and dispassionately recount the facts. Politicians, at the same time, have a vested interest in creation of crisis and the resulting hysteria, exacerbated by media, since by "saving us" they can increase the demand for their services and the realm of their influence. Therefore there exists a natural and close alliance of interest between the political sector and the media in the creation, care and feeding of crises. In that way, the press plays an interesting and important role in the political process.

Panchapakasan and McKinnon (1999), in their study of alternative measures of political risk/cost, provide evidence that level of press coverage is a powerful measurement of political visibility and political costs. They promote the use of media or press coverage as a more direct measure of political visibility in future political risk studies. They propose that political acts of cooperation or conflict between a firm, a government and a lobby group are subjects of press coverage. Panchapakesan and McKinnon (1999) test the theoretical link between the level of press coverage and the political visibility by examining the number of times during the 1988 and 1989 years that articles about 100 publicly listed Australian companies appear in newspapers and business magazines reviewed by the Australian Business Index. They compare press coverage as a measure of political visibility to other, previously tested measures of political visibility (i.e., measures of size: assets, market share, industry, capital intensity, number of employees, number of shareholders and social responsibility disclosure) and find that press coverage is comparatively very successful in encapsulating aggregate political risk and political visibility.

Meanwhile, support for a relation between political risk and auditing effort comes from agency theory (Fama and Jensen 1983, Watts and Zimmerman 1986, Zimmerman 1977). Under the agency theory, managers are assumed to act in their own self-interests even if it is detrimental to shareholders (Jensen and

Meckling 1976). The agency perspective then proposes the requirement for monitoring managements' behaviour by independent parties. Auditors, by performing the independent attest function, are a significant part of a firms' monitoring system. In their monitoring role, they also improve the quality of the financial reporting process (Beasley and Salterio 2001).

The auditors' role in highly political settings is emphasised, due to managements' potential for earnings management (Watts and Zimmerman 1978). Zimmerman (1977) suggests that independent auditing in public sector reduces private costs that arise from relationships between politicians and interest groups. Since auditors usually have statutory access to information, which is not readily accessible to others, they have a comparative advantage in carrying out the monitoring. The statutory access to financial information also makes auditors a preferred monitoring mechanism to any other monitoring substitute (such as politicians, creditors, debt holders) by all contracting parties in the public sector, including management. It follows from there, that auditors in politically risky settings (in both private and public sectors) where management of politically visible firms have incentives for earnings management, have an important role to play. In public sector, auditor's role as a monitor is also enhanced by the fact that public sector is characterised by the lack of residual claims that in private sector motivate an individual shareholder to monitor companies' management.

In their approach to auditing engagements, auditors should identify "crises" and client firms that are under political pressure. For example, professional auditing promulgations suggest that such crises and political pressure are factors that affect auditors' assessment of inherent risk in the audit risk model.[13]

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[13] New Zealand Auditing Standard AS-402 states in paragraph 14:
"To assess inherent risk, the auditor should use professional judgement to evaluate:
(iii) unusual pressures on management, for example, circumstances that might predispose management to misstate financial report...";
(v) factors affecting the industry/environment in which the entity operates...."

Client media or press exposure clearly falls within the definition of client industry and environment. The effect of the media/press on the auditing process is discussed by the Specific Auditing Standard 12 issued by the New Zealand Office of the Auditor General. This standard says:

> "Any issue so significant that it is likely to attract the attention of the media is to be immediately reported to the Auditor General as it can affect approved auditor's professional indemnity insurance" (OAG-12, section. 5.1 and OAG-2, section 8.0)

In other words, the audit client's exposure to publicity and media can lead to auditor's increase in the risk of legal liability. That risk is a part of the auditor's assessment of their business risk as it represents part of the client's business and industry and therefore is also related to the client's inherent risk (e.g., PWC Audit Manual 2000).

The auditors' conservative and cautious approach to client media exposure has been documented by several studies that investigate the effects of media disclosures on auditors, their audit procedures and modified audit reports.[14] Mutchler (1984, 1985, 1986) analyses auditors' going-concern audit opinion decisions via interviews and questionnaire process and suggests that in accordance with US SAS 34, the presence of items considered to be contrary information or mitigating factors affects the auditor's opinion decision. Auditee press exposure, particularly negative exposure, can be classified as such a mitigating factor. However, Mutchler (1986) finds that including contrary information and mitigating factors in a model of the auditor's opinion decision for financially stressed companies does not provide any incremental explanatory power.

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[14] Stevens (1981) notes that auditors of private sector firms are usually cautious of media exposure and tend to avoid audit engagements prone to publicity, particularly adverse publicity.

Mutchler et al (1997) extend Mutchler (1986) and propose that press exposure of audit clients with financial difficulties has strong effect on the audit report modification. They use Wall Street Journal Index as an objective reference source of contrary and mitigating factors. To capture the effect of press coverage on the audit opinion, they devise a news-indicator variable which is defined in terms of news items referenced in the Wall Street Journal Index during the period beginning two years before the audit-report date for the last audit report issued prior to bankruptcy and ending with the bankruptcy date.

Mutchler et al (1997) find evidence that client debt default events reported in press are more likely to lead to the audit report modification. They also find evidence that extreme negative news before the audit report date are highly significant in the auditors' decisions on the audit opinion. They conclude that an auditor is likely to modify the audit opinion in the presence of public disclosure, e.g., in the Wall Street Journal.

Their finding of the effect of the client press or media exposure on audit approach supports Banks and Kinney's (1982) findings that the client's press coverage of loss contingencies increases the likelihood of auditors' selecting more conservative financial reporting for their clients. Frost (1991) replicates Banks and Kinney (1982) and tests the hypothesis that loss contingency firms have significantly lower cumulative returns than firms with no loss contingencies and that these returns are more negative when these firms have prior negative disclosures in the Wall Street Journal. Frost (1991) finds that auditors rank those loss contingencies that receive coverage in the Wall Street Journal as most serious.

More recently, Joe (2003) provides evidence, in her experimental study of client press coverage effects on the audit opinion, that auditors react strongly, and even

overreact, to negative press exposure of their clients prior to the date of the audit report by issuing modified audit opinions. Joe (2003) suggests that when an event already known to auditors receives press coverage, it becomes more salient to auditors, who then adjust inadequately for the redundancy in the data when making their judgements. She bases her proposition that press coverage causes auditors to believe that there is an increased probability of bankruptcy for financially troubled clients on Tversky and Kahneman's (1973) study of representativeness and availability heuristic in decision making. Kahneman and Tversky (1972, 1973) find that when making judgements under uncertainty, decision makers ignore the background base rates and over-rely on recent information. As a consequence, when auditors are exposed to press coverage of their clients, particularly negative press coverage, they are likely to assign a higher probability to the client's likelihood of failure.

Joe (2003) used 90 in-charge auditors from an international public accounting firm and presented them with description of the company financial information of the company and an article identified as a Wall Street Journal article that repeated information on the company already disclosed in the financial information. The participants then judged the company's viability, made going-concern probability estimate, selected an audit opinion and judged their confidence in these decisions. Joe (2003) finds that the redundant information repeated in the press makes auditors more conservative in their opinion choice and less optimistic about the company's viability.

This study investigates the relationship between media/press exposure and auditing production. By incorporating press exposure as a variable affecting audit risk and audit effort, this study extends the audit production/effort literature, political cost literature and ARM literature.

2.4 RESEARCH ON CORPORATE GOVERNANCE

Finally, this study investigates the effect of corporate governance, as an element of audit risk on audit production/effort. Public sector entities are unique because they lack alienable residual rights (i.e., shares) and consequently do not benefit from monitoring by share market participants (e.g., Bradbury 1999). As a result, boards of directors are likely to play a more critical and central role in monitoring the performance of public sector entities. This provides a setting in which this study can powerfully examine the relationship between board of director effectiveness and audit production/effort. Given the increasing interest in corporate governance, particularly in its relation to the audit function after the Enron crisis, it is important to understand how auditors react to more or less effective boards.

The research on corporate governance is based on alternative views of corporate governance in accounting, finance and management literature. The accounting and finance research of corporate governance is largely based on agency theory (Fama and Jensen 1983, Bathala and Rao 1995). Agency theory proposes that managers act in their own self-interest even when that is detrimental to the shareholders (Jensen and Meckling 1976). Under the agency theory, corporate governance is designed to monitor managements' behaviour. From the agency perspective, auditors can also be considered as part of corporate governance mechanism since they monitor the quality of managements' financial reporting (Beasley and Salterio 2001).[15]

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[15] One alternative view to the agency perspective comes from management literature and proposes that corporate governance largely serves to meet regulatory requirements (i.e., "form"). This view of corporate governance often assumes boards of directors to be ineffective and their functions limited to ratifying management's actions, satisfying regulations and enhancing compensation (Galbraith 1967, Wolfson 1984, Kosnic 1987, Core, Holthausen and Larker 1999). Another perspective on corporate governance is the resource dependence perspective from the corporate strategy literature (Pfeffer and Salancik 1978, Boyd 1990 and Williamson 1999). This

The agency perspective is supported by previous research that provides evidence that poor corporate governance is often associated with earnings manipulation, low quality of financial reporting and even financial statements fraud (Dechow et al 1996, Beasley 1996, McMullen 1996, Wright 1996, Beasley et al 1999, Beasley et al 2000, Carcello and Neal 2000).

Dechow et al (1996) provide evidence that the likelihood of earnings manipulation is systematically related to poor corporate governance structure and weaknesses in management oversight. They investigate the motives for and consequences of earnings manipulation in a sample of US firms in the decade between 1982 and 1992 which were subject to accounting enforcement actions by the Securities and Exchange Commission (SEC) as a result of violating generally accepted accounting principles by overstating their reported earnings. Dechow et al (1996) propose, based on Jensen (1993) that internal control governance processes are established to maintain the credibility of firms' financial statements and safeguard against such behaviour as earnings management. They find evidence that an important motivation for earnings manipulation is the management desire to attract external financing at low cost. They also find that firms that manipulate earnings are more likely to have poor corporate governance structure which is manifested in such firms by having boards dominated by management, a Chief Executive Officer who is also a Chairman of the Board, and a Chief Executive Officer who is also a firm's founder, and by not having an audit committee and an outside share blockholder.

Beasley (1996) studies companies where fraud occurred to a matched sample of companies with no fraud. He finds that companies with fraud had lower

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perspective suggests that shareholders and management rely on board of directors as a means to access and manage scarce resources and to set the corporate strategy for the firm.

percentage of outside (or independent) directors on the board. He also finds that outside directors of fraud companies have lower proportion of shareholding in the company as well as that they serve as directors for a shorter period of time compared to directors of companies with no fraud.

Beasley et al (1999) also analyse financial statement of companies where fraud occurs and find that such companies have ineffective corporate governance activities. They examine Securities and Exchange Commission (SEC) enforcement actions against 200 US companies over the period 1987-1997 to gain insight into issues including nature of the companies involved, the amounts of frauds, the types of fraud committed, and the corporate governance mechanisms in place at the companies. Similarly to Dechow et al (1996), they find that fraud companies have poor corporate governance as these companies have fewer audit committees, less independent audit committees, fewer audit committee meetings, less frequent internal audit support and less independent boards of directors.

Several recent studies have focused on audit committees as they are an important element of corporate governance and are explicitly linked with the accounting function. For example, McMullen (1996) finds that firms with informed and active audit committees have fewer errors in their financial statements, experience fewer shareholder suits and less auditor turnover then firms without audit committees. Wright (1996) provides evidence that audit committee composition is strongly related to financial reporting quality. He also provides evidence that as the percentage of inside directors on the audit committee increases, the quality of financial statements decreases.

Beasley et al (2000) provide further insight into the importance of audit committees in various industries. They report that fraud companies in the technology and financial services industries have weak governance mechanisms, fewer audit committees and less independent boards of directors.

De Zoort and Salterio (2001) investigate audit committee members' corporate governance experience in financial reporting and auditing and their effect on auditor-corporate management conflict situations. The evidence of their study provides justification for calls that audit committees are to be composed of independent and knowledgeable directors. The results of their study also provide support for auditors' concerns that directors' varying knowledge in financial matters leads to systematic differences in directors' judgements when it comes to disputes between auditors and management.

Following from corporate governance studies on board of directors' characteristics, Beasley and Salterio (2001) empirically examine the relation between board of directors' characteristics (such as board size and a number of independent directors) and the voluntary formation of audit committees as a corporate governance mechanism. They find that firms that voluntarily create audit committees composed of independent directors with a breath of relevant financial reporting and auditing knowledge and experience, have boards of directors that are larger, have more outside directors and are less likely to be chaired by the CEO.

In summary, prior research suggests that there is a theoretical and empirical link between management philosophy, corporate governance and financial reporting. Prior research also suggests that corporate governance considerations should be a significant component of auditor's risk analyses and auditors' judgement. Despite this suggested importance of the considerations of corporate governance by auditors, there is little professional guidance on how auditors should consider corporate governance when planning their audit procedures and formulating their audit strategies. In New Zealand auditing practice, auditing standard AS –206 on fraud and error and AS-402 on risk assessments and internal control provides very general references to corporate structure/governance and management factors that

should be taken into consideration by the auditors when assessing audit risk. The general suggestion of these standards is that understanding the client's corporate governance structures is likely to help the auditor to assess client associated risks and plan more effective and efficient audits.

However, the importance and the effect of corporate governance factors on auditing process have been researched in only three prior studies. Cohen and Hanno (2000) investigate the impact of the quality of corporate governance and management control philosophy on preplanning and audit planning judgements. They observe the evaluations by 96 auditors of hypothetical clients with weak or strong corporate governance and management control philosophies and their consequence on preplanning and client acceptance judgements. Their study was the first one to provide empirical evidence that management control philosophy and the governance structure do affect auditing – specifically, they affect extent of audit testing. They do not, however, find any consistent evidence of the effect of corporate governance on the timing of various audit tests.

Cohen, Krishnamoorthy and Wright (2002) continue the work of Cohen and Hanno (2000) and examine the impact of various corporate governance factors (such as the board of directors and the audit committee) on the auditing process. They conduct an exploratory study through semi-structured interviews with 36 auditors on current audit practices, regarding auditors' considerations of corporate governance in their auditing. They investigate the effect of corporate governance on the whole auditing process rather than just preplanning and the planning phase of the process. They find that corporate governance is especially important to auditors in the client acceptance phase and when dealing with an international client. Their study also provides evidence that auditors view management as the primary driver of corporate governance while audit committees, contrary to the business and academic literature, are typically considered by the auditors as

ineffective and lacking sufficient power to be a strong corporate governance mechanism.

The findings by Cohen et al (2002) are supported by Goodwin and Seow (2002) who use an experimental study to examine the perceptions of auditors and directors in Singapore about corporate governance practices and their effects on the quality of financial reporting and auditing. They find that auditors place more significance on the internal control function as a mechanism to detect weaknesses in internal controls and prevent fraud than on audit committees. Their finding suggests that audit committees, as a corporate governance mechanism, are not seen as effective in enhancing audit effectiveness compared to other control mechanisms.

This study endeavours to provide further evidence, using archival rather than experimental or exploratory evidence, on the effects of corporate governance in auditing production. The effect of corporate governance mechanisms, such as board of directors and audit committee, on auditing is examined in this study through the effect that corporate governance has on the actual audit effort measured in actual audit hours, for audits of New Zealand public sector corporate entities.

Because public sector corporate entities lack alienable residual claims (Alchian 1977), which eliminates the market as a mechanism for corporate control, corporate governance mechanisms (such as board of directors) have an important monitoring role for public sector corporate entities. Thus, the public sector should provide a setting to more powerfully examine the relationship between corporate governance mechanisms and the audit production. In this way, this

study adds to and complements the research by Cohen and Hanno (2000), Cohen et al (2002) and Goodwin and Seow (2002).[16]

2.5 AN OVERVIEW OF THE OF PUBLIC SECTOR AUDIT MARKET RESEARCH

No prior study examines the effect of corporate governance on audit production in the public sector. In this section, I review studies that examine audit markets in the public sector.

Studies of public sector audit markets generally follow the framework used by studies of private sector audit markets. Most of these public sector studies, therefore, apply same theoretical background on market concentration and audit market quality as do private sector auditing studies.

The demand for auditing in the public sector has been largely researched from the audit quality point of view (Copley 1991, Deis and Giroux 1992) and auditor change point of view (Robert et al 1990, Rubin 1992).

Conceptually, most studies of public sector auditing use Zimmerman's (1977) positive theory of public sector (municipal) disclosure. Zimmerman (1977) proposes that agency costs in the municipal market arise due to the form of government. He finds that the demand for auditing is greater in the city-manager form of government (due to the increased agency costs as a result of an

[16] Only one prior study investigates the role of corporate governance in New Zealand public sector (Cahan, Chua and Nyamori 2000). Cahan et al (2000) examines the effect of corporate governance, through board structure on CEO compensation for New Zealand public sector corporate entities. They find some evidence of the board of directors' effectiveness as a monitoring mechanism in the public sector.

extra layer of management between elected officials and the taxpayers) than in the mayor-form of city government.

Based on Zimmerman's (1977) work, Baber (1983) and Copley (1991) investigate whether public sector audit fees are positively related to agency variables, which measure political competition and the extent of taxpayer funding of municipal services. Barber (1983) finds that the demand for monitoring/auditing increases with the strength of political competition expected in future elections, while Copley (1991) finds that municipal officials seek additional monitoring (auditing) to demonstrate to voters/taxpayers that they are fiscally responsible with taxpayer supplied resources where these resources make a substantial percentage of revenue. Subsequently, Deis and Giroux (1992) and Ward, Elder and Kattelus (1994) also find that audit fees are sensitive to the percentage of revenues raised from taxpayer-funded resources. These studies provide some empirical evidence of applicability of agency and contracting literature (Watts 1977, Watts and Zimmerman 1986) to public sector audit research.

Interestingly, all of these studies, except for Deis and Giroux (1992) use audit fees to capture the audit effort and differences in audit quality. Copley (1991) asserts that audit quality is reflected in audit fees as audit consumers/clients who seek higher level of audit quality are willing to pay premium price. He also provides evidence that an audit quality surrogate based on audit fees has greater explanatory power than the usual Big5/Non-Big 5 audit firm dichotomy.

It was not until Deis and Giroux's (1992) study of audit quality in public sector that public sector auditing research moved on from fees to actual audit hours data as a better measure of audit effort and audit quality. They find that audit quality improves with increased audit hours and conclude that actual audit hours are an excellent surrogate for audit quality when more direct measures of quality

are unavailable. They also conclude that even though the brand name distinction (Big 5 vs. Non-Big 5) is a useful surrogate for audit quality differences among auditor size groups, the quality differences within an auditor size (i.e., within Big 5) are more complex. Deis and Giroux (1992) assert that audit quality differences among audit firms of similar size are better captured by the number of actual audit hours.

Since Deis and Giroux's (1992) study, the research of public sector entities has been focused on audit fees in public sector in the UK (Beattie and Fearnley 1994, Broadbent and Guthrie 1992, Clatworthy, Mellett and Peel 2000), Australia (Davidson, Dolley and Monroe 1997, Chong, Dooley, Houghton and Monroe 2001) or Canada (Bandyopadhay and Kao 2000).
No further research has provided new evidence on audit production/effort or audit quality in public sector through the use of actual audit hours.

This study extends previous research on audit production in previously unexamined setting – the public sector. In that way, this study provides a test of whether O'Keefe et al (1994) and Stein et al (1994) audit production model applies to public sector audits.

2.6 Summary and Conclusion

This chapter discusses the theoretical framework for audit market and audit effort, political cost and corporate governance research. It also provides a background for public sector auditing studies.

The research into economics of auditing was motivated in the last thirty years by the concerns about increasing lack of competition in audit markets. Most of

the studies examining either supply or demand of auditing used audit fees as a proxy for both measures of audit market concentration and audit quality.

A very few studies that examined actual audit effort measured by audit hours provide a valuable insight into client characteristics which actually drive the audit effort and audit production. This study is a continuation of such research. It provides a systematic conceptual approach to analysis of the client characteristics effects on audit effort through the framework of the audit risk model.

This study also introduces two new variables, political risk and corporate governance, into the audit risk model.

The next chapter explains the institutional setting of this study. It provides the background for both public sector reporting and auditing in New Zealand.

CHAPTER 3

INSTITUTIONAL SETTING – PUBLIC SECTOR AUDITS IN NEW ZEALAND

3.0 INTRODUCTION

Chapter 3 discusses the institutional setting for this study. It discusses public sector reporting and auditing in New Zealand. Section 3.1 provides the background to public sector reforms in New Zealand during the 1980s and 1990s. The public sector reforms in New Zealand included a contestability process for public sector audits. Sections 3.2 and 3.3 discuss agency and political problems in state owned corporations and compare them with private sector firms. These sections also provide an explanation of the unique political and corporate environment in which New Zealand state owned corporations operate. Section 3.4 discusses the legislative framework for public sector auditing in New Zealand and the process of auditor selection and appointment as a result of the contestability process. Section 3.5 summarises and concludes this chapter.

The study of audit services production in New Zealand public sector described in this thesis is a result of changes in public sector auditing in 1990s in New Zealand. The introduction of contestability process in the auditor selection process in the New Zealand public sector and a consequent presence of private sector auditing firms in public sector auditing raise interesting questions about production of public sector audits and their comparability with private sector audits.

3.1 Background to Public Sector Reform in New Zealand

The New Zealand public sector has experienced significant changes in the last 15-20 years. In the period 1984-1990, the New Zealand Government put into place a comprehensive programme of economic reforms with a goal of achieving a more market oriented-economy (Evans et al 1996).

The New Zealand public sector reforms were influenced by agency theory. Agency theory, as outlined earlier, addresses problems of incentives for agents (managers and employees) to pursue the interests of their principals. The foundations of agency theory can be found in works by Alchian (1984), Alchian and Demsetz (1972), Alchian and Woodward (1987), Cheung (1983), Easterbrook (1984), Jensen and Meckling (1976), and Williamson (1975, 1985). Within the public sector framework, politicians and public sector bureaucrats can be regarded as agents of the voters. The agency problem in public sector can then be two fold: 1) the agency problem between the voters and the politician, and 2) the agency problem between the politician and the bureaucracy.

This study focuses on the second agency problem. The relationship between Ministers of the Crown (politicians) and the chief executive officer (CEO) of the public sector corporate entity is one of a principal and an agent. The political friction and pressure between public sector corporate entities' CEOs and Ministers of the Crown provide a setting in which the effect of political risk on audit effort can be examined.

The conception of New Zealand public sector reforms started in the early 1980s. At that time it became apparent that New Zealand suffered from a lack of international competitiveness and it was perceived by the Government that the efficiency of all sectors of the economy had to increase. Also, at that time, the relative size of the public sector in the economy was significant. For example,

government expenditure in 1984 was approximately 39% of GDP. That meant that inefficiencies in the public sector acted as constraint on overall economic performance. Therefore, the pressure from fiscal factors led to the reform of the public sector, which included financial management reform.

Financial management reform entailed two major changes (McCulloch and Ball, 1992):

- decentralisation of executive authority for the financial management and performance of public sector departments, and
- revised financial reporting for all public sector entities.

Decentralisation of executive authority was manifested in several aspects (McCulloch and Ball, 1992):

- as ex ante specification of the performance, in output terms, required of the CEO of a public sector entity;
- devolution of decision making authority to give to the CEOs the control over the acquisition, utilisation, disposal and mix of inputs;
- incentives for CEOs to act in the Government's interests; and
- ex post reporting of actual performance against ex ante specification.[1]

The ex ante specification of the performance by the CEO was the integral part of establishing the accountability relationship between ministers and heads of departments and their CEOs. It manifested itself in agreements between the chief executive and a minister on which outputs to produce and at what price. While the

[1] The reforms in the New Zealand public sector took place within the framework of more general economic reforms that included changes in public policy. These economic and public policy reforms were influenced by three major theoretical frameworks in economics literature: 1) public choice theory, 2) contracting theory and 3) agency theory. Public choice theory (e.g., Atkinson and Stiglitz 1980, Alexis 1982, Breton and Wintrobe 1975, Congleton 1982, Laband 1983) analyses the economic effects of the behaviour of voters, legislators, bureaucrats and special interest groups.

minister is responsible for the choice of outputs the CEO has a responsibility for delivering the agreed outputs as specific goods and services. As a consequence of CEOs becoming explicitly accountable for their and their departments'/entities' performance, they have been given greater discretion over the acquisitions, utilisation and disposal and mix of resources used to achieve their agreed outputs. The accountability relationship between the ministers, heads of departments and their CEOs has been monitored and incentivised through statements of service performance prepared by CEOs.[2]

Finally, as a consequence of the newly introduced accountability relationship and in accordance with Public Finance Act 1989, CEOs and their departments have been, as part of the financial management reform, and still are today, required to produce ex post financial statements, yearly and half-yearly, by following generally accepted accounting practice. Prior to the Financial Management Reform in 1992, the financial management and reporting was predominantly designed to assist in monitoring of compliance by departments with various legal and administrative requirements, all based on cash rather than accrual accounting (Scott and Gorringe, 1989).[3]

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[2] Statements of service performance are reports on performance relating to the production of the goods and services that the CEO agrees to produce. They are monitored and used by ministers in reappointing CEOs contractual employment arrangements. In other words CEOs face penalties and rewards in their own employment contracts based on the performance measured against the agreements on outputs.

[3] Before the passage of the Public Finance Act 1989, the appropriation system in New Zealand public sector was cash-based, where each department received a vote made up of several programmes. Programmes were then broken into standard expenditure groups. The cash orientation encouraged budget maximisation, year-end spending and very poor utilisation of fixed assets (Ball, 1992). Further, this cash-based system had little incentive for the management of real resource flows, since all checks and balances related to the use of cash. The Public Finance Act (1989) and State Sector Act (1988) changed this and shifted the focus of accountability and controls towards what is produced rather than what is used to produce it. Since CEOs become responsible for financial management and performance of their departments, and therefore, their departments gained significant autonomy in terms of managing their assets, they had incentives to maintain good asset and cash management systems. Finally, as part of the management decentralisation the departments gained the associated responsibility to manage and forecast their own cash flows.

The process of widening the CEO's responsibilities was an important element of the new public sector management system with emphasis on the accountability relationship between Government Ministers and CEOs.

The relationship between Ministers and CEOs is based on a set of agreements (contracts) detailing outputs that CEO's department/entity is to supply to the government and efficiency with which the public sector entity is to be managed.[4] Based on these contracts, CEOs face the possibility of rewards and penalties that are linked to their performance. The rewards are usually negotiated between a Minister and CEO taking into consideration the advice on the performance of CEOs from the monitoring agency, that is the Office of the Controller and Auditor General. The penalties that chief executives face ultimately include losing their jobs.[5]

The new system of financial management with strong emphasis on CEOs accountability and performance also required changes in financial reporting and a new and different emphasis of performance monitoring. The first step in improving the monitoring of CEOs/agents was to revise financial reporting requirements for all public sector entities to bring them closer to the reporting of private sector entities. Revised financial reporting requirements for all public sector entities in New Zealand were a result of Government adopting the ownership perspective in dealing with public sector departments and it complements financial management reform. The ownership perspective requires

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[4] The powers of the chief executive and his/her employment within the state sector is supported by the State Sector Act 1988. The State Sector Act clarifies the respective roles and powers of Ministers and CEOs, provides for annual performance agreements between them and replaces permanent tenure of heads of government departments with contractual agreements for up to five years (Ball, 1992).

[5] Although full details of circumstances surrounding CEO and/or board of directors' resignations/departures are commonly not disclosed, there have been few instances where the Crown replaced the board and/or CEO and those events were reported in the press such as the Solid Energy case in 1999 or TVNZ in 2000.

the ability of public sector entities to produce information on entity's financial performance similar to information conventionally prepared in the private sector.

That required the public sector entities to adopt accrual accounting system, rather than cash based system with distinction between current and capital transactions and the use of the concept of capital maintenance (Ball 1992). Accrual accounting was adopted in the NZ public sector as it reflects all flows of resources within an entity in an accounting period and therefore makes decisions about the allocation and use of resources more transparent than cash accounting. Thus, accrual accounting became mandatory for public sector entities for financial year beginning after 1 July 1991. Besides adoption of accrual accounting, the revision of financial reporting involved adoption, in New Zealand public sector, of generally accepted accounting principles as used in private sector financial reporting.[6]

The Public Finance Act 1989 provides the legislative framework for the changes to the financial reporting requirements in the public sector in New Zealand. While the State Sector Act 1988 provides chief executives with enhanced decision making authority and expanded accountability, the Public Finance Act 1989 complements the State Sector Act 1988 by broadening the base of public sector reporting and requires the adoption of New Zealand Financial Reporting Standards by all public sector entities. The Public Finance Act also introduces the formal requirement for all departments and public sector entities to report to Parliament/Ministers annually. Therefore, it defines the definitions of performance and specifies information requirements.

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[6] The first tangible evidence of the progress made by the financial management reform and associated financial reporting reform in the New Zealand public sector during 1980s and early 1990s, was the financial statements of the whole of the New Zealand Crown Estate in July 1992. These first all encompassing financial statements of New Zealand Government were first such set of financial statements in the world and they marked a new era in public sector management and reporting in New Zealand.

3.2 State Owned Corporate Entities in New Zealand

Part of the New Zealand public sector reform process was to define activities of the core public sector and separate them from trading activities of the Government. This reform had two major features: commercialisation (deregulation of the statutory monopolies through removal of controls over prices, wages, exchange rates and interest rates) and corporatisation of Government trading activities (Bradbury 1999). On 1 April 1987, government created the first nine state owned corporations from those trading activities and mandated them explicitly commercial objectives.

The objective of creating these corporations was to remove direct political influence on government trading activities and to have these enterprises work on an equal basis with comparable firms in the private sector. Therefore, state owned corporate entities pay taxes, are subject to the same legal environment as private firms, raise their capital on the capital market and are expected by government to earn a commercial return on their equity. State owned corporate entities are also not constrained in their choice of suppliers and customers and as a matter of fact they are expected to seek their business within public sector, and in the private sector wherever possible.

Principal objectives of state owned corporations are prescribed by section (4) of the State Owned Enterprises Act 1986. They are expected to operate as a successful business, which in terms of the Act is defined:

> "...as profitable and efficient as comparable businesses that are not owned by the Crown; and to be a good employer; and an organisation that exhibits a sense of social responsibility by having regard to the interests of the community in which they operate" (Section 4(1)).

In other words, state owned corporations must make decisions on a commercial basis and maximise the value of the shareholder's (that is the Government's) wealth/assets under their control.

All of the state owned corporations are companies and, therefore, are also incorporated and regulated by the Companies Act 1993. That means that they have to comply with the same financial disclosure requirements as any other privately owned company.

The process of corporatisation which gave rise to state owned corporations did not change government ownership of assets owned and managed by these corporations, however it did change the governance structures. State owned corporations are now, like private sector firms, managed by boards of external directors. These directors are often chosen from boards of private sector firms. The Crown in the role of the shareholder/stakeholder seeks to balance the commercial and political skills when appointing directors to the boards of state owned companies. The management of state owned corporations is responsible for the day-to-day running of operations while the board of directors is responsible to Ministers (who represent the Government as the shareholder) for maximising the value of the Government's investment.

Having commercial objectives and corporate governance structure very similar to private sector companies makes public sector corporate entities interesting to research and to compare to private sector corporate entities. However, a lack of alienable residual rights (i.e. shares) for public sector corporate entities is a source of potential agency and political problems.

3.3 Agency and Political Problems in State Owned Corporations Compared with Private Sector Firms

The dominant organisational form in the New Zealand private sector, as well as in many other western countries, is the listed public company. These companies are characterised by the separation of residual ownership claims from control decisions (Jensen and Meckling 1976, Fama and Jensen 1983). This separation of ownership from control then gives rise to agency problems between shareholders and management. The agency problem in private sector firms is controlled by a number of mechanisms which are largely products of the private property rights. These mechanisms are:

- Tradable equity or market for shares,
- Market for takeovers or corporate control,
- Threat of insolvency,
- Market for debt,
- External directors,
- Market for managerial talent,
- Competition in product markets, and
- Auditors and alternative monitoring and incentive mechanisms.

These mechanisms are mutually reinforcing, largely due to information economies. That is, the information generated and used by each of these mechanisms is also utilised by the other mechanisms, in order to lower the overall cost of monitoring and evaluating agents' performance. For example, the mechanisms of monitoring by the market for takeovers and corporate control also leads to lower debt costs, and in that way also benefits the market for debt monitoring.

The agency problems, which are found in private sector companies, also feature in state owned corporations. However, due to the government ownership of state owned corporations and the non-transferability of property rights in them, the control mechanisms that work well in the private sector for controlling agency problems, are much weaker for state owned entities.

It is useful to compare the relative appropriateness and efficiency of mechanisms which control agency problems in the private sector and state owned entities.

3.3.1 Tradable Equity/Share Transferability

Private companies have freely transferable ownership through trade of their shares on the share market. This transferability of ownership provides ability to transfer residual claims, which then provides incentives for share market participants to monitor management performance. Share prices of traded shares tend to reflect available information on the current and future earnings of the company.

Professional analysts and institutional investors study management performance, which in turn creates pressure on managers to make decisions in the interests of owners (Fama and Jensen 1983). In other words, the market for tradable equity creates incentives for managers to ensure that a company's assets are utilised efficiently.

Due to the non-transferability of state owned corporations' shares, the share market cannot be used as a management disciplining mechanism. Further, there is also no direct monitoring by state owned corporation owners (the public) due to the lack of incentives for the individual "shareholder" to participate in the increase of the value of the publicly owned enterprise (such as state owned corporate entities) (Clarke and Porter 1982). The only compensating controls are

through internal monitoring systems such as the board of directors and external monitoring systems such as Treasury analysts and external auditors.[7]

3.3.2 Market for Takeovers or Corporate Control

The transferability of shares also facilitates the market for takeovers or corporate control. When existing managers miss opportunities to use a company's resources efficiently and their performance is poor, the share price is depressed. This gives opportunity for a takeover by another management team who are better in utilising the company's assets. Therefore, the transferability of shares and aggregation of shareholding through the takeover are a very effective way of controlling agency problems. The threat of takeover acts as an incentive for management to act in the best interests of shareholders.

Since state owned companies do not have transferable shares, it is not possible for them to be taken over. No competition for control means that their management is not threatened by the possibility of a takeover when underperforming.

3.3.3 Threat of Insolvency and Bankruptcy

The threat of insolvency and bankruptcy is the ultimate test of management's unsatisfactory performance in a private company. It is a capital rationing system and it sets a maximum limit on the value that can be destroyed by poor managerial decisions. As a means of controlling agency problems, bankruptcy is an expensive but important way of controlling poor stewardship of economic resources.

State owned corporations face no threat of bankruptcy as their losses can be funded indefinitely by the Government.[8] This absence of the threat of bankruptcy

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[7] In general, Treasury analysts are Crown policy advisors, who monitor performance of Crown owned enterprises, approve statements of corporate intent for such enterprises and approve capital injections/expenditure for Crowned owned entities.

[8] The evidence of Government funding losses of their corporations is mixed so far. In 2001 Terralink, one of state owned corporations, went into receivership and was ultimately sold by the

for state owned corporations means that agency costs are increased for such entities.

3.3.4 Market for Debt

For private sector firms, debt holders have an incentive in monitoring management's performance. They recognise that management has incentives, after debt is issued, to transfer wealth to shareholders, increase the risk of bankruptcy and that way reduce the market value of outstanding debt. Therefore, debt can be an effective mechanism for controlling agency problems when a firm has substantial free cash flow (Watts and Zimmerman 1986). In some situations, such as a breach of the debt agreement, the debt holder can also appoint a manager and can limit market for corporate control.[9]

In the case of state owned corporations, given that the share market, the market for takeovers and the threat of bankruptcy are not effective mechanisms for controlling agency problems, the monitoring by lenders maybe more valuable than for private sector firms. However, monitoring by lenders is largely dependent on the lenders' perception of Government guarantees on the state owned corporations' debt.

Where the government provides explicit guarantees, the credit rating of the state owned corporations will apply the credit ratings of the Government and lenders have very little incentive to monitor the performance of state owned corporations' managers. Where there are implicit guarantees by the Government, the lenders may discount such state owned companies risk for the likelihood of government

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Government. Later, the same year, NZ Government used $885M of taxpayers' funds to "bailout" Air New Zealand – a corporate entity in which the Government had only a minority interest in at that time. Therefore, it is unclear what the Government position is regarding the threat of bankruptcy for its corporate entities. It appears, though, that where the state owned entity is deemed of "national interest", it is likely to be provided funds so to be saved from bankruptcy.

9 For example, see Williamson (1988), Mello and Parsons (1992), Smith and Watts (1992), Stulz (1990), Berger (1997), Leland (1998), Agrawal and Knoeber (1996) and Morellec (2001).

intervention and they will monitor management at a reduced level. Overall, the presence of Government explicit or implicit guarantees either removes or reduces state owned corporations' managers' incentives for good performance.

3.3.5 External Directors

Private sector firms typically have a governance structure that includes a board of external directors. These directors are usually appointed by the shareholders and have the duty of monitoring and ratifying the conduct of managers on behalf of the shareholders.

In general, the market mechanisms (share market, market for takeovers, threat of bankruptcy and market for debt) which are effective in controlling problems between shareholders and managers are also effective in controlling external directors. This is because an external director's reputation is strongly affected by the market. Information on directors' reputation and the performance of the firm they are associated with have a direct effect on their remuneration and position as directors (Fama and Jensen 1983).[10]

Corporatisation of the New Zealand public sector and establishment of state owned corporations also brought a change in governance mechanisms of such entities. One of the most significant changes was the appointment of external directors (with commercial experience in the private sector) in order to control internal managers and monitor major policy initiatives. This change in governance resulted in state owned corporations having strong similarities with wholly owned, but independently operated subsidiaries in private sector (Bradbury 1999).

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[10] Also see Baker et al (1988), Brickley et al (1999), Coles and Hoi (2001), Ferris et al (2002), Shivdasani and Yermack (1999) and Yermack (2002).

Theoretically, the directors' incentives which work well for private sector firms are weakened in state owned corporations. This is largely due to directors of state owned companies having no shareholding interests in them (unlike private sector directors in private firms), and also the lower likelihood that they can be replaced in the absence of the takeover market. However, reputation effects may still exist. Williamson (1983) hypothesised that where capital market mechanisms are weak the external directors will bear greater responsibility for controlling managerial decisions and they will effectively "substitute" for the market. Bradbury (1999) provides evidence that in the case of one New Zealand state owned corporation, New Zealand Government Computing Services, directors and managerial accountability are more important factors for the improved financial performance than the form of ownership.

3.3.6 Market for Managerial Talent

The market for managerial talent is also an important mechanism for controlling agency problems in private sector. The performance of managers affects their future income and the employment of other managerial team members. The managerial labour market utilises information from capital markets to assess the performance of particular managers. This monitoring is usually performed through the assessment of risk-adjusted returns for individual firms. This way managements' performance is oriented towards decisions which are in the best interests of shareholders (Fama and Jensen 1983).

Takeovers are also a powerful mechanism that compliments market for managerial services. This is because underperforming managers can be displaced by takeovers which in turn affect their reputation and reduce other employment opportunities for them. Even though the managerial talent market limits agency problems, it does not eliminate them. Due to the high cost of replacing management, shareholders generally find that executive remuneration linked to

measures of performance (such as share value) provides an important incentive for managers to act in the best interest of shareholders.[11]

The public sector reforms in New Zealand also included reform in public sector labour practices. State owned corporations became free to control their own hiring and promotion policies. This resulted in appointments of managers and directors with private sector experience. The change in rewards and sanctions, in turn, contributed to change in public sector values including the attitude towards accountability and performance measures.

Since state owned corporations have an absence of traded equity and the link between the market perception of their performance and mangers'/directors' reputation is weakened, the placement of management teams is based on the assessments by government advisors such as Treasury officials and auditors. Further, some of the incentive based executive remuneration systems used by private sector firms can be used in state owned corporations, while equity based remuneration packages cannot. In general, directors and management remuneration packages are linked to accounting measures of performance. While accounting measures are not ideal performance measures, they are the best indirect measures of commercial performance and provide strong incentive system for both directors and managers to respond to product market competition (Bradbury 1999, Coughlan and Schmidt 1985, Weisbach 1988, Warner et al. 1988).[12]

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[11] For further evidence, see Antle and Smith (1986), Abowd (1990), Abowd and Bognanno (1995), Baiman and Verrecchia (1995), Baker et al (1988), Baker 1992, Brickley et al (1985), Bushman et al. (1996), Conyon (1997), Dechow et al. (1991, 1994), Garen (1994), Gibbons and Murphy (1992), DeAngelo (1988), Murphy (1997, 1998).

[12] Accounting measures of performance are generally the primary determinant of executive bonuses (Murphy 1988). This is because accounting information is verifiable, widely understood and provides managers with an easy indicator of how their "day-to-day" actions affect year-end profitability. There are, however, two fundamental issues with accounting measures of performance. Firstly, accounting information is inherently historical and backward looking. Therefore managers' focus on accounting profitability can provoke avoidance of actions that reduce current profitability but increase future growth, such as reducing research and development activities (Dechow and Sloan 1991). Secondly, accounting profits can be manipulated through

3.3.7 Product Competition

Competition in product markets is an important and complementary mechanism (to competition in factor markets) for promoting efficient performance. This is because, in the private sector, firms which are able to deliver goods and services (demanded by customers) at the lowest price and generate adequate return on capital are most likely to survive. Firms that are not successful in product market competition face decreasing earnings and ultimately bankruptcy.

Product market competition is a very important agency monitoring mechanism in the public sector where capital market mechanisms generally do not work. Empirical research in public sector performance suggests that exposure to competition in product markets increases efficiency of government owned enterprises compared to private sector firms (Bradbury 1999, Berkman and Bradbury 1988, Savas 1974, Caves and Christensen 1980, Davis 1984). However, many public sector corporate entities operate in oligoplistic or monopolistic market conditions, and therefore, product market competition is not a very effective monitoring mechanism for such state owned entities.[13]

Overall, the inability to transfer property rights under Government ownership weakens the control mechanisms in the New Zealand public sector corporate market. The control mechanisms that would otherwise align the actions of managers with the interest of stakeholders are largely ineffective for such public sector entities. For example, the management of public sector corporate entities are usually not threatened by competing management teams and are subject to

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discretionary accruals or by shifting earnings across periods (Healy 1985, Lambert and Larker 1988, Gaver and Gaver 1995, Holthausen et al 1995).

[13] Publicly owned companies that have natural monopoly characteristics in New Zealand public sector are port companies (such as Centreport, Westport and Port of Napier) and airports (such as international airports in Auckland, Wellington and Christchurch). Another industry with monopolistic characteristics in New Zealand is the electricity distribution and transmission (Transpower Limited).

less scrutiny by capital markets. Further, to the extent that lenders are likely to perceive state owned corporations' debt as Government guaranteed, they have less incentive to monitor state owned corporations' performance. That means that sound management performance becomes less important in obtaining finance at low cost.

3.3.8 Alternative Monitoring and Incentive Mechanisms in Public Sector – Including External Auditing

Since a number of the monitoring and incentive mechanisms that apply to private sector firms are either absent or have a weaker effect in the case of state owned corporations, the New Zealand Government, as a shareholder, introduced alternative methods to control agency problems in such entities. State owned companies are required to achieve a rate of return on shareholders' funds and total assets comparable with similar private sector firms. That way the rate of return target became an important surrogate mechanism used to promote efficiency.

However, historically, there have been difficulties in measuring real economic rates of returns for state owned companies. Valuation of assets has been used in arriving at the rate of return target for individual entities. In the absence of share prices, accounting numbers have generally been used to assess state owned corporations' operational and financial performance. Managers and directors remuneration has also been based on accounting measures of their entity's performance. Previous research of executive compensation provides evidence that accounting measures of performance are prone to manipulation when used as basis for executive compensation (Healey 1985, Gaver and Gaver 1995, Holthausen et al 1995). Therefore, managers and directors in New Zealand public sector have also vested interest in manipulating the accounting numbers. Since auditors provide an opinion on truth and fairness of the accounting numbers in the financial statements, Government as the shareholder sees independent external

auditors as very important monitors. It sees them as one of the more effective mechanisms in resolving agency problems in the case of state owned enterprises.

The Government also established another monitoring agency, Crown Company Monitoring Advisory Unit (CCMAU) in 1993 to ensure that its investments in state or Crown owned companies are performing to the best of their abilities. CCMAU is owned by and administratively linked to the Treasury but is operationally independent. CCMAU provides advice to shareholding ministers[14], independently from the rest of the Treasury. CCMAU provides advice to ministers in the following areas:

- Monitoring – reporting on business plans, company reports, performance against targets, and sectoral trends and benchmarking,
- Ownership – advising on strategic issues, investment and diversification opportunities, restructuring issues, and the impact of policy positions,

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[14] Each state owned or Crown company has two shareholding ministers, each of whom holds 50% of the company's shares. One of these, the "responsible minister", has specific responsibility for an individual company or group of companies (e.g. SOEs). The responsible minister generally takes the lead shareholder role, particularly in their capacity as the formal point of contact with boards. The Minister of Finance has always been the second shareholding minister because of the importance of the sector company to the Government's economic and financial objectives.

The Government, through the two shareholding ministers, is normally the company's sole shareholder (the exception is airport companies, where this role is often shared with other parties, usually local authorities). The Government or Crown acts as a steward, protecting the investment in these companies, on behalf of the ultimate beneficiaries, the people of New Zealand. The shareholding ministers appoint directors to run each company. Directors oversee the management of the corporate enterprise and are legally bound to act in its best interest. The chief executive, who is appointed by, and is the agent of the board, has delegated power to control the company within the limits of his or her delegations.

State owned company boards are accountable to shareholding ministers for their performance, and shareholding ministers are in turn accountable to Parliament for the performance of state owned companies. Parliamentary Select Committees review shareholders' performance in terms of the requirements of the relevant legislation and members of the state owned company boards may be asked to appear before the Select Committees to assist in this assessment. State owned company boards are accountable to the shareholding ministers for the performance of the company against a set of parameters and targets contained in a Statement of Corporate Intent (SCI) or Statement of Intent (SOI). The SCI or the SOI are the key accountability documents in the relationship between the shareholder and the board. It is a formal contract between the shareholders and the board against which the shareholders can hold the board accountable. Each year these documents are prepared by boards in consultation with shareholding ministers and are tabled in Parliament. Once tabled, these documents become public. Performance against SCI and SOI targets is outlined in each company's audited annual report, which is also tabled in Parliament.

- Ministerial servicing – managing issues and drafting replies to correspondence, parliamentary questions, and Official Information Act requests,
- Governance – identifying and screening potential directors, managing appointments and inductions, director training and governance best practice.

CCMAU also, on behalf of the shareholding ministers, maintains a working relationship with each state owned company board, in order to understand each company's business, business environment and the issues facing each company.

In 2003, CCMAU monitored 36 state owned companies and entities comprising a conservatively estimated net worth of $9.8 billion, $17.9 billion total assets and a combined total revenue of $7.7 billion (CCMAU Website – http://www.ccmau.govt.nz).

The role of independent external auditors is, however highlighted as there are also some additional issues in public sector that emphasise the role of auditing as a monitoring mechanism. The public is generally unable to take direct action that influences management decisions since they are unable to sell their ownership rights (Porter 1986). That introduces another layer of agents in the public sector setting – politicians who elect officials (ministers) to monitor state owned corporations' management and safeguard public interests.

Political systems can generate incentives which can cause politicians interests to diverge from the best interest of the public who are the ultimate owners (Downs 1957). This occurs because politicians have a limited term in the office, and their personal wealth does not rest on the state owned corporation's organisational performance but on their own re-election. They can be tempted to deliver benefits to constituents and interest groups where immediate benefits may be

readily apparent and that way use state owned companies as a means to ensure their own re-election. Public ownership of state owned entities can facilitate "vote winning" practices by politicians to deliver favours to particular interest groups. The costs of "vote winning" cannot be observed since they are widely dispersed, while benefits may be readily apparent (Hartley 1986). Thus, to achieve political rather than efficiency goals politicians/ministers might be tempted to place political pressure on state owned corporations and their management and/or interfere in their decisions on pricing, investment and the capital structure.

External auditors, who are obviously independent of ministers, have a very important role in resolving the agency problem between both public/voters and politicians/ministers. They provide regular monitoring, through audits of financial reports prepared by management and are in the position of offering an informed opinion on the reasonableness of state owned corporations' financial performance.

Therefore, external auditors who are appointed and report to the shareholders/stakeholders on the performance of state owned corporations and their management (CEOs and directors) reduce agency problem between the politician/minister as the representative of the ultimate shareholders/stakeholders, (public) and bureaucracy/management (CEOs, directors) of state owned corporations.

The importance of auditing as an objective and efficient monitoring mechanism in New Zealand public sector is reflected in the New Zealand Public Audit Act 2001. The Public Audit Act 2001 established the Auditor-General and the Deputy Auditor-General as officers of Parliament who are accountable directly to the House of Representatives and they are not officers of the Crown. This

ensures the independence of the auditing process and strengthens the audit reporting in New Zealand public sector.

3.4 Public Sector Auditing in New Zealand

This section provides a description of legislative and Auditor-General specific requirements for auditing public sector entities in New Zealand. The description of these requirements and the description of the New Zealand public sector auditing setting provides a useful background to understanding some of the public sector specific characteristics (such as limitations placed on auditors appointments, provision of non-audit services in this setting, the requirement for a three year fixed fee audit tenures and contracts) and their effects on audit production and audit market in New Zealand public sector.

The initial interest in public sector audit services around the world was partly a response to rapid changes in the competitive environment for audit firms in the US in the late 1970s and 1980s. In 1987 the Government Accountants Office (GAO) in the US recommended that government entities use competitive bidding for audits as a tool for improving audit efficiency and quality.

In 1992, the New Zealand Controller and Auditor-General announced that public sector audits would be awarded based on competitive tenders. As in the US, this tendering process was chosen to improve audit efficiency and to increase client choice of auditor. The drive for efficiency was motivated by a need to review and lower the audit costs for public entities. Prior to 1992 audit fees were perceived as high, and the Audit Office (now known as Audit New Zealand), the government audit agency, was seen as inefficient in the conduct of audits compared to private sector auditors. Further, as a result of its monopoly position the Audit Office was seen as earning monopoly rents. (Chapman 1993, The Audit Office Annual Report 2001-2002).

In 1993, 30 percent (by audit hours) of the public sector audits were exposed to the tendering process and by 1998 that increased to 80 percent. In 2003 approximately 88 percent (by audit hours) of the public sector audit portfolio has participated in the contestability process. The remaining 12 percent, mainly audits of national sensitivity and the audits where the Auditor-General considers that the contestability process is potentially too disruptive to the auditee, have been left exclusively to Audit New Zealand for now (The OAG Annual report 2002-03). The exceptions to the contestable audit engagement policy by OAG are made where the Auditor-General believes that Audit New Zealand would be unreasonably at risk of losing critical mass in a sector (subject to geographical area) if it lost the audit.[15]

The tendering process for audits of public sector entities in New Zealand was introduced gradually over the period of eight years, as the New Zealand Controller and Auditor-General wanted to maintain a high quality of audit services that would not be compromised by a potential decrease in audit fees (Chapman 1993). The drive of the contestability process has been the improvement of efficiency in public sector audit services production which was also to be reflected in the reduction of audit fees, while maintaining the good quality of auditing services. The Auditor-General at the time thought that market forces method was the most efficient and quickest way to achieve these objectives (Chapman, 1993).

In the 2001-02 fiscal year, the Auditor General renewed and made new audit arrangements for a wide range of public entities subject to contestable audit process (The Audit Office Annual Report 2001-02). Of all tendered entities 84

[15] To ensure the independence of auditors, adequate expertise in understanding of the public sector (including political relationships involving these entities) and to ensure adequate legislative compliance, Audit New Zealand is perceived as the optimal auditor choice for audits of some public sector entities, such as for example, the New Zealand Treasury.

percent stated preference for reappointment of their existing audit service provider. In the view of New Zealand Auditor General that result indicates high level of satisfaction with the service provided by current audit service providers and satisfaction with the competitiveness of audit fees negotiated in the contestability process (The OAG Annual Report 2001-02).

3.4.1 Legislative Requirements

State owned corporations are subject to reporting requirements set out in Public Finance Act 1989 which requires in Part III section 27 that annual financial statements of the Crown be prepared. State owned companies' annual reporting requirements are further regulated by section 15 of the State Owned Enterprises Act 1986 that also requires that their annual reports be prepared and audited. Further, since state owned companies are also regulated by the Companies Act 1993, section 196 of the Companies Act also requires the appointment of an auditor for all companies incorporated under that Act. None of the incorporated public sector entities can take an advantage of section 196(2) of the Companies Act, which exempts certain companies from the requirement to appoint an auditor.[16]

From 1 July 2001 when new Public Audit Act 2001 came into force, public sector corporate entities came into the category of public entities that are subject to public audit and are therefore, part of Auditor-General's auditing portfolio. The Public audit Act 2001, section 5 defines "public entity" and encompasses all public sector companies registered under the Companies Act 1993. Section 14 of the Public Audit Act 2001 also mandates that the Auditor-General is the auditor of every public entity, which then obviously includes all public sector corporate entities. Section 14(2) of the same Act provides no exclusion from the mandatory audit of public entities. Prior to enactment of Public Audit Act 2001 and for the

[16] Public sector corporate entities cannot exempt themselves from an audit as they have to comply with Public Audit Act 2001 from 1 July 2001 and Public Finance Act 1989 before that date. Both Acts require mandatory audits of public sector corporate entities.

period under observation in this study, the Public Finance Act 1989 required in section 25, that the Audit Office be appointed as auditor of all public sector entities and that the entity itself could also not resolve not to have its financial statements unaudited. Therefore, under both the Public Audit Act 2001 and the Public Finance Act 1989, the legislated auditor of all Government owned corporate entities in New Zealand is the Controller and Auditor-General.

The Controller and Auditor-General is an entity established by section 10(1) of the Public Audit Act 2001 (prior to that, Public Finance Act 1989) and is an office of the Parliament, for the purposes of the Public Finance Act 1989. In order to plan, conduct and report the results of over 3,700 public sector audits each year, the Controller and Auditor General uses three sources of assistance: two internal business units (i.e., the Office of the Auditor-General and the Audit New Zealand) and private sector auditing firms. Together, these are commonly referred to as the "Audit Office". This includes the Controller and Auditor-General[17] as a person, the Deputy Controller and Auditor-General and all those authorised by the Controller and Auditor-General to carry out any particular function on his behalf (the Controller and Auditor General Audit Report 2001-02).

3.4.2 Audit Office

The purpose of the Audit Office is to act as a constitutional safeguard that maintains the financial integrity of New Zealand parliamentary system of government. The Audit Office is an Office of Parliament and is therefore independent of the executive branch of government (this includes ministers). The role of the Audit Office is to assist the New Zealand Parliament to strengthen effectiveness, efficiency and accountability of the instruments of Government. This role of the Audit Office is discharged by providing reports on whether

[17] Usually termed and abbreviated as "Auditor General".

governmental activities are carried out, and accounted for, in a manner consistent with Parliament's intentions.

In the case of state owned corporations, they are regulated by the State Owned Enterprises Act 1986 which prescribes, as discussed before, that their objective is to be as profitable and efficient as comparable private sector businesses. The Audit Office, therefore, enables the Parliament and the public to assess whether public sector organisations are delivering what they have been asked to, i.e., have operated lawfully and honestly, have not been wasteful, and have fairly reported their performance in their financial statements. The main products which Audit Office provides and which help achieve these assessments of public sector entities are the provision of assurance through various reports including audit reports and advice which is provided to various parliamentary select committees, ratepayers, taxpayers, audited entities and professional bodies (Manual for Audit Service Providers, Volume 1, Office of the Auditor-General).

The Public Audit Act 2001 provides current legislative backing to the functions of the Audit Office. In section 14, it mandates that the Auditor-General (i.e. the Audit Office) is the auditor of every public entity. Further, sections 15 and 16 prescribe that the Auditor-General must audit financial statements of public entities as well as perform discretionary activities, such as performance audits.[18]

Prior to Public Audit Act 2001, the Public Finance Act 1989, section 25 provided the legislative backing to the functions of the Audit Office. It said that its prime function was to be the auditor of the "money and stores" of certain public sector entities and to ascertain whether:

> "...an entity's books and accounts have been faithfully kept, procedures, including internal controls were sufficient to ensure that there was effective

[18] Performance audits are defined in the Act in terms of two public audit activities: 1) effectiveness and efficiency audits and 2) examinations of issues of compliance, waste and probity.

control over revenues, expenditure and other resources of the entity and that an entity's resources have been applied effectively and efficiently in a manner consistent with the public sector application policy".[19]

According to Public Audit Act 2001, Part 5, sections 32-35, the Auditor-General may appoint persons and partnerships qualified to be auditors of a company under section 199 of the Companies Act 1993 and to perform financial report audits on the behalf of the Auditor-General.

The section empowering the Audit Office and the Auditor-General to delegate public sector audits opens for other suitable persons, normally chartered accountants in private practice, to be engaged on contracts to audit in the name of the Audit Office. Due to this empowerment, the two internal business units used by the Controller and Auditor-General are:

1. The Office of the Auditor General – which is responsible for providing the strategic audit planning, setting standards determining who will undertake audits, overseeing auditor performance, conducting special audits, studies and reporting and advising the Parliament.
2. Audit New Zealand – which is responsible for carrying out audits it has won the right to conduct on behalf of the Auditor-General in competition with private sector auditors, as well as those audits not awarded to private sector auditors under the contestable audit arrangements (The Controller and Auditor-General Annual Audit Report 2001-02).

Figure 3.1 represents organisational arrangements of the Controller and Auditor-General and the Audit Office.

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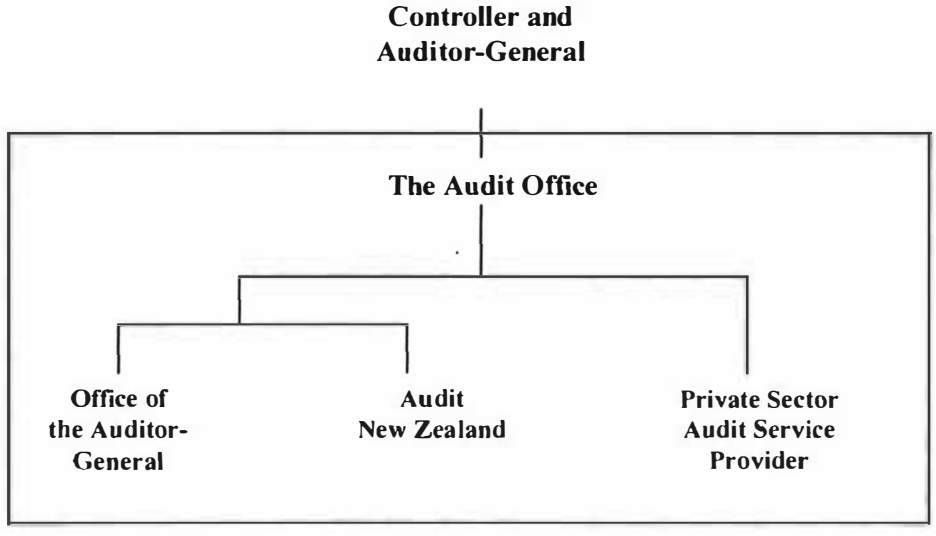
[19] A further function and duty performed by the Audit Office, under the Public Finance Act 1989, was that of "Controller". This function was prescribed by section 22 of the Public Finance Act 1989 and involved ensuring, on behalf of Parliament, that funds provided by the Crown to public sector entities were used for lawful purposes and consistent with an appropriation. However, the function of the Controller was somewhat restricted when it came to Crown-owned companies. With such entities the Audit Office functions were mainly restricted to matters associated with the statutory audit of the companies' financial statements.

FIGURE 3.1

ORGANISATION OF THE NEW ZEALAND AUDIT OFFICE



Source: The Controller and Auditor-General Annual Report 2001-02.

The current structure of the New Zealand Office of the Controller and Auditor-General is a result of the same financial management reform which reorganised and refocused, both in financial and managerial terms, the New Zealand public sector in the 1980s and 1990s and which is discussed in previous sections of Chapter 3.

3.4.3 Contestability

The drivers for the change and reorganisation of the New Zealand public sector auditing, as discussed before, a need to improve efficiency of auditing services for public sector entities without impairing audit quality. To achieve the audit efficiency, the New Zealand public sector audit market was exposed to contestability process in the early 1990s. The first stage of the process was the limited exposure to market testing (mostly for state owned companies' audits) over a three-year period in the late 1980s and early 1990s, in order to introduce audit production efficiency changes into Audit New Zealand (i.e., the Department of the Office of Auditor-General) (Chapman 1993). This was achieved through a

number of audit staff secondments to Audit Office and Audit New Zealand by private sector auditing firms.

Prior to the fully fledged contestability process in public sector auditing in 1990s the Audit Office also contracted, over a period of 10 years, a number of public sector audits to the private sector auditors and that way gained an insight into the audit procedures, associated costs and practices of the private sector auditing. In December 1992, then the Auditor-General officially introduced a new contracting philosophy and strategy.[20] He:

1. Divided the portfolio of entities subject to an Auditor-General's audit into two parts – those for which the provision of audit services was to be contestable, and those for which (for the time being) the audit services were to continue to be provided only by the Audit Office operational business unit, i.e., Audit New Zealand;
2. Allocated the audits of the entities in the contestable part of the portfolio to service providers on the basis of a competitive tender over a three-year period. Bids were invited from both competent private sector auditors and Audit New Zealand (Chapman 1993).

Ten years on from the initial introduction of contestability into New Zealand public sector audit market there are now 142 individual Approved Auditors (individual chartered accountants and registered auditors), from 71 private sector firms and Audit New Zealand, who conduct audits and sign audit reports on behalf of the Controller and Auditor-General. Of those, 68 Approved Auditors and 61 firms audit only schools or very small public sector organisations (The Office of the Controller and Auditor-General Annual Report 2002-03).

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[20] Jeff Chapman was the Auditor-General from June 1993 until April 1995. David MacDonald led the Audit Office from April 1995 until April 2002. He progressed and improved the contestability model in New Zealand public sector auditing to its present state. Prior to Jeff Chapman, Brian Tyler led the Audit Office from 1983 until 1993. Kevin Brady is the current New Zealand Controller and Auditor General, appointed in May 2002. He signalled, shortly after his appointment, that some changes are ahead for the contestable tendering process in New Zealand public sector auditing (Cryer 2002).

Approximately 88 percent (by audit hours) of the public sector audit portfolio has now been opened to the tendering process.

For public sector entities that have contestable audits, the market is again segmented by the OAG into large and medium size audits vs. small audits.[21] Only six (as of 2002 – four) international accounting firms, Audit New Zealand and several medium size chartered accounting firms are invited to tender for the audits of large and medium size entities. This, in terms of market concentration, still ensures some level of competition. The small number of very similar audit service suppliers also implies homogeneity regarding the service product within the public sector audit market segment. Invitations to tender are now only issued to the firms that are perceived by the OAG as the ones with a high quality audit methodologies and an adequate level of specialisation in public sector auditing. That means that all state owned corporate audits are offered for tender to larger audit firms (Big 8/6/4 international auditing firms) and Audit New Zealand only. State owned companies given, their many similarities with private sector firms, have been perceived by the Office of the Auditor General (OAG) as most appropriate of all public sector entities to have their audits tendered and contracted to private sector auditors.

The current Controller and Auditor-General claims that the philosophy of contestability has met the following objectives so far:

1. The pool of available public sector auditing talent and auditing skills has been increased;
2. Many entities have been able to compare their current auditor's approach with the audit proposals of a range of alternative audit service providers;
3. The competitiveness of Audit New Zealand's audit fees and service quality has been tested against the private sector; and

[21] This distinction is based on actual audit hours where OAG deems audits small if they individually involve less than 200 actual audit hours.

4. An element of choice has been introduced in relation to the provision of audit services for the majority of entities (The Audit Office Annual Report 2001-02)

The Office of the Controller and Auditor-General, however, suspended tendering of audits (for entities where existing contracts are completed and for new audits that have not previously been subjected to contestability) during 2002-03 year. This suspension is now pending the outcome of a review of contestability process.[22] The review of the contestability process was undertaken by the Office of the Auditor-General following the recommendation of the team from Australasian Council of Auditors-General who undertook an external review of the New Zealand Auditor-General's Office and activities in 2001-02.

The review of the contestability process in 2002-03 examined the impact of the contestability on audit prices, audit quality, the capability of the Audit Office and the strategic and operational risks of auditing in New Zealand public sector. The review found that the overall the gains, in tenns of audit quality and price as a result of contestability have largely been realised. However, the conclusion of the review was also that the contestability process may be producing diminishing returns for the Audit Office and that also due to audit supplier market changes in recent years (diminishing number of suppliers), the contestability process may be causing some unintended and perverse behaviours in the auditor/auditee relationships (The Controller and Auditor-General Annual Report 2002-03). The Auditor-General indicated, that based on these findings, there will be some major changes to the model for selecting and appointing auditors in New Zealand public sector, in coming years.

[22] In 2002-03 163 public sector entities had their audit contracts at the point of reconsideration and retendering. Due to the suspension of the tendering/contestability process the Auditor-General reappointed their existing auditors for a further year.

Throughout the period of fully implemented contestability process and for the period under observation in this study the Office of the Controller and Auditor-General has had very detailed procedures to ensure the homogeneity in audit service quality and value for money for tendered audits. Both Audit New Zealand and private sector firms must follow these procedures when tendering for public sector audits:

1. Pre-appointment procedures:
   - Audit New Zealand and private sector firms are only able to tender for audits where they meet prerequisites in relation to auditing experience (both of the organisation and the proposed approved auditor); audit staffing resources; auditing methodology; systems for maintaining professional standards; and their own audit quality assurance systems;
   - All tender proposals are subject to audit quality scrutiny before comparative costs are considered. An annual independent review of the tender process is carried out by the independent evaluator.

2. Post Appointment procedures for the approved and appointed auditors are equally strict. They encompass that:
   - All audits are conducted within a framework of the Auditing Standards issued by the Institute of Chartered Accountants of New Zealand (the Institute), the OAG Standards, [23] and in accordance with the OAG audit brief, which is specific to the sector or class of entities. Further, all audits are subject to Auditor-General's specific audit independence standards which are more stringent than those set by the Institute. The Auditor-General's staff also regularly performs quality assurance reviews of the audit files of all Approved Auditors to ensure that: all contractual obligations (including adherence to auditing standards and

[23] The Public Audit Act 2001 provides in section 23 for the Auditor- General to publish auditing standards that are to be used in conducts of public sector audits and inquiries.

other audit requirements) are met; and the systems, procedures and methodology on which the engagement is based continue to operate.

- The Office of the Auditor-General provides continuous technical support to all approved auditors through training seminars, technical forums and discussions of urgent matters while approved auditors are required to obtain approval from the OAG before issuing an audit report which records a fundamental uncertainty, disclaims an opinion, contains an adverse opinion or when a "going concern" qualification is considered.

Another measure of quality and audit service homogeneity among audit service providers is achieved through visits of audited entities by the Auditor-General's staff where they carry out customer satisfaction surveys to seek auditee's views about their auditor's performance.

The most significant difference in the conduct of private sector audits vs. public sector audits is in the strict rules regarding auditors' independence that are imposed by the OAG Auditing Standard – 1 on integrity, objectivity and independence (The Office of the Auditor-General, Manual for Audit Service Providers, Volume 1). This Standard in Section 5.4 prohibits the appointed auditor of the public sector entity to engage in a number of non-audit engagements.[24]

[24] The engagements that approved auditor must not undertake are: 1) liquidations and receiverships, 2) taxation advice, where that advice would involve tax evasion or tax avoidance arrangements, 3) assistance to management in provision of valuation services that result in the product of the valuation giving rise directly to assets or liabilities in the auditee's statement of financial position (this prohibition does not extend to giving routine advice or discussing work of a confirmatory nature on the adequacy of the provisions or the valuation of assets or liabilities which are determined by the auditee itself), 4) participation in the annual audit within two years of placement as a temporary employee, and 5) provision of on-going secretarial, accounting, internal audit and other management services (the OAG considers that provision of such services effectively places the auditor in a management role).

OAG AS – 1 in paragraph 5.6 further limits that the approved auditor may undertake other types of consulting or service engagements for the auditee (other than the ones prohibited by OAG AS-1, Section 5.4), only up to earning a maximum from the additional services provided to the auditee of 100 percent of the annual audit fee in any one year. Paragraphs 5.1 and 5.2 of that standard also regulate auditors conflicts of interest and undue economic dependence on audit fees by regulating that the total fees paid by the auditee to the auditor in any year do not exceed 15 percent of the gross fees of the practice of the appointed audit firm (this fee limit applies to national firms and their local offices and excludes associate firms and international relationships).[25]

In addition to these strict rules which promote auditor's independence and are set by the OAG, the contract to provide audit services states (paragraph 5.6) that the tender fee (i.e., audit fee for tendered audit service) is to remain fixed for the audit period (usually a three year period) and it is not renegotiable except in extraordinary circumstances, such as:

- If an auditee significantly changes its level of activity or operations during any uncompleted audit period;
- If an auditee fails, over at least two consecutive audits, to meet planned agreed deadlines and/or fails to produce financial statements of readily auditable standard; or
- If there are significant changes to the statement of accounts and reporting requirements for the auditee (OAG Auditing Standards).

The three year fixed fee arrangement is intended to provide the Auditor-General with value for money in public sector audits by ensuring that the approved and

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[25] Therefore, some intrinsic economic barriers usually found in private sector audit markets have been removed by the OAG. For example, diversification of services by the suppliers which can lead, in less regulated private sector markets, to "low balling" on audit fees and cross-subsidisation between auditing and other additional non-audit services provided by the same auditing firm, has been limited by the OAG AS-1.

appointed auditor does not engage in underreporting and underpricing of audit effort on initial engagements with the view of extracting economic rents as an incumbent auditor in subsequent years (DeAngelo 1981).[26]

Finally, another significant characteristic of the overall New Zealand public sector audit market is the general low exposure to legal liability for the providers of audit services in public sector. Lawsuits for the auditors of public sector entities are virtually unheard of. The segment of the market where there is any real potential for legal liability of auditors in the public sector is for audits of state owned corporations but only those marked by the Government for privatisation by sale.

Therefore, the ability to detect material misstatements in the financial statements due to management fraud and non-compliance with sector specific legislation remains primary and the critical focus of the auditing process/production for auditors of sate owned corporations in New Zealand.

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[26] Similar three year contract regime is also practiced in Belgium. Belgian corporate legislation requires a minimal length of the mandate of three years for Belgian companies. During the three year mandate, auditors are only dismissed under very exceptional circumstances. The audit mandate in Belgium can be renewed without limitation but always for three yearly periods. Vanstrealen (2002) examines whether auditor's independence, in particular in reference to auditor's reporting behaviour in the first years of the audit mandate differs from the last year of the mandate. She tests audit reports of 392 Belgian companies that went bankrupt in the period 1992-1996 for whether the incumbent auditors were more willing to make compromises with client's management regarding issuance of going-concern qualified audit opinion, than they were in the last year of their official audit mandate (when they hope to renew their mandate). She finds that auditor's going-concern opinion does not appear to be significantly influenced by the length of the auditor-client relationship and the year of the auditor engagement period (i.e. the year of the auditor mandate), for the sample in her study. The results of Vanstrealen (2002) are in contrast to Vanstrealen (2000) where she finds evidence that auditors in Belgium are less willing to qualify audit reports in general (not specifically going-concern qualifications) in case of long term audit tenure. Studies based on US data, such as Krishnan and Krishnan (1996) and Louwers (1998), provide evidence that the perceived risk of litigation is a dominant factor in the US business environment affecting auditor's behaviour, particularly in regards to going-concern audit report qualification. New Zealand public sector audit market is, however, characterised by a low-litigious business environment, and findings of Vanstrealen (2002) on Belgian auditing environment are, therefore, more likely to be relevant to New Zealand public sector audit market.

3.5 SUMMARY AND CONCLUSION

Chapter 3 discusses the institutional settings of this study. The New Zealand public sector, including public sector auditing, underwent a series of economic reforms in the 1980s and 1990s. As a result of the reforms, public sector departments underwent a process of decentralisation of executive authority and corporatisation of government trading activities. Government owned corporate entities which undertake Government trading activities have many similarities with private sector corporations except for their lack of alienable residual rights. Consequently they do not benefit from monitoring by share market participants.

However, the lack of tradable equity emphasises the role of other monitoring mechanisms for state owned corporations, such as their corporate governance mechanisms and external auditing. The institutional setting of New Zealand public sector auditing provides for an interesting arena for exploring the production of audit services in this newly competitive but still regulated market.

Since public sector entities are exposed to intense political forces and risks (Zimmerman 1977), it is reasonable to expect that the political risk will have impact on audit production in public sector. Further, public sector auditing studies in North America focused on audit pricing and audit fees (Baber 1983, Copley 1991, Beattie and Fearney 1994, Clatworthy, Mellet and Peel 2000)[27] while studies of the production of audit services have been mostly researched in private sector settings (O'Keefe et al. 1994, Stein et al 1994, Hackenbrack and Knechel 1994).

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[27] The majority of public sector studies, particularly on state owned companies have been based in North America using the positive model of the right of ownership or property rights theory (Alchain 1965, De Alessi 1980). Studies such as Boardman and Vining (1989), Berkman and Bradbury (1988), Bradbury (1999), Caves and Christensen (1980), Karpoff and Rice (1989), Meggison, Mash & Vanladenborg (1994), and Williamson (1983) investigated the influence of government ownership on financial performance of state owned firms.

In New Zealand, Hay (1991, 1992, 1997, and 2003) and Hay and Foo (1996) research public and private sector reporting and auditing. Only Hay and Foo (1996) examine audit service pricing for state owned firms. Yet, New Zealand state owned corporations' similarities and differences with private sector firms are an interesting source of research questions, not only for issues of financial performance but also for issues of managerial performance (and the monitoring of such performance) and audit production. This study extends previous research into political settings and public sector reporting and auditing and endeavours to provide new evidence on the effects of public sector characteristics on audit production.

The specific audit risk related client characteristics, such as political risk and corporate governance, are particularly significant for public sector corporate entities, and the effect of such risks on audit production is the subject of this study.

The next chapter, Chapter 4, presents the conceptual model for this study. Chapter 4 also develops the study's hypotheses.

CHAPTER 4

CONCEPTUAL MODEL AND HYPOTHESES

4.0 INTRODUCTION

The previous chapter discusses the institutional setting in this study. This chapter discusses the conceptual model used for this study and develops the hypotheses predicting the association between client/auditee characteristics and audit effort. Section 4.1 describes the audit production model in general terms and with specific reference to its use in this study. Section 4.2 develops the hypotheses in regard to the effects of political risk on audit effort while section 4.3 develops hypotheses for predicting the relationship between the board of directors effectiveness and audit effort. Section 4.4 summarises and concludes the chapter.

4.1 AUDIT PRODUCTION MODEL

The existing literature in auditing research has not provided a single coherent theory of production from which a specific empirical model of audit production can be developed. Instead, most research in audit markets and audit production uses neoclassical microeconomic theory.

In neoclassical microeconomics, each firm is described by a production function:

$$q = p(a_1, a_2, a_3, \ldots\ldots, a_n)$$

where

q = output of the firm

p(.) = production function

a_i = factors of production (inputs).

In this equation, the assumption is that the optimum combination of inputs to produce any given amount of output is such that the ratios of marginal input cost to the marginal physical product of each input are equalised. Therefore, the production is characterised by quantities (and mix) of inputs used. This production function when used to study economics of auditing has been translated into expectation that audit fees are a function of a number of audit cost factors such as audit work performed by the auditor measured in hours worked and price per hour.

Many prior studies, as discussed in Chapter 2, use audit fees to proxy for "audit effort". However previous research (Dhaliwal and Palmrose 1985, Palmrose 1986, 1989, Wallace 1989) finds that it is difficult to explain audit fees, due to differences in elasticity of demand for auditing and the multi-product, multi-period pricing strategies of audit firms.

Further, in auditing, it is normally not possible to directly observe input-output relationships since the output is a level of assurance for a specific client. What is more readily observable in auditing is the varying input utilisation (across clients and/or over time for a given client) where inputs are a function of varying client and engagement characteristics.[1] In other words, the audit firm's decision problem is that the audit firm tries to produce a fixed level of audit assurance at minimum cost for their varying clients.

O'Keefe et al (1994) denoted that assumption as:

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[1] While inputs are observable, the information is proprietary and not easily obtained by the researcher.

$$\underset{h}{\text{Minimise}} \quad c(h,\gamma)$$
$$\text{such that} \quad \bar{q} = p(h,\gamma)$$

where

$c(\cdot)$ = audit cost function

h = $(h_1,\ldots h_n)$, are audit service inputs where hj denotes the quantity of each type of input,

γ = $(\gamma_1,\ldots \gamma_n)$, are exogenous (from the auditor's perspective) client firm characteristics,

$\bar{q}$ = the level of assurance associated with audit firm's brand name,

$p(\cdot)$ = audit production function.

Therefore, the cost of an audit is a function of the audit service inputs, such as labour and capital used in the production combined and based on the client characteristics. At the same time, the level of assurance or output is also a function of production inputs and client characteristics.

O'Keefe et al (1994) describe this as the standard problem of minimising costs for a given output. The solution to this production equation requires that input quantities are determined simultaneously and that the ratio of the marginal factor cost to the marginal output or "assurance" for each input be the same.[2]

[2] O'Keefe et al (1994) assume (as the level of assurance produced is not directly observable) that it can be inferred from the audit firm's name. They also assume that a particular audit firm delivers a fixed level of assurance at any moment in time. That assumption is derived from Simunic and Stein (1987) where they find that multiple unobservable levels of audit quality cannot, in principle, be sold under a single brand name. They also assert that if investments by audit firms in their reputation associated with the delivery of a specific firm level of assurance are not movable, then the auditor is motivated to maintain the stability in the delivered assurance/quality level over time. Further, O'Keefe and Westort (1992) show that in competitive markets, audit firms tend to have a limited range of audit quality/assurance they can deliver to clients. This is because an audit firm's investments in client knowledge make it the cost-efficient auditor only for clients who demand an audit quality/assurance consistent with those investments.

The optimum combination of audit service inputs for a given client is then denoted h^*, where the components of h^* are the units of labour, capital and other resources utilised in the audit production. O'Keefe et al (1994) do not consider capital inputs, such as the intensity of use of computer-assisted audit techniques, as they believe that these are of second-order importance in audit production. They suggest that it is reasonable for audit production to consider only labour resources and measure h^* in labour (audit) hours.[3]
In O'Keefe et al's (1994) model, a potential audit service for a client is characterised by an assurance level, $\bar{q}$ and a minimum cost of producing that assurance $c(h^*, \gamma)$.

Based on this neoclassical production conceptual framework, the audit production can be studied through the properties of the relation:

$$h_j^* = p^{-1}(\bar{q}, \gamma) \quad \forall j = 1,...,J$$

where the client characteristics or γ, depend on the research question investigated and choice of control variables (such as size, complexity and risk measures).

O'Keefe et al (1994) investigate these specific issues related to client characteristics:

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[3] O'Keefe et al. (1994) use audit hours data and client characteristics from one single major public accounting firm on audits performed in a single year which restricts generalisability of their findings but strengthens their assumptions about the constant level of assurance output. This study uses data on audit hours from various audit service providers/firms which would imply a varying level of audit quality/assurance. However, as explained in chapter 3 of this thesis, the audit service providers invited to tender for New Zealand public sector audits, are carefully selected by the Auditor-General's Office, are subject to continuous review of their audit procedures and services provided. It is after a number of discussions with the officers in the Auditor-General's Office that it is concluded that audit service providers under observation in this study provide more or less high quality and homogeneous services within the public sector audit market.

- The nature of the relationship between size, complexity, and risk characteristics of the client and the quantity and mix of labour inputs necessary to produce a fixed level of audit assurance.
- The effect of auditor reliance on a client's internal control system on the nature and mix of audit inputs and audit hours.
- Whether there exists a learning curve in auditing a client over time.
- Whether there exist knowledge spillovers from non-audit to audit services. (That is, does the production of tax and general management consulting services for a client affect the nature and mix of audit inputs and audit hours.)

O'Keefe et al (1994) express these issues in the empirical model:

$$\ln h_j = \beta_{j0} + \beta_{j1} \ln A + \sum_{i=2}^{K} \beta_{ji} \gamma_i \ln A \qquad \forall_j$$

where A denotes client size and γ_i represents all other client (engagement) characteristics.

This study adapts O'Keefe et al's (1994) model for explaining audit effort by combining the client specific factors used in the prior research with two new measures of audit risk – political risk and corporate governance (board of directors) effectiveness. Political risk and corporate governance (board of directors) effectiveness are used in this study following the recommendation by Mock and Wright (1999) who suggest that researchers expand the set of audit risk variables used when studying audit risk and related audit effort. Given the institutional setting of this study and previously discussed characteristics of New Zealand public sector corporate entities, political risk and corporate governance effectiveness are expected to add explanatory power to the audit production model.

More specifically, Zimmerman (1977) suggests that public sector entities are exposed to intense political forces that may affect their accounting choices. The political cost hypothesis (Watts and Zimmerman 1976) also suggests that some firms face more political costs than others, and empirical evidence (e.g., Cahan 1992, Hall 1993, Key 1997) indicates that managers in private sector firms that are politically vulnerable will take steps to minimise reported income. Whether political risk/cost will affect the audit effort has not been examined in any setting yet. In this study, it is expected that auditors will expend more effort auditing public sector entities that have high levels of political risk.

Likewise, an auditor's consideration of and assessment of corporate governance, as promulgated by AS-402, is an integral part of their assessment of the client's internal control environment and control risk, an element of the ARM (audit risk model). For example, understanding the client's corporate governance system is likely to help auditors plan a more effective and efficient audit. Understanding the client's corporate governance structures and philosophy also helps the auditor understand the client's accepted accounting policies. This study examines the relationship between boards of directors, control risk and audit effort at the total engagement level with the use of archival rather than experimental (e.g., Goodwin and Seow 2002) or exploratory evidence (e.g., Cohen et al. 2002).

The adapted model used as the framework for this study is presented in Figure 4.1. Figure 4.1 depicts the conceptual approach to audit production analysis, first studied by O'Keefe et al (1994) and extended in this study.

This diagram suggests that actual audit hours, as an input in the audit production/effort equation, are a function of predetermined client characteristics, such as size, complexity and risk. In the model, risk is divided into three components based on the ARM. As discussed in Chapter 2, audit risk

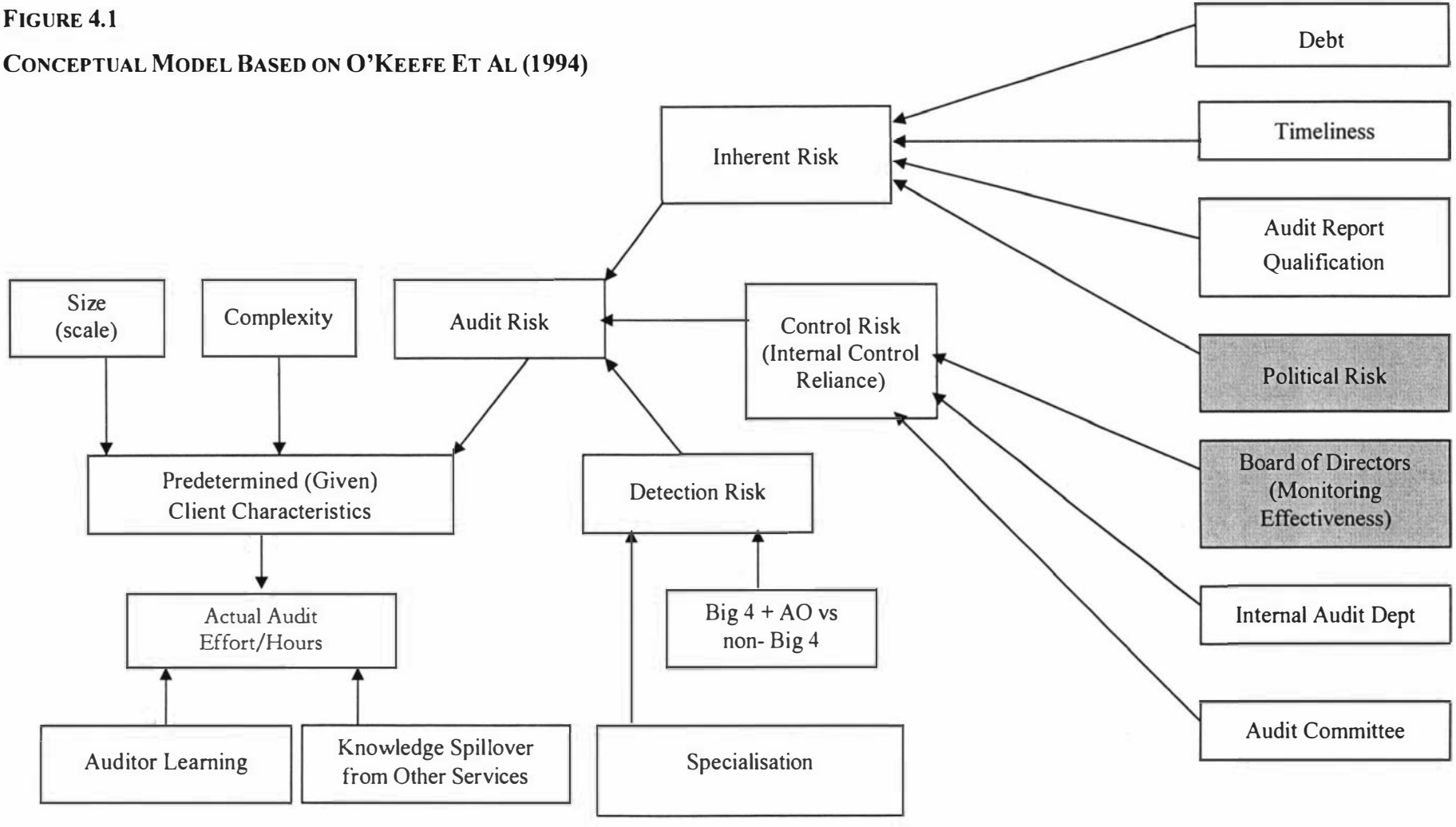
has three components: inherent risk, control risk and detection risk. Previous studies of those components of audit risk (Houghton and Fogarty 1991, Dirsmith and Haskins 1991, Ashton 1974, Ashton and Ashton 1988, 1995) suggest that all three components can be analysed by reference to various client characteristics that affect them individually as well as affecting the overall audit risk. Except for the political risk and corporate governance variables that are introduced into the analysis of audit production for the first time, this study adopts proxies for size, complexity and audit risk that have been previously documented as being effective in explaining audit fees and audit effort (e.g., Simunic 1980, Chan et al 1993, Johnson et al. 1995, O'Keefe et al 1994 and Hackenbrack and Knechel 1997, Dopuch et al 2003).

In addition, auditor learning and auditor knowledge spillover from other services have been previously used in audit production studies (O'Keefe et al 1994, Stein and Simunic 1994, Hackenbrack and Knechel 1997, Dopuch et al 2003) as potential factors affecting audit effort/hours. While these studies provide mixed results regarding relevance of auditor learning and knowledge spillover factors, for completeness, they are included as additional control variables in this research.

Further discussion of all the variables used in this study, and their measures, is presented in Chapter 5 of this thesis.

FIGURE 4.1

CONCEPTUAL MODEL BASED ON O'KEEFE ET AL (1994)



It is worth noting that the conceptual model presented in Figure 4.1 that is based on ARM does not explicitly consider the "engagement risk" or "business risk". This is consistent with the discussion of the ARM and its shortfalls in Chapter 2. As discussed in Chapter 2, the ARM has been criticised in practice (Cushing et al. 1995) for its lack of consideration of "engagement risk" or "business risk". That is, the ARM is primarily designed to address the risk of the auditor issuing an unqualified audit opinion on client's financial statements that are materially misstated. Business risk, on the other hand, is defined (Arens et al 2002) as the risk that the audit firm will suffer harm because of a client relationship, even though the audit report for the client is appropriate. In other words, business risk is a risk of loss or injury to an auditor's professional practice due to a client relationship and is present even when auditors comply with generally accepted auditing standards.

The primary sources of business risk are the risks related to litigation (where the auditors are held liable for client/shareholder losses) and impairment of the auditors' reputation. Other causes of business risk are failure to collect audit fees and sanctions imposed by regulatory bodies. Therefore, business risk is a wider risk than audit risk, and it encompasses more than the risks associated with issuing an incorrect audit report. For example, if the client has weak internal controls and experiences financial difficulties, this introduces to the auditing process two kinds of risks: the risk of material misstatements (which is captured by the ARM) and the risk of the client's financial failure (or business risk which encompasses both types of risk). Business risk can be, therefore, thought of as the auditor's risk of participating in the business of auditing.

In practice, the boundaries between audit risk as in the ARM and business risk (as well as factors that affect both of those risks) are blurred. Arens and Loebbecke (1997) report that some auditors believe that audit risk should be lowered and audit effort increased when a client carries high levels of business risk while others do not believe so.

There is some empirical evidence that auditors respond to business risk by increasing the investment and audit effort in the auditing process (Pratt and Stice 1994, Walo 1994, Houston, Peters and Pratt 1999). However, there is no conclusive evidence that auditors charge fee premiums over and above the cost required to conduct the audit with high "business risk" (Wallace 1989, Morgan and Stocken 1998, Niemi 2002).[4]

Although business risk is an important part of the auditor's risk environment and certain client characteristics (such as the auditee's or client's financial position) have a strong effect on business risk, in this study the concept of business risk is not explicitly incorporated in the audit production model. This is largely due to the underlying characteristics of public sector auditing in New Zealand. The risk of litigation and the threat of bankruptcy for public sector corporate entities, as discussed in Chapter 3, are attenuated. Consequently, it is assumed in this study that the ARM adequately describes audit risks and audit production/effort for New Zealand public sector corporate entities audits.

[4] Recently, Houston et al (1999) investigate, in an experimental study, the conditions under which the ARM does and does not describe the auditor's effort investment and pricing decisions. They provide evidence that the ARM adequately describes auditors' planning and audit fee premium decisions in the presence of errors, while it does not in the presence of irregularities (such as fraud).

4.2 Political Risk

State owned companies operate in a politically charged environment. They are exposed to political processes and political interferences by politicians.

The public choice literature (e.g., Downs 1957, Stigler 1971, Posner 1974, Peltzman 1976) analyses political processes using the the assumption "that individuals in the political process, like individuals in the market, act in their own self-interest" (Watts and Zimmerman 1986). This theoretical framework proposes that the political process is a competition among individuals (politicians and others) for wealth transfers.

Politicians are motivated by re-election and can increase their chances of re-election by granting favours to voters (Downs 1957). Because voters, in general, are concerned about policies that have a major impact on them (and are less concerned about policies with minor impact), policies that confer benefits on few but spreads costs across many voters tend to be viewed by politicians as vote-winning devices. As a result, politicians are susceptible to pressure from interest groups, and interest groups have incentives to actively seek information about politicians' actions and monitor them (Stigler 1971, Peltzman 1976).

Jensen (1976), Meckling (1976) and Watts (1977) argue that in the political processes politicians create "crisis" that they exploit and address by offering simple solutions to the voters. Based on this framework Watts and Zimmerman (1978, 1986) develop the political costs hypothesis that applies to financial reporting where firms that are targets for politically motivated wealth transfers.

Watts and Zimmerman (1978) argue that politicians and their constituents equate high accounting profits with monopolies and either lack incentive or are unable to understand accounting numbers completely. As a result, firms with high income are more likely to be targets for wealth transfers in form of

legislation and/or regulation. Therefore, managers of such firms have incentive to use accounting procedures to reduce their reported income.

The literature in accounting choice and earnings management provides ample empirical evidence to support political cost hypothesis. Cahan (1992), Hall (1993), Cahan et al (1997) and Key (1997) provide evidence of political cost in political processes in various settings in the US. In New Zealand, Wong (1988), Navissi (1995), Navissi et al (2000) and Bowman and Navissi (2003) provide evidence on regulatory threats, earnings management and political vulnerability.

Zimmerman (1977) suggests that independent auditing in public sector, as in economic markets, reduces private costs that arise from relationships between elected politicians and interest groups. Independent auditing also provides a monitoring service to the public and the politicians over the earnings management in response to the political processes. However, Zimmerman (1977) also posits that there are other monitoring mechanisms in the public sector which arguably can partially substitute for auditing and can satisfy the demand for monitoring, such as potential or competing politicians, creditors, appointed management (such as boards of directors and CEOs).

The press also plays an important role in the political process. Jensen (1976), in his theory of the press, suggests that the primary demand facing the press is to provide entertainment and ratings as opposed to information. That also means that certain news items (e.g., embezzlements or exorbitant earnings by companies) are more valuable and newsworthy and valuable from the media/press point of view. Uncovering political issues sells newspapers, attracts TV viewers and radio listeners, and can affect advertising rates. Consequently, monitoring provided by the press does not ensure that politicians will operate in the best interests of their voters, but the media provides a vehicle for political dialogue and can influence public perceptions about political issues (Miller et al 1979). Thus, the press can create and fuel new "crises" or provide

coverage for "existing crises" that have been initiated and identified by vote-seeking politicians.

Although both the media and independent auditors are involved in the relationships in public sector and their monitoring affects public sector reporting and management (Zimmerman 1977, Baber 1983, Cheng 1994), their relationship is not one of compatible partners in that process.

As previously discussed in Chapter 2, auditors in general do not respond well to their clients' media exposure. A good reputation is one of auditors' most valuable assets in the modern auditing services market (Wilson and Grimlund 1990). It is an asset that auditing firms devote considerable effort and expenditure to develop and maintain.

Lowensohn and Collins (1997) and Joe (2003) study auditors' responses to press/media coverage about their clients. For example, Lowensohn and Collins (1997) study auditors' competition in the US market for governmental audits. They find that political risk factors, particularly those resulting from client's adverse media exposure and public sector controversies, influence auditors' decisions to avoid audits prone to such publicity. They conclude that media plays a significant role in the development of political climate for public sector auditing and is an important environmental factor in that setting.

Recently, Joe (2003) conducted an experimental study to examine why auditors are more likely to issue a going concern, qualified audit opinion when they have been subjected to negative press coverage prior to issuing their audit opinions. Joe (2003) provides evidence that negative press coverage increases auditors' perception of auditees' bankruptcy probability and leads auditors to modify audit opinions.

In New Zealand, public sector state owned corporations which were established from government departments, have been closely linked with government

policies, are characterised by public ownership and represent a potential vehicle for the politicians/ministers to deliver favours to particular interest groups. This is because the costs of such self-interest use of state owned corporations by politicians are obscure and widely dispersed while the benefits can be readily apparent to interest groups (Hartley 1986).

Scott and Gorringe (1989) identified the potential conflict between management and ministers when it comes to ministers pursuing political rather than efficiency considerations of state owned corporations. For example, in 2000, state owned TVNZ, which was operating as an independent and commercial TV company, had to change its corporate focus and broadcasting policy in order to meet the new Minister's and Government's expectations of social responsibility in broadcasting (National Business Review 2000, The New Zealand Herald 2000, The Independent 2000).
Similarly in 1999, the board chairman of the Orion Group, the power company, had to stand down as a chairman of the company subsequent to the energy minister criticising the company for abusing its monopoly status in electricity supply by increasing the charges and paying large pay-outs to the directors (The New Zealand Herald 1999, The Dominion 1999, The Press 1999). More recently, in 2001, the health minister has been criticised for appointing members of the board of directors of 26 district health boards in her favour (The Dominion 2001).

Further, Duncan and Bollard (1992, p. 180) in their review of the overall effects of corporatisation of New Zealand public sector pointed out that "there is still considerable ministerial involvement with state enterprises especially in restructuring and pricing. Both ministerial involvement and official involvement has in some cases been much more intrusive than many of the directors and chief executives would have liked."

Thus, there is clearly potential for reported income manipulation, "crises" creation and the media/press "uncovering" of these "crises" in the New Zealand

public sector. Two recent examples are the "uncovering" substantial losses suffered by New Zealand health services providers from 2001 until 2003[5] and the "excessive" profits earned by some of the power supplying companies in 2000 and 2001.[6]

As discussed in Chapter 3, Auditing Standard 12 issued by the Office of the Auditor-General requires that auditors monitor media coverage of their public sector clients. Specifically, OAG AS-12 requires that "any issue so significant that it is likely to attract the attention of the media" be immediately reported to the Auditor-General as it can affect approved auditor's professional indemnity insurance. In other words, audit client's exposure to publicity and media can lead to an increase in the auditor's risk of legal liability. This liability forms part of auditor's assessment of their business risk.[7]

Additionally, at the level of the financial statements, media/press coverage may create an environment that puts additional pressure on management. For example, managers might have incentive to adjust their financial results in order to alleviate political pressure. In that way, media exposure creates a risk that should be assessed as part of the client's inherent risk and, more generally, audit risk (AS-402). Thus, media exposure can have an impact on auditor's decision

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[5] The large reported deficits in the New Zealand health sector (Sunday Star Times 2002, 2001) has been blamed for staffing crises in hospitals around the country, the South Island's health services crises (Otago Daily Times 2001, The Dominion 2001, 2002, The Press 2002) and the escalating costs of sending people for medical treatment overseas (The Dominion Post 2002). At the same time, the media also questioned and widely publicised the health minister's decision on spending an extra $3 billion of taxpayers' funds over 3 years to reduce the deficit in health sector. The Minister has been "uncovered" and criticised for introducing the loyalty bonuses and bonding payments to staff in health sector in order to tackle the health system staffing deficits (The Dominion 2001).

[6] Meridian Energy, Mighty River Power and Genesis Power, government owned power supplying companies, have been accused by media/press of lining government coffers with their profits at the expense of power consumers (National Business Review 2000). Orion Group has been in the centre of media attention for producing a windfall which was used by Christchurch City councillors for furthering their own political agenda (The Press 2001).

[7] The Auditor-General formally stated, as a matter of policy, in the 2002-03 Annual Report, that all approved service providers are from 2002-03 required to consult with the Office of the Auditor-General before accepting any engagements involving matters of possible media or political interest, or of a sensitive nature. The Auditor-General explained this policy by reasoning that engagements with elements of media or political interest have an impact on the wider interests of the Auditor-General and implications for the wider public sector.

on the nature, timing and extent of audit procedures (PwC Audit Manual 2000), and a high level of media exposure will have a positive effect on audit effort and audit hours, as the auditor will need more effort to accumulate sufficient and appropriate audit evidence to obtain an appropriate level of assurance.

More formally, it is hypothesised that:

H_1 Audit effort is positively related to media exposure.

4.3 BOARD OF DIRECTORS EFFECTIVENESS

The public sector reforms in New Zealand in 1980s and 1990s facilitated the creation of public sector corporations. These corporations have many similarities with private sector firms, except for their ownership, as the government remains their ultimate owner. The corporatisation of government trading entities into government owned corporations led to appointments of boards of external directors to oversee the operations of new corporatised entities. These directors have essentially the same duties as directors of private sector companies as they operate under the same corporate legislation (i.e., the Companies Act 1955 and now Companies Act 1993).

Fama and Jensen (1983) in their economic theory of the firm provide a framework for the explanation of agency problems and agency costs in regard to separation of ownership and decision control in corporations. Agency costs arise when the owner-manager sells equity claims on the corporations and when debt claims exist against the corporation. Monitoring mechanisms are implemented to minimise agency costs by limiting the activities of top management that are responsible for decision control (Jensen and Meckling 1976). One such monitoring mechanism is the board of directors that receives its authority for internal control from shareholders of a corporation. The delegation of internal control authority occurs because shareholders generally do not have large enough incentive to devote resources to insure that

management is acting in the shareholders best interest (Grossman and Hart 1980). Fama and Jensen (1983) argue that the board of directors is the highest internal control mechanism responsible for monitoring the actions of top management in a corporation.

In a general sense, internal controls in an organisation capture the function and operating style of the governing body and its committees, management philosophy and their operating style, organisational structure, management control systems, personnel policies, process procedures and segregation of duties (AS-402). A client's internal control mechanisms, their effectiveness and auditor's assessment of their operation will provide a basis for the auditor's assessment of control risk, which is part of the ARM and the overall audit risk. Control risk is the risk that a material misstatement could occur and not be prevented or detected on a timely basis by the entity's internal control structure (AS-402, paragraph 6).

Effective internal controls reduce control risk (ineffective internal controls increase control risk). The nature, extent and timing of audit procedures depend on the auditor's assessment of the client's internal control risk. The basic assumption in auditing is that better internal controls reduce the need for extensive audit procedures (i.e., they lead to a decreased audit effort). Therefore, audit effort, in principle, also depends on internal control risk.

A number of previous studies in both the private and public sector examined the effect of internal controls on audit fees and audit effort (Simunic 1980, Rubin 1988, Copley 1989, O'Keefe et al 1994, Bell, Knechel and Willingham1994, Mock and Wright 1999, Hackenbrack and Knechel 1997, Dopuch et al 2003). However, all previous production studies except for Palmrose (1989) find that the expected reduction in substantive audit work/audit testing does not occur when internal controls are strong and can be relied on. The lack of evidence of the association between control reliance and audit effort is also consistent with prior archival studies on ARM (e.g., Bedard 1989, Mock and Wright 1993) but

it is inconsistent with experimental studies that indicate error rates are lower when good internal controls exist (e.g., Kreutzfeldt and Wallace 1986, 1990, Roberts and Wedemeyer 1988, Willingham and Wright 1985). Hackenbrack and Knechel (1997) suggest that auditors might be motivated to maximise their fees (audit fees are usually based on audit hours worked) rather than minimisation of total audit cost (from the point of view of shareholders) which might cause the auditors to not reduce their testing in response to good internal controls and might cause them to perform inefficient and costly audits instead.

O'Keefe et al (1994) provide evidence of auditors in the field not relying on internal controls. They explain that this suggests that auditors are not being very effective in mapping internal control quality and reliance into reduction in substantive testing. The US Public Oversight Board in their review of auditors' assessment of control risk and design of tests of controls confirmed that notion.[8]

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[8] The US Public Oversight Board finds that auditors tend to focus on substantive testing rather than relying on and test internal controls. They explain their review findings as a result of the following:

1. "Professional standards in the area of internal control risk are perceived by many as complex and difficult to apply, particularly with respect to the guidance on how much knowledge auditors need about internal control, the need to test controls and the nature and extent of controls testing.

2. Professionals have a wide range of beliefs about the relevance of internal control and how internal control is, or should be, considered in audits. In addition, the level of knowledge about internal control, including understanding the types of errors that can result from internal control weaknesses, and how internal control fits or should fit into the audit process, varies widely among auditors. [The US Public Oversight Board, in their review noted numerous instances of management overriding controls unbeknown to the auditors. These included controls over the aging of accounts receivable, recording shipments, changing computer programs and classifying payments.] As a consequence, the auditors assessed control risk and fraud risk as being lower than they actually were, but still performed inefficient audits. The Panel also noted that entities often used information technology to facilitate material fraud (such as by making inappropriate modifications to computer programs, making large numbers of small non-standard entries rather than a few large ones, and "freezing the date" in the computer system).

3. Testing controls is considered time consuming and seems to be viewed by some auditors, including partners, as less effective than detailed substantive audit tests. There is confusion about when, if ever, an auditor can rely entirely on substantive tests for assurance about a particular assertion.

4. There is a diversity of views about the most effective way of coordinating the work of information technology specialists with that of auditors and the role of those specialists in

Prior research of corporate governance (e.g., Dechow et al. 1996, Beasley 1996, McMullen 1996, Wright 1996, Beasley et al 1999, Beasley et al 2000, Carcello and Neal 2000), as discussed in Chapter 2 of this thesis, suggests that there should be a connection between corporate governance and the auditing process, particularly audit risk. Studies of the effects of corporate governance on auditing (Cohen and Hanno 2000, Cohen et al 2002 and Goodwin and Seow 2002) do not provide conclusive evidence on to what extent the corporate governance affects auditing effort.

The New Zealand public sector corporate environment provides a powerful setting to examine the relationship between board of directors effectiveness, as part of internal control structure, and audit effort. Because public sector corporate entities in New Zealand lack alienable residual rights, they do not benefit from monitoring by share market participants. As a result, boards of directors are more likely to play a central role in monitoring the performance of public sector corporate entities and are likely to be a central part of internal controls in such public sector corporate entities (Bradbury 1999).

Fama (1980) and Fama and Jensen (1983) suggest that the composition and characteristics of the board of directors are important factors in creating an effective monitoring of management actions. This study of effectiveness of corporate governance as an element of internal control is based here on Fama (1980) and Fama and Jensen's (1983) theory of the firm and the role of corporate governance in the firm. This study focuses on four specific characteristics of the board of directors and their effect on audit effort as discussed below.

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understanding, assessing and testing controls. The ability of engagement personnel to supervise the work of these specialists is often questioned."

4.3.1 Board Size

The size of board of directors has been argued to influence the board's effectiveness. Jensen (1993) and Yermack (1996) suggests that a smaller board can perform executive control better while larger boards are less effective and more easily influenced by the CEO. In finance literature Yermack (1996) provides evidence that small boards of directors are more effective in corporate governance. He documents that companies with small boards exhibit more favourable values for financial ratios and have stronger CEO performance incentives from compensation and the threat of dismissal. Accounting related Beasley (1996) finds, consistent with Jensen (1993) that with increased board size the likelihood of financial statement fraud increases. In contrast, other studies, such as Chaganti et al. (1985), find that larger boards are more valuable in monitoring as they are more diverse and their members are likely to have higher level of accumulated knowledge and experience. Chaganti et al (1985) find that firms with smaller boards file for bankruptcy more often than firms with larger boards, suggesting that larger boards are more effective in preventing corporate failure. Beasley and Salterio (2001) also find that one positive benefit of large boards is that they have the ability to voluntarily increase in the monitoring capacity of audit committees, through the appointment of more outside directors and directors with higher experience and knowledge. However, none of these previous studies examine the effects of board size on actual audit effort. This study examines Jensen (1993) proposition that large boards are less effective than smaller boards in fulfilling their monitoring function. Therefore, this study suggests that large boards will increase control risk, which in turn will increase audit effort. More formally, the second hypothesis of this study is:

H_2 Audit effort is positively related to board size.

4.3.2 Outside Directors and CEO Board Membership

The effectiveness of the board of directors monitoring function is increased by the inclusion of outside (i.e., non-management) directors on the board (e.g.,

Fama 1980, Fama and Jensen 1983, Pfeffer 1981, Bradbury 1990). Outside directors are presumed to be more independent of management and limit opportunities for the board of directors to become an instrument of management (e.g., Williamson 1984). Outside directors are generally managers or directors of other corporations. The value of their human capital is directly linked to their reputations for high quality decision making, which they maintain by demonstrating expertise in decision control on the board of directors (e.g., Fama 1980).

The value of outside directors in the governance of private sector companies has been confirmed through many studies (e.g., Kosnick 1987, 1990, Brickley and James 1987, Weisbach 1988, Cotter et al 1996, Brickley et al 1994). Most notably, Rosenstein and Wyatt (1990) provide evidence of increases in positive stock returns around announcements of outside director appointments. Beasley (1996) finds that the likelihood of management fraud decreases with the higher percentage of outside directors on the board, while Beasley and Salterio (2002) find that boards with greater proportion of outsiders are more likely to voluntarily form audit committees. In New Zealand, Bradbury (1990) provides evidence that proportion of outside directors on the board and intercorporate ownership are important determinants of enhanced corporate governance through voluntary formation of audit committees. Cahan and Wilkinson (1999) provide evidence that in New Zealand the proportion of outside directors on the board increased in 1990s after the Companies Act 1993, which enhanced corporate governance requirements, came into effect (also see Prevost et al 2000).

Further, Beasley and Petroni (1998) find that the likelihood of a specialist high quality auditor (Big 6 firm) being chosen as a firm's auditor increases with the percentage of outside directors on the board. This suggests that overall monitoring of a firm's performance increases in quality with the increase in proportion of independent directors on the board.

Finally, Mayers et al (1997) find that with companies where ownership rights are not transferable (mutual insurance companies) and where important corporate control mechanisms such as hostile takeovers and share-based incentive compensation are missing, the importance of monitoring function performed by outside directors is greater than for companies with transferable ownership rights. This finding is particularly significant for understanding the role of outside directors on the state owned corporations' boards. Since state owned corporate entities suffer from the lack of transferable ownership rights or shares, the monitoring role of directors, especially outside directors is increased.

In terms of the effect of outside directors' monitoring on auditing process and audit effort, the enhanced management monitoring by outside directors in general leads to a more effective control environment which, according to the ARM, reduces control risk for auditors and should therefore reduce audit effort.

In the New Zealand public sector, the Public Sector State Services Commission and Crown Company Monitoring Advisory Unit (CCMAU) appoint directors of public sector corporate entities and maintain strict rules about directors' independence.

Therefore, in case of New Zealand public sector corporate entities almost all appointed directors will be outside directors. However, in few instances the CEO is also a member of the board of directors. Jensen (1993) recommends that the CEO should be separated from the board chairman function as his dual role can reduce board of directors effectiveness. The CEO's power to control the board is often attributed to the belief that the CEO can have the strongest influence in determining who is on the board of directors (e.g., Mace 1986, Vancil 1987, Patton and Baker 1987). That can lead to the reduced ability of outside board directors to effectively monitor management by management's ability to limit board activities through controlling the board's chairperson position. The board chairperson's function is to run board meetings and to oversee the process of hiring, evaluating, compensating and firing senior

management. One way for shareholders to limit the CEO's ability to dominate the board of directors is to segregate the key positions of CEO and board chairperson.

Consistent with the view of CEO duality inappropriateness are findings of Dechow et al (1996) who find that firms manipulating earnings are more likely to have a CEO who is also a board chairperson. Beasley and Salterio (2002) also find that the concentration of board power in one person as both board chair and CEO increases the potential for less effective monitoring by creating audit committees that have fewer outside directors with relevant financial reporting knowledge and experience.

In the New Zealand public sector, a CEO of a public sector corporation cannot also serve as the chairman of the board of directors, but his/her presence on the board can still have an inhibiting effect on the effectiveness of the board's monitoring function. The reduction in monitoring effectiveness of the board may lead to an increase in control risk for auditors and, consequently, may impact on audit effort. Therefore, it is hypothesised in this study that:

H_3 Audit effort will increase when the CEO is also a member of the board of directors.

4.3.3 Multiple Directorships

Fama (1980) and Fama and Jensen (1983) propose that directors with multiple directorships provide greater monitoring as they have significant investments in their reputations. However, other researchers (e.g., Core et al 1999) find that multiple directorships can encroach on the time and mental capacity of directors and make them less effective in their monitoring role. Consistent with the expectation that "busy" directors are possibly less effective monitors, auditors are likely to assess boards with directors who hold multiple directorships as potential contributors to higher control risk, which may increase their audit effort. More formally, this study hypothesises:

H_4 Audit effort will increase when the proportion of "busy" directors on the board increases.

4.3.4 Audit Committees

Past research (Bradbury 1990, Green 1994, Beasley 1996, Pincus et al 1989, Carcello and Neal 2000, Beasley et al 2000 and Beasley and Salterio 2002) suggests that audit committees play a particularly important role in corporate governance. Bradbury (1990) proposes that audit committees can increase the credibility of the financial reporting process by effectively monitoring the internal and external audit functions. McMullen (1996) provides evidence that firms with reliable financial reporting (i.e., absence of errors, irregularities and illegal acts) are more likely to have audit committees.

Beasley et al (2000) investigate the effects of corporate governance mechanisms on fraudulent financial reporting. They find that companies with fraud are less likely to have an audit committee and are more likely to have less independent directors who meet less frequently. Beasley and Salterio (2002) provide findings that large boards of directors have ability to voluntarily increase the monitoring capability of audit committees through the appointment of more outside directors, which leads to improved financial reporting and monitoring. Their findings are consistent with Xie et al (2001) who find that the presence and quality of audit committees are negatively related to the level of earnings management in firms.

The US Securities and Exchange Commission (SEC) also suggests that:

> "Audit committees play a critical role in the financial reporting system by overseeing and monitoring management's and the independent auditors' participation in the financial reporting process...Audit committees can, and should, be the corporate participant best able to perform that oversight function" (SEC 1999, p. 1).

Audit committees meet directly with the external auditors and they often review and improve the quality of internal controls, as well as the quality of a firm's financial reporting. Therefore, they are an important element of internal control environment and their presence signals reduced control risk (as an element of the ARM) to auditors (Arens et al 1998, Audit Manuals PWC 2000, OAG 2000). The presence of audit committee as a subcommittee of the board of directors should lead to reduced audit effort. Consequently, it is hypothesised that:

H_5 Audit effort will decrease where there is an audit committee.

4.4 SUMMARY AND CONCLUSION

This chapter discusses the conceptual model for audit production research. The model used by O'Keefe et al (1994) is combined with the ARM framework and two new determinants of audit effort. Specifically, hypotheses are developed to predict the effect of political risk and corporate governance mechanisms (the role of directors) on audit effort.

The political cost hypothesis (Watts and Zimmerman 1978) suggests that some firms face more political costs than others, and empirical evidence of previous studies indicates that managers of firms that are politically vulnerable will take steps to minimise reported income. Whether political costs affect the audit effort has not been previously examined. In this study, it is hypothesised that auditors will use more audit effort to audit public sector corporate entities that have high level of political risk.

Public sector corporate entities are also characterised by non-transferable residual rights (i.e., they are owned by the government). Consequently, they do not benefit from monitoring by market mechanisms. Instead, their boards of directors are likely to play a more critical role in monitoring the performance. It

is hypothesised in this study that four characteristics related to the board of directors – board size, CEO being a member of the board, multiple directorships of the directors and existence of an audit committee – will impact on audit effort.

The next chapter describes the research design used to test the hypotheses developed in this chapter. It also includes discussion of dependent variable (i.e., audit effort measured in audit hours) and independent variables, which includes variables for political risk and board effectiveness, and control variables, which account for other factors affecting audit effort.

CHAPTER 5

RESEARCH DESIGN

5.0 INTRODUCTION

The previous chapter discusses the hypotheses used in this study. This chapter describes the research design used to test the hypotheses developed in Chapter 4. Sample selection criteria are documented in section 5.1, while section 5.2 details the model used for hypothesis testing. Section 5.3 describes the actual audit hours used as the dependent variable in the model. Section 5.4 discusses independent variables political risk and corporate governance effectiveness, while section 5.5 explains other variables used as control variables in this study including variables for auditor learning and knowledge spillover effects. Section 5.8 summarises and concludes the chapter.

5.1 SAMPLE

The sample for this study consists of 275 entity/year observations from 1998-2000. The sample was selected as follows. First, audit hours data for audits of 200+ hours was requested from and provided by the New Zealand Auditor General (only the data on 200+ actual audit hours were available from OAG records). Overall, audit hour data were obtained for 327 public sector entity audits over the years 1998-2000. Second, I requested annual reports for each of the 327 entity/year observations. When the entity did not respond to my initial request, a follow-up letter was sent. This process yielded 275 annual reports which represents 84 percent of 327 entity/year observations that OAG provided data on. The remaining 16 percent or 52 entity/year observations are excluded.

The 275 entity/year observations include 89 observations from 1998, 97 observations for 1999, and 89 observations from 2000.[1]

The data on audit fees and other variables except for press coverage were collected from public sector corporate entities annual reports for 1998, 1999 and 2000 years. The data on press coverage was gathered from the New Zealand News Index Database. The search in this database was fitted to each entity's financial year and with the use of both full corporate company's name, as well as commonly used name abbreviation or synonym. The best name fit result was then used for the analysis.

5.2 MODEL

There is no theoretical basis for choosing a functional form for the relation between client characteristics and labour/audit hours. O'Keefe, Simunic and Stein (1994) consider several empirical models.

The Cobb-Douglas form, i.e.,

$$\ln h_j = \beta_{j0} + \beta_{j1} \ln A + \sum_{i=2}^{K} \beta_{ji} \ln \gamma_i$$

where

$$h_j = e^{\beta_{j0}} A^{\beta_{j1}} \prod_{i=2}^{K} \gamma^{\beta_{ji}} ,$$

and the Ashton, Elliot and Willingham (1989) form (also known as the Audit Fee research form), i.e.,

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[1] The rejected observations do not have significant systematic similarities in their characteristics. The rejected entity/year observations belong to a variety of industries with slightly higher representation in energy industry, electricity sector (28% of total 43 rejected observations are from the electricity sector). This is because the electricity sector underwent significant restructuring in the period under observation and number of electricity companies were dissolved, merged or sold on behalf of the Government. As a result of this their financial statements are not available. On average the excluded entity/year observations relate to slightly smaller audits as their average audit hours are 403 compared to the analysed entity/year observations with 573 average audit hours.

$$\ln h_j = \beta_{j0} + \beta_{j1} \ln A + \sum_{i=2}^{K} \beta_{ji} \ln \gamma_i$$

where

$$h_j = e^{\beta_{j0} + \sum_{i=2}^{K} \beta_{ji} \gamma_i} A^{\beta_{j1}},$$

are considered. O'Keefe et al. (1994) note that the underlying function in both forms recognises the key role of client size as a determinant of audit hours. Under both of these forms all other client characteristics are assumed to affect hours by changing the curvature of the hours-size relationship.

O'Keefe et al (1994) adapt, for their disaggregated audit hour data, the Audit Fee research form as:

$$\ln h_j = \beta_{j0} + \beta_{j1} \ln A + \sum_{i=2}^{K} \beta_{ji} \gamma_i \ln A \qquad \forall j$$

where

$$h_j = e^{\beta_{j0}} A^{\beta_{j1} + \sum_{i=2}^{K} \beta_{ji} \gamma_i} \qquad \forall j .$$

However, they find that none of the empirical results are sensitive to the choice of functional form. Subsequent audit production research (Bell et al 1994, Stein and Simunic 1994, Hackenbrack and Knechel 1997) use the Audit Fee form. This study, based on audit production empirical studies by O'Keefe et al (1994) and Hackenbrack and Knechel (1997), uses the Audit Fee form as the most appropriate form to analyse audit production. The Audit Fee form also allows for the comparison between findings of audit pricing/fee studies and audit production studies.

If total audit hours is the dependent variable, then ordinary least squares (OLS) regression can be readily used to estimate the empirical function. I adapt O'Keefe et al's (1994) model and use the following model to examine the relation of client characteristics on actual audit effort/hours in the New Zealand public sector:

$$ln(\text{AU\_HRS}) = b_0 + b_1\text{TOT\_PRES} + b_2\text{TOT\_DR} + b_3\text{BUSY\_DR} + b_4\text{CEO\_DR} + b_5\text{ADT\_CMTE} + b_6 ln(\text{REV}) + b_7\text{SUBS} + b_8\text{INVREC} + b_9\text{LEVGE} + b_{10}\text{LOSS} + b_{11}\text{ADTR\_TYP} + b_{12}\text{SPCLST} + b_{13}\text{SWTCH\_1} + b_{14}\text{SWTCH\_2} + b_{15}\text{OTHR\_FEE} + b_{16}\text{IND\_AIRP} + b_{17}\text{IND\_HLTH} + b_{18}\text{IND\_PORT} + b_{19}\text{IND\_RES} + b_{20}\text{IND\_OTHR}$$

where

TOT_PRES	Total number of press mentions during the financial period
TOT_DR	Total number of directors
BUSY_DR	Proportion of busy directors (>3 directorships)
CEO_DR	CEO is director
ADT_CMTE	Company has an audit committee
REV	Total revenue ($000)
SUBS	Number of subsidiaries
INVREC	(Inventory + receivables)/Total assets
LEVGE	Leverage (Total liabilities/Total assets)
LOSS	Company made a loss during the financial period
ADTR_TYP	Auditor is one of the Big 5
SPCLST	Auditor is an industry specialist (>20% share of industry audit fees)
SWTCH_1	Auditor switched in past year
SWTCH_2	Auditor switched two years ago
OTHR_FEE	Proportion of non-audit fees to audit fees
IND_AIRP	Airport
IND_HLTH	Health service provider
IND_PORT	Port
IND_RES	Crown Research Institute
IND_OTHR	Other

5.3 DEPENDENT VARIABLE

The dependent variable in this study is audit effort which is measured as the natural log of total audit hours (AU_HRS). The data were provided by the New Zealand OAG and relate to audits exceeding 200 actual hours. According to the OAG, audits with less than 200 actual hours are largely audits of schools, and there are not the focus of the study.

The audit hours provided by the OAG are the hours that the auditor must provide under the contract to the OAG at the conclusion of every annual audit. They are used by the OAG for efficiency evaluation and audit costing monitoring purposes. Similar to O'Keefe et al (1994), it is recognised in this study that the hours charged and reported by the audit service provider may not represent actual hours spent on a job. However, it is assumed that any unreported hours may simply reflect idiosyncratic inefficiencies or idiosyncratic learning and are random. Further, discussions with OAG staff also indicate that reported audit hours are a reasonably accurate reflection of actual hours spent on an audit engagement. The OAG monitors, and seeks explanations for, any significant fluctuations in reported audit hours and related audit fees from one audit engagement to the other.[2]

Lowballing is defined by DeAngelo (1981) as auditors pricing their initial audit engagements at a lower amount than they can sustain in the long run, as a competitive response to the existence of quasi-rents to incumbent auditors.[3]

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[2] See chapter 3 for further discussion.

[3] Lowballing, apparently, also persists when the auditee switches auditors of the same type or size, when fees for other services by the auditor are controlled but not for auditees receiving qualified audit opinion. In other words, lowballing persists when the auditee changes from one Big 5 auditor to another Big 5 auditor but does not persist when the change is from a Big 5 auditor to the non-Big 5 auditor. Fixed or controlled fees for non-audit services provided by auditor also provide conditions for lowballing on audit fees while a presence of a qualified audit opinion is a

Simon and Francis (1988) and Turpen (1990) provide evidence of lowballing on initial engagements that usually persist through the third year of the audit engagement. Simon and Francis (1988) also provide evidence that price cutting in the initial year is around 24 percent while in subsequent two years it reduced to 15 percent. With only three year tenure contracts and OAG monitoring procedures, the possibility that audit service providers under-report the actual audit hours and engage in lowballing practices on their audit fees is remote.

Another issue that previous studies in audit service production (O'Keefe et al. 1994, Hackenbrack and Knechel 1997) raise are the potential biases introduced by pooling of audit hours observations across audit firms and changes in audit firms' technologies during multiple sample periods.

Both O'Keefe et al (1994) and Hackenbrack and Knechel (1997) obtain audit hours data and client characteristics from a single major auditing firm. The data from a single source limits generalisability of their findings but reduced potential biases. O'Keefe et al (1994) cited Kinney (1986) and Palmrose (1988) to argue that major audit firms can be characterised by different types of production technologies and systematically different levels of audit quality (i.e., assurance levels). They also argue that one firm's technology in a single year can be assumed to stay reasonably consistent.

This study uses as the dependent variable, audit hours data provided by a number of audit firms on annual audits over a three-year period. Thus, theoretically there is a potential for introduced biases from both varying audit quality across different audit firms and changes in technology over time. However, potential variations in audit quality are limited as discussed in Chapter 3 by a strict selection, tendering and appointment process used by the

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deterrent to lowballing, presumably due to issues surrounding fee recoverability after a qualified audit opinion is issued (Yardley 1992).

OAG. Also, the continuous monitoring of changes in reported audit hours, audit fees and quality, and audit client satisfaction surveys used by the OAG on all of their contestable audits limits the possibility of major and systematically different levels of audit quality.

Changes in audit technology and their potential effect on reported audit hours were discussed with three major audit service providers (Audit New Zealand, PWC and KPMG). Only PWC experienced changes in their audit approach methodologies and audit technology, as a result of the merger of Coopers & Lybrand and Price Waterhouse on 1 July 1998. However, as reported by Winograd et al (2000), the new PWC audit approach was available to all of their 60,000 assurance professionals in 150 countries on the date of the merger and within 100 days of the merger all staff was trained and used the new approach. Thus, all audits conducted by PWC since mid-1998 would be on a consistent basis as far as audit technology is concerned. Finally, significant consistencies exist in major audit firms' methodologies as they all essentially operate under generally accepted auditing standards (i.e., the New Zealand Institute's Auditing Standards and Audit Guidance Notes and OAG Auditing Standards once they are appointed as an approved auditor in New Zealand public sector). Therefore, the potential variability in audit technology is expected to be minimal in this study.

In addition, the tests run on audit hours are repeated using audit fees. While the main focus of the study is not to test determinants of audit fees in New Zealand public sector, tests using audit fees allow for a comparison of results with the previous audit fee literature and for an assessment of the appropriateness of audit fee as a proxy for audit effort.

5.4 INDEPENDENT VARIABLES

5.4.1 Political Risk

Watts and Zimmerman (1978, 1986) propose that politically visible (or politically sensitive or exposed) firms attract attention of regulators and are exposed to political costs.

Political visibility can be described as a quality of a firm that attracts a disproportionate share of scrutiny by the regulators (such as government and its agencies) and by the general public and various organised interest groups (Whittred and Zimmer 1990). Following Watts and Zimmerman (1986), many positive accounting researchers use firm size as a proxy for political visibility. The underlying assumption of the size proxy is that larger firms are more politically sensitive than smaller firms and therefore subject to greater political costs.

Holthausen and Leftwich (1984) and Christie (1990) criticise firm size as a proxy of political visibility and Watts and Zimmerman (1980) emphasise the importance of developing more precise proxy variables for political visibility. They contend in their 1990 positive accounting theory review paper that empirical evidence of political cost hypothesis studies only holds for the largest firms (Zmijewski and Hagerman 1981) and for oil and gas industry (Zimmerman 1983). Ball and Foster (1982) claim that a fundamental difficulty in using firm size to proxy for political costs is that size can also proxy for many other effects including industry membership.

Various alternative proxies for political visibility have been examined over the past ten to fifteen years. Market share as the proportion of firm sales to total sales of the industry has been used by Hagerman and Zmijewski (1979), Wong (1988) and Deegan and Hallam (1991). Industry has also been used as a

measure of political visibility where particular characteristics of the industry expose industry members to political cost. Over time researchers have investigated potentially visible industries, such as the tobacco, oil and cable television industries. Cahan (1992), Han and Wang (1998), Hall (1993) and Key (1997) provide evidence of industry as a useful political visibility proxy. Capital intensity, number of employees and number of shareholders (Belkaoui and Karpik 1989, Zimijewski and Hagerman 1981) have also been used as proxies for political visibility.

More recently, the level of press coverage has been used to proxy for political visibility (Emanuel and McKinnon 1989, Panchapakesan and McKinnon 1999). According to Jensen (1976), the press is in the business of selling papers and will devote more attention to firms that attract public attention. In particular, political acts of cooperation and conflict between a firm and government agencies or interest group will readily attract press coverage. Because political visibility will vary not only cross-sectionally but will also change over time (e.g., in the US oil firms are most visible when oil prices are high), press coverage gives a more exact and direct measure of political exposure. Thus, I use the level of press coverage to proxy for political risk to test H_1.

The variable TOT_PRES is equal to number of articles about the public sector corporate entity that appeared in major New Zealand newspapers (i.e. New Zealand Herald, The Dominion, Christchurch Press) during the period 1998-2000. The number of articles was identified using the New Zealand Business Index Database. The search in this database is fitted to each entity's financial year, and I used both the full name and corporate name, as well as commonly used abbreviations or synonyms as keywords. The best name fit for each entity in each financial year is then used in the analysis for this study. A positive significant relationship is expected between TOT_PRES and AU_HRS.

5.4.2 Corporate Governance Effectiveness

Previous audit research (Simunic 1980, Rubin 1988, Copley 1989 and Hackenbrack and Knechel 1997) uses, to limited success, some plausible surrogates for capturing auditor's control risk assessment effects on audit fees and audit effort. Palmrose (1989), O'Keefe et al (1994), Hackenbrack and Knechel (1994) use auditees' and auditors' assessments (obtained from surveys) of auditor reliance on internal control. These studies propose a significant negative effect of the reliance on auditees' internal controls on audit effort/hours. Only Palmrose (1989) finds evidence of a significant relationship, while O'Keefe et al (1994) and Hackenbrack and Knechel (1997) find, contrary to expectations, that internal control reliance has no effect on audit hours.

In the absence of auditors' and auditees' direct assessments of the internal controls and their effects on audit production/effort, other plausible surrogates are used in this study.[4] Based on recent research of the effects on corporate

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[4] The conceptual model for analysing audit risk as a part of audit production is presented in Figure 4.1 and it denotes that, in conceptual terms, the existence of an internal audit department and the timeliness of auditor reporting are expected to have an effect on auditors' reliance on auditees' internal controls, the related auditors' assessments of control risk and the resulting audit effort.

The rationale behind the proposed significance of an internal audit department on audit production is the fact that an external auditor ordinarily has a close working relationship with auditee's internal auditors. From the perspective of the external auditor, the internal auditor is a component of the auditee's control environment. The work of the internal auditor in conducting tests of control is likely to influence the nature, timing and extent of external auditor's audit procedures. Where reliance is placed by external auditors on work and findings of internal auditors, the control risk is reduced which leads to reduction in audit effort. This relationship is also promulgated in New Zealand Auditing Standard AS-604: Considering the Work of Internal Audit.

Therefore, it is plausible to expect that entities that have an internal audit function will incur less external audit effort. However, the existence of an internal audit department has not been frequently used in previous studies. Only Copley (1989) examines the association between the internal audit function and audit fees in public sector, and he finds no significant relationship. Due to the information about the existence and function of internal audit departments not being publicly available and readily observable, this study does not use the existence of internal audit department as a measure of auditor's reliance on auditee's internal control structure.

Timeliness of an audit report is a result of efficiency of audit production and it is affected by auditee's characteristics. Audit timeliness or audit report lag (ARL) has been researched in several previous studies (Ashton et al 1987, 1988, Newton and Ashton 1989, Bamber et al 1993, Knechel and Payne 2001). ARL has been found to be a function of auditee business risk, complexity and occurrence of non-routine events (Ashton et al 1987), auditee industry, existence

governance on financial reporting and auditing (Beasley 1996, Beasley et al 1999, Beasley et al 2000, Cohen and Hanno 2000, Cohen et al 2002), the effect of corporate governance on internal controls and audit production/effort is examined in this study. Corporate governance effectiveness is assessed through several board of directors characteristics and these are used to test H_2-H_5.

Fama (1980), Pfeffer (1981) and Fama and Jensen (1983) suggest that characteristics of the board of directors, such as size and board composition are good proxies for board effectiveness. The board of directors characteristics tested in this study are: board size, CEO/director duality, multiple directorships, and the existence of audit committees.

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of losses and a type of audit opinion (Ashton et al 1988), auditee size and audit firm approach (i.e. structured vs. non-structured approach) (Newton and Ashton 1989).

The conceptual model in this study (presented in Figure 4.1) assumes that the ARL or audit report timeliness has an effect on audit production as part of the auditor's assessment of auditee's internal controls effectiveness and the control risk. That is, although the ARL is a symptom of audit production effectiveness, prior research has shown that it is highly dependent on client characteristics, of which one characteristic is the ability and effectiveness of the auditee (including auditee's information system) to produce financial information in a timely manner. New Zealand Auditing Standard AS-302 points out that one of the matters that auditors are to consider when engaging in audits are auditees' regulatory and reporting requirements which encompass reporting deadlines.

For public sector entities in New Zealand, the audited financial statements are to be available within the maximum of five months of balance date. Historically, the long ARL in New Zealand public sector and a non-compliance with regulatory reporting requirements has been associated with entities not preparing financial statements for their audits in time. As a result in the 1999/2000 year, the Auditor General reported that the auditors of public sector entities have been encouraged to put additional pressure on those responsible for preparing the financial statements in the public sector, and where such auditors are unsuccessful in obtaining financial statements, that the Parliament is to be informed of the names of non-complying entities.

The Auditor General also ensured that auditors are prompt in completing audits (OAG Annual Report 1999-2000). As a result of these efforts the number of audits and audit reports in arrears has been reduced from 1,038 in 1988 to 646 in 1999/2000, 395 in 2000/2001, and 372 in 2002/2003 (OAG Annual Reports 1999-2003). Therefore, it is a plausible assumption, at least in this study's setting, that auditors do reflect on and assess auditee's information system's ability to produce financial statements in a timely manner and that ARL is at least partly a result of auditee's ability to produce financial statements in auditable form by the balance date. However, there is very little variation in the ARL for the public sector corporate entities under observation in this study. Any differences are largely industry related and thus captured by the industry variables included in the model.

The size of the board is measured by the number of directors on the board and it is denoted as TOT_DIR. Whether the CEO is also a director on the board is measured by an indicator variable, CEO_DIR, that is equal to 1 if he/she is a board member and 0 otherwise. This is consistent with previous research in board composition (Pound 1988, Beattye and Zayack 1994, Brickley, Coles and Jerrell 1997, Cyert et al. 1997, Core et al. 1999, Cahan et al 2000, Adams and Mehran 2002). Busy directors are identified as those who have three or more directorships (Fama 1980, Fama & Jensen 1983, Core et al 1999, Cahan et al 2000). BUSY_DIR is measured as a proportion of busy directors on the board.

The existence of an audit committee, as a subcommittee of the board, is denoted as ADT_CMTE and is measured using an indicator variable equal to 1 if there is an audit committee or 0 otherwise (Bradbury 1990, Cahan et al 2000, Xie et al 2001).

Based on hypotheses (H_2–H_5) a positive relationship is expected between TOT_DIR, BUSY_DIR and CEO_DIR and audit effort measured in actual audit hours AU_HRS (the dependent variable). A negative relationship is expected between ADT_CMTE and AU_HRS.

5.5 Control Variables

Previous research in audit production (O'Keefe et al 1994, Stein et al 1994, Hackenbrack and Knechel 1997, Davis, Ricchiute and Trompeter 1993) provides evidence that there are other factors that have significant power in explaining audit effort. Based on O'Keefe et al (1994) and conceptual model in Figure 4.1, several control variables are introduced in this study and discussed below.

5.5.1 Client Size

Client size has been used in prior research to explain both audit fees and audit effort/hours and has been found to have a significant explanatory power. Previous studies provide evidence that client size alone explains more than 50 percent of the cross-sectional variation in audit fees and audit hours. Two main measures of client size were commonly used in prior studies.

Total assets are used by Palmrose (1989), O'Keefe et al (1994) and Hackenbrack and Knechel (1997). These studies find significant positive relationship.[5] Another measure of size used in prior studies is revenue (turnover). Maher et al (1992) and Chan et al (1993) propose that turnover (sales) is a better measure of size due to differences in age profile of assets and/or accounting policies of auditees.

Firth (1985) uses total assets, sales, net profit, net assets and current assets and finds they all have high explanatory power. Although total assets are a more common measure of client size than total revenue, this study uses both total revenue (REV) and total assets (ASSETS) to measure client size. A positive relationship between REV and AU_HRS and ASSETS and AU_HRS is expected.

5.5.2 Client Complexity

Audit effort is expected to increase in client complexity. One measure of complexity is the number of subsidiaries of the client (Simunic 1980, Firth 1985, Hackenbrack and Knechel 1997). This study labels number of subsidiaries as SUBS, and since a larger number of subsidiaries requires a higher audit effort, a positive relation between SUBS and AU_HRS is predicted.

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[5] Simunic (1980) uses a natural log transformation to address the non-linearity of the relationship between total assets and fees.

Another measure of complexity used in previous studies is the ratio of receivables and inventory to total assets (Simunic 1980, Firth 1985, Simon 1985, Francis and Simon 1987, Simon and Francis 1988, Francis and Stokes 1986, Maher et al 1992, Johnson et al. 1995). This ratio is that ensuring accuracy and recoverability of inventory and receivables involves complex audit procedures. I label the percentage of total assets held in inventory and receivables as INVREC. The coefficient for INVREC is expected to be positive.[6]

5.5.3 Audit Risk

Political risk, as explained in Chapter 4 is expected to affect audit risk and audit effort. However, various other factors (as per Figure 4.1) can also affect audit risk.

Prior research in the area of audit effort and audit fees (e.g., Simunic 1980, Firth 1985, Palmrose 1989, Wallace 1989, Chan et al 1993, Davis et al 1993, O'Keefe et al 1994, Pong and Whittington 1994, Hackenbrack and Knechel 1997) hypothesise that there is an association between audit effort and audit risk. The hypothesis is that, *a priori*, higher audit risk results in more audit testing.

However, audit risk has been one of the hardest variables to measure in the audit effort and audit fee models, and the majority of previous studies struggle to find proxies for audit risk that show any significance. This is largely due to the fact that audit risk, which reflects the nature of the business of the client's enterprise

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[6] Year-end indicators (busy vs. non busy season) is used by Copley (1989), Rubin (1988) and Palmrose (1986) for fee studies as complexity measure. Palmrose (1986) investigates the year-end indicator as a possible fee discount or premium factor. These previous studies find a positive significant effect of year-end on audit fees/hours. This study does not use a year-end indicator as public sector corporate entities in New Zealand do not have a degree of freedom in when to report and audit their results. The reporting deadlines are predetermined by the OAG and strictly adhered to. A June year-end is the predominant balance date for public sector entities in New Zealand, and therefore almost all public sector audits are performed in the "busy" period (i.e., between 30 June and 31 December).

and the control environment instituted by the client, is difficult to measure directly. That is, measures that explain audit risk as perceived by the auditor (those may include subjective judgements as to the integrity of senior management and assessments of auditee's internal control strength) are usually not available. The only study that attempts to the auditor's assessment of risk more directly is O'Keefe et al (1994). They use a survey instrument to measure the auditor's assessment of inherent risk.

In the absence of better and more direct measures of audit risk, a number of alternative measures are used by prior researchers and the choice of these measures largely depends on their perceived relevance and on data availability. The measures that have generally been available in previous research for measuring audit business or inherent risk are concentrated around measuring the probability of auditee business failure. These can be classified in two major categories: indebtedness measures of the client (mainly focusing on balance sheet measures of financial risk such as debt/equity ratio) and measures of the client's profitability.

Auditors dealing with an audit client who is facing financial pressure are likely to extend the scope of the audit work (by focusing the audit effort on questions regarding assets' valuation, the status of the client as a going concern, cash flow forecasts, possible breaches of loan covenants, etc.) in order to minimise the likelihood of material misstatements in the financial statements and also to control the potential legal liability arising from the auditee's financial failure.

The level of indebtedness (leverage) has been used in prior studies as an indicator of the probability of business failure. Higher leverage indicates to auditors a higher risk of the client going bankrupt, and that leads to greater risk that management might attempt to misrepresent accounts or transactions in the financial statements. Therefore, when leverage is high, the auditor will have

incentive to spend more effort on such audits in order to produce a more "defensible" audit.

O'Keefe et al (1994) use the book value of the client's liabilities divided by total assets. They find a significant positive relationship with audit effort. Public sector studies by Baber et al (1987), Ward et al (1994), Rubin (1988) and Bandyopadhyay and Kao (2000) use long-term liabilities outstanding at fiscal year end or debt per capita (for municipalities) instead of the debt/equity ratio. They find positive significant relationships between indebtedness and audit fees. Following O'Keefe et al (1994), this study uses total liabilities as a percentage of total assets (LEVGE) to measure indebtedness.

Another measure of profitability and of potential business failure is a loss by the client. Client loss is used as an indicator of financial distress by Simunic (1980), Firth (1985), Francis (1984), Francis and Stokes (1986), Johnson et al (1995). Only Simunic (1980) finds a significant positive effect on audit fees.[7] Following Simunic (1980), this study uses an indicator variable (LOSS) that is coded 1 if the entity had a net loss for the period and 0 otherwise.

Positive relationships between LEVGE and audit hours (AU_HRS) and LOSS and audit hours (AU_HRS) are expected.[8]

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[7] There is a possibility that other studies find no significant relationship because audit fees are not risk adjusted since they can be used by audit firms as a strategic tool in achieving a competitive position in the audit market (Palmrose 1986, Wallace 1989).

[8] Another variable that has been used in prior research to capture audit risk (also presented in Figure 4.1) is the presence of a qualified audit report. Simunic (1980) proposes that qualified audit opinions (or reports) are issued when there are significant uncertainties that may result in future losses to the auditee. He proposes that the increase in such uncertainties leads to a greater audit effort for auditors to support audit opinion and to control legal liability. Simunic (1980) finds a significant positive effect of the qualified audit report on audit fees. Subsequent studies of audit fees in New Zealand, such as Firth (1985) and Johnson et al (1995), do not find evidence of a relationship between audit report qualification or modification and audit fees. Copley (1989) investigates the effect of the qualified audit opinion on US Government entities' audit fees and finds insignificant positive coefficients.

The remaining part of the audit risk model (as outlined in Figure 4.1) that has not been addressed so far is the detection risk. Detection risk is the risk that any remaining misstatements in the financial statements will not be detected by the auditor's substantive procedure (AS-402, paragraph 6).

Detection risk is a function of the effectiveness of audit procedures and their application by the auditor, i.e., the auditor's performance quality. Previous research on audit quality (Dopuch and Simunic 1980, De Angelo 1981, Palmrose 1986, Francis and Wilson 1988, De Fond 1992) finds evidence of systematic relationship between audit firm size (absolute size and relative market share) and demand for higher audit quality as well as audit fees. Therefore, the literature uses audit firm size as a proxy for audit quality where large audit firms (Big 8/5) are treated as a homogeneous group producing higher quality audits and small (Non-Big 8/5) auditors are treated as a homogeneous group producing lower quality audits.

Although a majority of entities in this study are audited by Audit NZ, in line with prior research, this study uses an indicator variable (ADTR_TYP) that is coded 1 if the auditor is one of the Big 5 and 0 otherwise.

Another aspect of audit quality found in the literature is auditor industry specialisation (Palmrose 1986, Craswell and Taylor 1991, Craswell et al 1995, De Fond et al 2000, Francis et al 1999). Previous studies examine audit firm specialisation as quality surrogate and use auditor's market share to measure specialisation.

Prior audit production studies have not included audit report qualification as a determinant of audit production. Audit report qualification was considered in this study; however, there are only three audit report qualifications in the period under observation. These are Healthcare Otago (1998, 1999) and Terralink New Zealand (1998). Therefore, the variable was omitted.

In general, the identification of an industry specialist is difficult as there is no established definition of a "specialist". Australian researchers, such as Craswell and Taylor (1991), Craswell, Francis and Taylor (1995), Ritson et al (1997) and Ferguson and Stokes (2002), define industry specialists as an audit firm that has a market share equal to or greater than 10 percent in an industry that has 30 or more observations. However, the 10 percent rule is arbitrary and is further complicated by various choices for the measurement base. Two measures have been previously used: the percentage of companies audited and the auditor's firm share of total industry audit fees.

Craswell and Taylor (1991) find that their results vary significantly depending on the definition of industry specialist that is used. Subsequently, Craswell et al (1995) redefine auditor industry specialisation using 20 percent market share rule. Ritson et al (1997) and Matthews et al (1997) in their studies of Australian audit market also use the 20 percent cut-off in researching audit specialist.

This study uses Craswell at al's (1995) definition of industry specialist where the audit firm is assigned value equal to 1 if it has a share of 20 percent or more of the industry audit fees and 0 otherwise. Because a high quality or specialist auditor should be able to perform the audit more efficiently, it is expected in this study that there will be a negative relation between ADTR_TYP and AU_HRS and between SPCLST and AU_HRS.[9]

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[9] Ferguson, Francis and Stokes (2003) more recently develop a new definition of the industry specialist auditor. They propose and provide evidence that there are two levels of auditors' industry expertise: the "firm-wide" and the "office-level" expertise. Under the "firm-wide" definition, industry expertise is a firm-wide phenomenon and therefore a firm-wide measure of industry expertise is relevant for the study of auditing and audit pricing. Under the "office-level" definition, industry expertise resides in the unique human capital in each auditor's office, and as a consequence an office-level measure of industry expertise is also relevant for the study of auditing.

Ferguson et al (2003) then use Big 5 industry rankings based on market shares within each industry to define industry experts. Their industry rankings are based on the auditor's firm's share of the total fees (measured nationally for the "firm-wide" definition and measured for each industry per specific city for the "office-level" definition). They then use the firm's shares to compare the top-ranked firm in the industry with all other Big 5 auditors, so to identify (firm-wide and office (city)-specific) industry leaders. They do so to test for top two and then top three firms in the industry. Their tests then provide evidence that there is an average 24 percent premium in

5.5.4 Learning

Based on O'Keefe et al (1994) and following the model in Figure 4.1, this study also uses variables to capture auditor learning and knowledge spillovers.

A learning curve in auditing suggests that new auditors will incur more hours to do an audit than auditors who have done the audit for several years. The potential for auditor learning has lead to the theory of lowballing on new engagements (De Angelo 1981). Previous research on price-cutting or lowballing (Simon and Francis 1988) finds some evidence of audit fee discounting in early audit engagements. However, there is no conclusive evidence from audit production studies that learning curves in auditing actually exist.

O'Keefe et al (1994) imply that the best way to establish the existence of learning curves in auditing, where audit technologies are constant, is through longitudinal analysis. However, in the absence of longitudinal data, they use cross-sectional analysis of clients who retained their auditor for varying number of years. O'Keefe et al (1994) find that audit hours do not decline with the length of an auditor's tenure.

To examine whether new auditors face a learning curve, and because I have longitudinal data, I include two indicator variables. SWTCH_1 is equal to 1 if the client switched auditors in the current year and 0 otherwise. SWITCH_2 is

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the audit fee, associated with industry expertise when the auditor is both city-specific industry specialist leader and one of the top two firms nationally in the industry. They also find that the top two firms nationally do not earn a specialisation premium in cities where they are not also a city leader. They conclude that market perception and pricing of industry specialisation in Australia is primarily based on office-level industry specialisation and leadership.

The Ferguson et al (2003) "firm-wide" definition and rankings of industry specialist was also used as an alternative definition of industry specialist in this study. However, the results were qualitatively unchanged and only the results using Craswell et al's (1995) industry specialisation definition (share of 20 percent or more of the industry audit fees) are reported in chapter 6.

equal to 1 if the client switched auditors two years or more ago and 0 otherwise. As a new auditor would be expected to incur more hours, the coefficient for SWTCH_1 and SWTCH_2 should be positive. Further, it is expected that if learning is important, the coefficient for SWTCH_1 will exceed the coefficient for SWTCH2.

5.5.5 *Knowledge Spillover*

The impact of other services provided by the auditor firm on auditing pricing and audit effort (or so called "knowledge spillover effect") has been a source of numerous studies (Simunic 1984, Simon and Francis 1988, Palmrose 1996, Turpen 1990, Davis et al 1993, O'Keefe et al 1994 and Hackenbrack and Knechel 1997). A spillover effect would suggest fewer audit hours since the auditor has some knowledge about the business and can use this to conduct the audit more efficiently.

The majority of previous studies use non-audit services fee data and audit fee data to detect any presence of the knowledge spillover effect (Simunic 1984, Palmrose 1986, Barkess and Simnett 1994, Ezzamel et al 1999, Firth 1997, Bell et al 2001, Li et al 2003,Whisenant et al 2003). However, they generally find a positive relationship between audit fees and fees for non-audit services. This has been explained by the association between advisory or non-audit services with company-specific problems or changes rather than with audit knowledge spillover effect (Firth 1997, 2002). In other words, the empirical evidence suggests that the same conditions or problems within the company that may create the need for non-audit services may also create complexities for the audit and, consequently, increase audit fees.

Davis et al (1993), O'Keefe et al (1994) and Hackenbrack and Knechel (1997) use actual audit hours to assess the knowledge spillover on audit effort but,

again, find no evidence of knowledge spillover from other services (management consulting/tax) on audit effort.

Consistent with previous studies, this study uses non-audit services fees as a percentage of audit fees for a client, denoted as OTHER_FEE, to capture the effect of non-audit services on audit effort. In this study, the relationship between other services (OTHER_FEE) and audit hours (AU_HRS) is expected to be negative. Thus, the production and provision of other (non-audit) services to the client is assumed to reduce audit set-up costs or make the audit production process more efficient. Therefore, the actual audit hours are expected to decrease. However, in line with findings of previous studies (both audit fees and audit production studies), a positive relationship between other services (OTHER_FEE) and audit hours (AU_HRS) will not be totally unexpected or unusual.

5.5.6 Industry Variables

Previous studies in audit production (O'Keefe et al. 1994, Stein and Simunic 1994, Hackenbrack and Knechel 1997) consider industry specific production differences. Stein and Simunic (1994) caution that studies that include data from several industries should consider heterogeneity issues. Stein and Simunic (1994) and Hackenbrack and Knechel (1997) find that audits of financial entities consume fewer audit hours than audits of non-financial entities and require different sets of variables for more in-depth examination of audit effort expended on their audits. Many audit fee studies (Simunic 1980, 1984, Turpen 1990, Palmrose 1986, 1989, Pearson and Trompeter 1994) include industry-related indicator variables and find evidence of industry-specific fee differences. Palmrose (1989) finds significant negative relationships between audit hours and membership in either the electric/utilities industry or the savings and loan (i.e., finance/banking) industry. Stein and Simunic (1994) also find that internal

control quality and auditor's reliance on internal auditors varies in different industries and affects the production of financial audits.[10]

Heterogeneity issues are not as severe in this study as they are in Palmrose (1989) and Stein et al (1994) as there are no financial institutions in the sample. However, to explore the possible effect of industry on audit effort, I use the industry classification used by Cahan et al (2000) (i.e., energy, airports, health, ports, research and other). Indicator variables (IND_AIRP, IND_HLTH, IND_PORT, IND_RES, IND_OTHER) are included for each industry group except energy (which is represented by the intercept). No signs are assigned to industry indicators.

5.6 Summary and Conclusion

This chapter describes the research design for testing the hypotheses developed in Chapter 4. It begins by discussing the sample selection process. This is followed by a discussion of the functional forms for testing the relation between client characteristics and audit hours. The model used to test the hypothesis is specified in section 5.2. The dependent variable is reviewed in section 5.3. Section 5.4 contains a discussion of variables used to test the hypotheses and the measurement issues surrounding those variables. Finally, section 5.5 discusses control variables and additional variables used to study auditor learning and knowledge spillover effects on actual audit effort.

The next chapter, Chapter 6, analyses the results derived from testing the model specified and described in Chapter 5.

[10] Auditors in practice clearly recognise the existence of industry differences and the need for industry specialisation (Stein and Simunic, 1994).

CHAPTER 6

ANALYSIS OF RESULTS

6.0 INTRODUCTION

This chapter analyses the results derived from testing the hypothesised relations between client characteristics and actual audit hours in New Zealand public sector entities. Section 6.1 reports the descriptive statistics while results for the regression of audit hours on political risk, board of directors characteristics and the control variables are discussed in Section 6.2. Robustness tests and additional analyses are discussed in sections 6.3 and 6.4. This is followed by a summary and conclusion in Section 6.5.

6.1 DESCRIPTIVE STATISTICS

Table 6.1 presents descriptive statistics for the whole sample of 275 observations.

The mean (median) audit fee is $59,000 ($40,000) and the mean (median) amount of audit work is 579 (473) hours. The total number of press mentions varies from 0 to 462 mentions in a financial year and the mean (median) is 24.8 (7.0). In terms of the board of directors effectiveness measures, the mean (median) size of a board is 6.1 (6.0) directors. 53 (50) percent of directors are busy, and 54 percent of boards have audit committees. Only 9 percent of directors have a dual role of a CEO and a board member. These board-related descriptive statistics are consistent with those reported by Cahan et al (2000). The mean (median) non-audit fee is 41 (13) percent of the audit fee. The mean (median) client size measured by total revenue is $126 million ($44 million).

The number of subsidiaries operated by the client varies from 0 to 24 subsidiaries with a mean (median) of 2.3 (1.0) subsidiaries. The measures of client indebtedness and profitability show that the mean (median) leverage ratio is 0.39 (0.36), but this varies from 0.01 to 2.52. 17 percent of total company/year observations had a loss during the financial period.

Four percent of audit clients switched their auditor in the year of observation and another four percent switched in a prior year. 45 percent of audits under observation were conducted by Big 5 audit firms (of the remainder 94 percent were audited by Audit New Zealand) and 61 percent were performed by an industry specialist.

The comparison between the descriptive statistics of this study and the previous private sector-based studies in the US reveals that even though the sample size and the average audit hours worked on the audit seem to be comparable, the audit fees and the size of client firms under observation in this study are clearly lower. Macro-economic factors would contribute to differences in audit fees in different countries. Taylor and Simon (1999) reported that macro-economic factors (such as liability regimen, financial statement disclosure requirements and other idiosyncratic regulations) were significant determinants of audit fees in their study of audit fees from 20 countries.

A correlation matrix, containing Pearson correlations for independent variables, is reported in Table 6.2. Based on the Pearson correlation coefficients, the highest correlation is 0.893 between audit hours and audit fees. Thus, (not surprisingly) audit fees and audit hours are closely related. However, since conceptually audit hours and audit fees represent different phenomena, I use both audit hours and audit fees as a dependent variables in my tests.

TABLE 6.1

DESCRIPTIVE STATISTICS FOR A SAMPLE OF 275 PUBLIC SECTOR CORPORATE ENTITY AUDITS BETWEEN 1998 AND 2000 WITH MORE THAN 200 AUDIT HOURS

Continuous Variables		Mean	Median	Std. Dev.	Minimum	Maximum
AU_HRS	Audit hours	579	473	386	202	3,037
AU_FEE	Audit fee ($000)	59	40	58	10	440
TOT_PRES	Total number of press mentions during the financial period	24.8	7.0	52.8	0.0	462.0
TOT_DR	Total number of directors	6.1	6.0	1.2	3.0	9.0
BUSY_DR	Proportion of busy directors (>3 directorships)	0.53	0.50	0.27	0.00	1.00
OTHR_FEE	Proportion of non-audit fees to audit fees	0.41	0.13	0.82	0.00	6.08
REV	Total revenue ($000)	126,253	43,688	256,746	2,697	2,287,275
SUBS	Number of subsidiaries	2.3	1.0	3.6	0.0	24.0
INVREC	(Inventory+Receivables)/Total Assets	0.13	0.11	0.12	0.00	0.82
LEVGE	Leverage (Total Liabilities/Total Assets)	0.39	0.36	0.27	0.01	2.52
Indicator Variables				**Proportion of cases equal to 1**		
LOSS	Company made a loss during the financial period			0.17		
LISTED	Company is listed on NZSE			0.05		
ADT_CMTE	Company has an audit committee			0.53		
CEO_DR	CEO is director			0.09		
ADTR_TYP	Auditor is one of the Big Five			0.45		
SPCLST	Auditor is an industry specialist (>20% share of industry audit fees)			0.61		
SWTCH_1	Auditor switched in past year			0.04		
SWTCH_2	Auditor switched two years ago			0.04		
IND_AIRP	Airport			0.03		
IND_HLTH	Health service provider			0.22		
IND_ENGY	Energy company			0.32		
IND_PORT	Port			0.12		
IND_RES	Crown Research Institute			0.08		
IND_OTHR	Other			0.23		

TABLE 6.2

PEARSON CORRELATIONS

	AU_FEE	AU_HRS	TOT_PRES	TOT_DR	BUSY_DR	ADT_CMTE	CEO_DR	REV	SUBS	INVREC	LEVGE	LOSS	ADTR_TYP	SPCLST	SWTCH_1	SWTCH_2	OTHR_FEE	LISTED
AU_FEE	1.000																	
AU_HRS	0.893**	1.000																
TOT_PRES	0.656**	0.634**	1.000															
TOT_DR	0.306**	0.318**	0.259**	1.000														
BUSY_DR	0.332**	0.245**	0.163*	0.116	1.000													
ADT_CMTE	0.269**	0.259**	0.218**	0.400**	0.162*	1.000												
CEO_DR	-0.046	-0.035	0.043	0.006	0.214**	0.058	1.000											
REV	0.699**	0.681**	0.765**	0.350**	0.201**	0.243**	-0.049	1.000										
SUBS	0.750**	0.623**	0.335**	0.171**	0.295**	0.180**	0.054	0.347**	1.000									
INVREC	0.012	0.071	0.058	-0.081	-0.155*	-0.089	-0.203**	0.024	-0.052	1.000								
LEVGE	0.283**	0.302**	0.368**	0.229**	0.175*	0.135*	-0.133*	0.505**	-0.037	0.383**	1.000							
LOSS	-0.056	-0.005	-0.083	-0.064	-0.024	-0.048	-0.108	-0.054	-0.083	0.203**	0.269**	1.000						
ADTR_TYP	0.357**	0.231**	0.230**	0.194**	0.204**	0.098	0.033	0.243**	0.311**	-0.132*	-0.028	-0.086	1.000					
SPCLST	-0.177**	-0.142*	-0.191**	0.042	-0.077	0.087	0.194**	-0.145*	-0.116	-0.089	-0.099	-0.026	-0.347**	1.000				
SWTCH_1	0.027	0.001	-0.046	0.034	0.101	0.022	-0.003	-0.023	0.064	-0.081	-0.033	-0.004	0.166**	-0.231**	1.000			
SWTCH_2	0.041	0.120*	-0.004	0.021	0.066	0.043	0.003	0.091	0.028	-0.062	-0.007	0.004	0.115	-0.027	-0.044	1.000		
OTHR_FEE	0.487**	0.313**	0.216**	0.146*	0.259**	0.184**	0.017	0.340**	0.478**	-0.176**	0.136*	-0.016	0.349**	-0.035	-0.001	0.000	1.000	
LISTED	-0.010	-0.034	0.058	0.176**	0.037	0.175**	0.113	-0.036	0.008	-0.095	-0.032	-0.102	0.213**	0.107	-0.048	-0.045	0.142*	1.000

** Correlation is significant at the .01 level (two-tailed).

* Correlation is significant at the .05 level (two-tailed).

Among the independent variables, the highest correlation is between TOT_PRESS and REV. In general terms, large public sector entities and those involved in media themselves (such as TVNZ) are more likely to be mentioned in the press.[1] It is worth noting that three of the four board variables (all except CEO_DR) and LEVGE, ADTR_TYP and OTHER_FEE are positively and significantly correlated with REV while SPCLST is negatively and significantly related to REV.

Since other explanatory variables show some degree of correlation, multivariate analyses are more appropriate than interpreting the bivariate correlations.

Table 6.3 presents results of tests for multicollinearity, i.e. variance inflation factors. Variance inflation factors range from 1.11 to 4.24. Kennedy (1985) suggests that a variance inflation factor greater than 10 indicates harmful collinearity. Since all variance inflation factors are well below 10, multicollinearity does not appear to be a problem here.

[1] The finding on the strong correlation between press mentions and company size is consistent with findings of a recent study by Miller (2003) in which he investigates the press' role as a watchdog for accounting fraud. He finds that press is more likely to write an article about the firm that is large in size and has large market value of equity. This is explained in Miller's study by larger firms having richer information environments which reduces the information cost for the press. The larger firm size and the higher distribution of equity also indicate a large number of potential article readers, which in turn indicates the higher press' readership and higher circulation.

TABLE 6.3

TEST FOR MULTICOLLINEARITY: VARIANCE INFLATION FACTORS

	Column A Full Model	Column B Reduced Model
Test Variables		
Total number of press mentions during the financial period (TOT_PRES)	2.23	2.07
Total number of directors (TOT_DR)	1.79	1.78
Proportion of busy directors (>3 directorships) (BUSY_DR)	1.39	
Company has an audit committee (ADT_CMTE)	1.41	1.37
CEO is director (CEO_DR)	1.27	1.19
Control Variables		
Revenue ln(REV)	4.24	3.60
Number of subsidiaries (SUBS)	1.98	1.90
(Inventory+Receivables)/Total Assets (INVREC)	1.51	1.48
Leverage (Total Liabilities/Total Assets) (LEVGE)	2.17	2.03
Company made a loss during the financial period (LOSS)	1.45	1.32
Auditor type - one of the Big Five (ADTR_TYP)	1.88	1.84
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	2.51	2.50
Auditor switched in past year (SWTCH_1)	1.26	1.16
Auditor switched two years ago (SWTCH_2)	1.24	1.11
Proportion of non-audit fees to audit fees (OTHR_FEE)	1.73	1.67
Company is listed on NZSE (LISTED)	1.77	1.61
Industry - Airport (IND_AIRP)	1.27	1.26
Industry - Health service provider (IND_HLTH)	2.82	2.83
Industry - Port (IND_PORT)	2.51	2.25
Industry - Crown Research Institute (IND_RES)	1.53	1.44
Industry - Other (IND_OTHR)	2.66	2.69

6.2 REGRESSION RESULTS

The next two subsections (section 6.2.1. and 6.2.2) analyse results from regression models examining relations between client characteristics and audit hours and client characteristics and audit fees, respectively. They provide empirical evidence to examine the predicted relations in hypotheses H1 – H5.

6.2.1 Association Between Client Characteristics and Audit Hours

The results for the OLS regression analyses of the association between client characteristics and audit hours are presented in Table 6.4.

Column A shows the results for the full model. Column B shows the results for a reduced model where BUSY_DR is omitted. Because of data limitations, BUSY_DR was only available for 220 entity/year observations. Therefore,

TABLE 6.4

OLS REGRESSION RESULTS FOR AUDIT HOURS

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (1.85) **	0.000 (2.34) **
Total number of directors (TOT_DR)	+	0.018 (1.77) **	0.016 (1.88) **
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.038 (-0.96)	
Company has an audit committee (ADT_CMTE)	-	-0.017 (-0.78)	-0.001 (-0.05)
CEO is director (CEO_DR)	+	-0.022 (-0.67)	-0.025 (-0.85)
Control Variables			
Revenue *ln*(REV)	+	0.284 (8.63) ***	0.262 (9.69) ***
Number of subsidiaries (SUBS)	+	0.015 (4.67) ***	0.014 (4.69) ***
(Inventory + Receivables)/Total Assets (INVREC)	+	-0.049 (-0.55)	-0.045 (-0.57)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.003 (0.07)	0.019 (0.46)
Company made a loss during the financial period (LOSS)	+	0.085 (2.84) ***	0.061 (2.60) ***
Auditor is one of the Big Five (ADTR_TYP)	-	-0.035 (-1.44) *	-0.038 (-1.82) **
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	-	-0.029 (-1.00)	-0.025 (-0.99)
Auditor switched in past year (SWTCH_1)	+	-0.070 (-1.47) *	-0.048 (-1.16)
Auditor switched two years ago (SWTCH_2)	+	-0.039 (-0.69)	0.053 (1.28)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.033 (-2.45) ***	-0.037 (-3.03) ***
Company is listed on NZSE (LISTED)	+	-0.009 (-0.17)	0.005 (0.10)
Industry - Airport (IND_AIRP)		-0.100 (-1.87) **	-0.107 (-2.19) **
Industry - Health service provider (IND_HLTH)		-0.110 (-2.80) ***	-0.098 (-3.10) ***
Industry – Port (IND_PORT)		-0.064 (-1.58) *	-0.072 (-2.05) **
Industry - Crown Research Institute (IND_RES)		-0.087 (-2.33) **	-0.087 (-2.59) ***
Industry - Other (IND_OTHR)		-0.049 (-1.36) *	-0.037 (-1.23)
Intercept		1.335	1.407
N		214	275
Adj. R^2		0.682	0.661
F statistic (two-tailed test)		22.73 ***	27.75 ***

TABLE 6.4 – CONTINUED

Significance levels are one-tailed except for the industry variables.	
***	Significant at the .01 level.
**	Significant at the .05 level.
*	Significant at the .1 level.

column A is based on 220 observations and column B is based on 274 observations. Since the results are qualitatively similar, only column A results are discussed in depth.

Based on column A, the overall model is significant (F-statistics = 22.73) and the adjusted R^2 is 68.2 percent. This compares with O'Keefe et al (1994) who find an R^2 of 78-81 percent (depending on the staff rank, from audit staff member to audit partner) for their audit hours model.

H1 predicts that audit effort/hours will increase when client's media exposure is high. This prediction is supported as TOT_PRES is significant at the 0.05 level based on a one-tailed test. It has a positive coefficient which suggests that auditors do spend more hours auditing entities with high political exposure compared to those with less political exposure. This finding supports the view that political risk affects audit risk, as outlined in the audit risk model, and ultimately affects the audit effort. Moreover, it provides the first support for the political cost hypothesis as applied to an audit production context.

H2-H5 predict that board of directors characteristics will have an effect on audit effort/hours. Results related to the board variables are weak. Of the four board variables, only TOT_DR is significant. The coefficient for TOT_DR is positive as expected which indicates that entities with larger boards (after controlling for firm size and other factors), presumably because they are less effective, require more audit effort in terms of hours. This finding supports H2. However, BUSY_DR, CEO_DR and ADT_CMTE are not significant. Thus, H3-H5 are not supported. The finding that BUSY_DR, CEO_DR and ADT_CMTE are not significant is consistent with Cohen et al (2002) and Goodwin and Seow (2002)

who find that auditors place more significance on the audit internal control functions than corporate governance mechanisms.

Further, as proposed by O'Keefe et al (1994), Hackenbrack and Knechel (1997) and Mock et al (1999), auditors are not always efficient in utilising their knowledge about clients' internal control strengths when designing their audit procedures. This apparent lack of association between control reliance, including reliance on clients' corporate governance mechanisms and audit effort, has in fact been one of the major criticisms by US Public Oversight Board of audit approach designs currently used in US.

The analysis of the associations between the control variables and audit effort shows that REV and SUBS are both highly significant and correctly signed. Consistent with prior research, large entities and entities with numerous subsidiaries require more audit effort.[2] However, unexpectedly INVREC is not significant. Menon and Williams (2001) in a study on long-term trends in audit fees find that the magnitude of audit fee model coefficient for accounts receivable and inventory has declined over the last 20 years. They conclude that this decline is largely due to audit procedures productivity improvements through increasing

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[2] Most previous audit production studies (O'Keefe et al 1994, Stein et al 1994, Hackenbrack and Knechel 1997, Dopuch et al 2003) as well as audit fee studies (Simunic 1980, Firth 1985, Johnson et al 1995) use total assets as measure of auditee size. However, Chan et al (1993) provide evidence that revenue or turnover is a better explanatory variable. They argue that asset measures vary significantly between otherwise similar companies. This is because of differences in age profile of assets or because of choice of accounting policies (regarding revaluations and intangibles treatments). These variations can give rise to significant confounding effects. A further problem in using total assets as a size measure is that there can be an interaction between size and complexity measures where complexity measure incorporates total assets in the calculation (such as inventory and or receivables to total assets ratios). Finally, Chan et al (1993) argue that revenue/turnover is a better explanatory variable when auditors employ a transaction based rather than balance sheet oriented approach to auditing. Given the variation and the nature and quality of assets in this study, particularly fixed assets, Chan et al's (1993) reasoning seems reasonable and revenue is used as the appropriate measure for auditee size in this study. However, I also ran the model with total assets and the results were qualitatively the same.

computerisation and other audit technology advances. This may explain why INVREC is not significant here.

Other inherent risk factors also show mixed results. Leverage (LEVGE) is not significant. While contrary to expectations, one explanation is that in the public sector the threat of insolvency and bankruptcy is reduced as a result of implicit government guarantees (Berkman and Bradbury 1998). On the other hand, LOSS is significant at the 0.01 level with a positive coefficient. Thus, it appears that similar to the private sector, losses increase inherent risk and require an increase in audit effort. In the case of state owned corporate entities, due to the absence of traded equity, the relative performance of their managers is harder to assess. Generally, management's remuneration is linked to accounting measures of performance (New Zealand Business Round Table 1988). As a result, managers in entities incurring losses may have added incentive to manage earnings upward, and as a result, more diligence and effort is required on the part of the auditor.

The analysis of the variables that capture detection risk shows that neither detection risk variables (ADTR_TYP, SPCLST) are significant. Because almost all entities are audited by a Big 5 firm or Audit New Zealand (only nine entity/year observations had non-Big 5/non-Audit New Zealand auditors), the significant and negative coefficient for ADTR_TYP suggests that the Big 5 audit firms are more efficient at conducting audits than Audit New Zealand. The insignificance of SPCLST suggests that the skills required to audit the public sector entities are fairly homogeneous as it does not appear that specialists have an efficiency advantage compared to their non-specialist counterparts. This is consistent with OAG tendering, selecting and auditor appointment policies (as discussed in chapter 3), which restricts access to large New Zealand public sector audits for other than higher quality auditors.

Auditor learning is examined through SWTCH _1 and SWTCH _2 variables. SWTCH_1 is significant at the 0.1 percent level but has a negative coefficient contrary to expectations. SWTCH_2 is not significant. While unexpected, these

findings are consistent with O'Keefe et al (1994) who find that audit hours do not decline with the audit tenure. This is explained by either audit hours being systematically underreported in the first year of an audit or by the possibility that the audit firm might fail to reach the target level of audit effort – and therefore, the target level of assurance – in the first years of their appointments. Further, Dopuch et al (2003) in the study of the effects of low-balling on audit effort find that price-cutting or low-balling has no impact on auditors' effort/hours and they propose that consequently it has no impact on audit quality. In this study, however, the negative coefficient on SWTCH_1 provides evidence that, at least in the New Zealand public sector auditing setting, the audit quality may be compromised in the initial engagement year.

Knowledge spillover is examined through the proportion of non-audit fees (OTHR_FEE) to audit fees. The proportion of non-audit fees (OTHR_FEE) to audit fees has a significant negative relationship with audit hours in this study, which confirms the notion of knowledge spillovers from non-audit services to auditing. This finding is not consistent with Davis et al (1993), O'Keefe et al (1994) and Hackenbrack and Knechel (1997). Previous studies used more detailed information on non-audit services (they had a detailed information about the proportion of consulting services vs. taxation services) than the current study. These previous studies find that management consulting services have a weak negative effect on audit effort while taxation services have the opposite effect.[3] Without more detailed information about the type of non-audit services provided to entities under observation, it is hard to make any further inferences of possible effects of non-audit services on audit effort. Nevertheless, the findings of the current study on knowledge spillovers add to our understanding of the interaction between audit and non-audit services in audit production.

[3] Dopuch et al (2003), however, claim that management consulting and tax services have no effect on audit hours in a mix of labour category. They conclude that non-audit services have purely a price effect on audit fees as they seem to increase auditors' bargaining and pricing power vis-à-vis the auditee.

Finally, regarding the analysis of effects that an industry might have on audit effort, of the five industry variables, three are significant with negative coefficients in the full model. The industry analysis in this study is benchmarked on the energy industry (the largest industry sector), i.e., the industry effect for firms in the energy industry are included in the intercept. The negative coefficients for airports, health providers, and research institutes suggest that these entities require less audit effort than energy firms. Given that the energy firms underwent a number of reforms during this period and were often subjected to public scrutiny (e.g., Mercury Energy as a result of the Auckland power failure in 1999), this finding makes intuitive sense. The findings of this study relating to industry effects are consistent with Palmrose (1986, 1989) and support findings of Stein et al (1994) who show clear industry differences in the production of audit services.

6.2.2 Association between client characteristics and audit fees

Because audit fees reflect pricing issues in addition to production issues, the model was re-run using the natural log of audit fees as the dependent variable. The results are shown in Table 6.5. Again, the focus is on the column A results, and I only discuss the column B results where relevant. For this model, the F-statistic is 49.89 and the adjusted R^2 is 82.8 percent. Similar to Table 6.4, REV and SUBS are the two variables with the most explanatory power.

Looking at the test variables, TOT_PRES is again significant which supports H1. That suggests that increases in audit effort/hours, as result of increases in political visibility, are passed onto the client through audit fees. It, therefore, appears that in the New Zealand public sector audit fees are risk adjusted when it comes to political risk. This finding extends Palmrose (1989) and more recently Niemi (2002) who provide conflicting evidence on audit risk and audit fees in private sector. While Palmrose (1989) concludes that audit fees are not risk adjusted, Niemi (2002) provides evidence that they are in Finland.

TOT_DIR is significant and positively signed but only at the 0.05 level in column B. This provides some additional support for H2. In addition, there is some

support for H3. Specifically, BUSY_DR is significant at the 0.05 level with a positive coefficient. This suggests that entities with more busy directors have higher fees. Because auditors do not spend more hours auditing entities with busy directors (i.e., BUSY_DR is not significant in Table 6.4, column A), this suggests that entities with busy directors are more likely to overpay for the audit. This might be because they do not have time to negotiate a better fee or because they have close relationships with certain audit firms as a result of their other directorships and are willing, consciously or unconsciously, to pay a higher audit fee. Audit fees are not related to CEO board membership or the existence of an audit committee. Therefore, H4 and H5 are not supported.

The results for ADTR_TYP, SPCLST, SWTCH_1, SWTCH_2, and OTHR_FEE are particularly interesting. Based on the prior research which predicts a Big 8/5 premium, an industry specialist premium and low-balling on initial engagements, positive coefficients were expected for ADTR_TYP and SPCLST and negative coefficients for SWTCH_1 and SWTCH_2.

In Table 6.5, ADTR_TYP is significant at the 0.01 level (0.05 level in column B) with a positive sign. This suggests that entities with a Big 5 auditor pay a fee premium. Because Big 5 auditors spend fewer hours doing the audit (i.e., ADTR_TYP is significant and negative in Table 6.3, column A), this suggests that the public sector entities are paying for the brand name of the Big 5 firms rather than a more intense audit effort. This finding is consistent with previous research on Big 8/5 fee premiums (e.g., Firth 1985) in private sector. Also, in column B of Table 6.5, I find support for an industry specialist premium (SPCLST is positive and significant at the 0.1level) and, in columns A and B, for knowledge spillovers (OTHR_FEE is negative and significant at the 0.05 and 0.01level). However, another interpretation for OTHR_FEE is that non-audit services cross-subsidise audit services. In column B, results provide some support for low-balling as both SWTCH_1 and SWTCH_2 are negative and significant.

TABLE 6.5

OLS REGRESSION RESULTS FOR AUDIT FEES

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (1.76) **	0.000 (2.04) **
Total number of directors (TOT_DR)	+	0.011 (1.16)	0.015 (1.79) **
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.064 (1.69) **	
Company has an audit committee (ADT_CMTE)	-	-0.001 (-0.04)	0.016 (0.92)
CEO is director (CEO_DR)	+	-0.011 (-0.34)	0.001 (0.03)
Control Variables			
Revenue *ln*(REV)	+	0.317 (10.02) ***	0.312 (12.08) ***
Number of subsidiaries (SUBS)	+	0.025 (8.01) ***	0.027 (9.47) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.124 (-1.45) *	-0.208 (-2.76) ***
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.025 (-0.58)	0.013 (0.33)
Company made a loss during the financial period (LOSS)	+	0.051 (1.77) **	0.046 (2.06) **
Auditor is one of the Big Five (ADTR_TYP)	+	0.081 (3.42) ***	0.080 (3.97) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.035 (1.25)	0.034 (1.40) *
Auditor switched in past year (SWTCH_1)	-	-0.050 (-1.09)	-0.057 (-1.45) *
Auditor switched two years ago (SWTCH_2)	-	-0.112 (-2.07) **	-0.104 (-2.63) ***
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.023 (-1.78) **	-0.028 (-2.38) ***
Company is listed on NZSE (LISTED)	+	0.026 (0.54)	0.016 (0.37)
Industry - Airport (IND_AIRP)		-0.105 (-2.04) **	-0.106 (-2.27) **
Industry - Health service provider (IND_HLTH)		-0.026 (-0.70)	-0.027 (-0.91)
Industry - Port (IND_PORT)		-0.074 (-1.92) **	-0.067 (-1.98) **
Industry - Crown Research Institute (IND_RES)		-0.009 (-0.25)	-0.014 (-0.43)
Industry - Other (IND_OTHR)		0.092 (2.66) ***	0.082 (2.82) ***
Intercept		-0.026	-0.014
N		214	275
Adj. R^2		0.828	0.818
F statistic (two-tailed test)		49.89 ***	62.67 ***

TABLE 6.5 - CONTINUED

Significance levels are one-tailed except for the industry variables.
*** Significant at the .01 level based on one-tailed test.
** Significant at the .05 level based on one-tailed test.
* Significant at the .1 level based on one-tailed test.

6.3 ALTERNATIVE VARIABLE DEFINITIONS

6.3.1 Alternative specification of political risk variable

Panchapakesan and McKinnon (1999) suggest that the construct of political risk and political visibility is complex. They propose that various industries might be exposed to very different aspects of political risk. Therefore, the political risk variable, TOT_PRES, might also be affected by industry specific factors. To control for an industry effect, the model was run using relative press coverage (REL_PRES) as a test variable, instead of TOT_PRES. REL_PRES was measured as the TOT_PRES for the company-year divided by the mean TOT_PRES for all company-year observations in the sample in the same industry grouping.

The regression results using this alternative political risk variable specification are shown in Tables 6.6 and 6.7. Results in both Table 6.6 for audit effort/hours and Table 6.7 for audit fees show no significant change from the results in Tables 6.4 and 6.5, where absolute number of press mentions (TOT_PRES) is used as a measure of political risk. Therefore, it is reasonable to conclude that the political risk variable (TOT_PRES) used in this study is fairly robust and it is not affected by industry factors.

6.3.2 Alternative specifications to adjust for size

Because audit hours and press coverage are highly correlated with firm size (i.e., revenue – see Table 6.2), I re-run models using size-adjusted measures for the dependent variable and political risk. In Table 6.8, I divide audit hours and press mentions by total revenue. In Table 6.9, I divide audit fees and press mentions by total revenue. In Table 6.10, I divide audit fees and press mentions by audit

hours. In Tables 6.8 and 6.9, total revenue is then omitted as an independent variable. In Table 6.10, total revenue is retained in the model but deflated by audit hours.

Table 6.8 shows that where audit effort is scaled by revenue, the overall model becomes much less significant (F-statistic = 7.40, adjusted R^2 is 37.5 percent in Table 6.8 compared to table 6.4 where F-statistic = 22.73, adjusted R^2 is 68.2 percent). A similar decrease in the model significance can be found when comparing results in Table 6.9 (where audit fees are scaled by revenue) with Table 6.5. This large change in the model significance is not all together surprising as most previous studies of audit effort (O'Keefe et al 1994, Stein et al. 1994, Hackenbrack and Knechel 1997, Dopuch et al 2003) as well as previous audit fees studies (Simunic 1980, Firth 1985, Johnson et al 1995) find that variables that capture auditee size explain well over 50 percent of cross sectional variations in both audit effort/hours and audit fees.

However, more important, press coverage remains significant in both models. This provides further support for H1 and the view that both audit effort and audit fees are adjusted to recognise political risk.

One interesting finding in Tables 6.8 and 6.9 is that the existence of audit committee (ADT_CMTE), as a measure of corporate governance effectiveness, becomes significant with a negative effect (as expected) on both audit effort and audit fees (both scaled by auditee size variable i.e. revenue). This is in contrast with previous results reported in Tables 6.4 and 6.5 where audit committee variable (ADT_CMTE) has no effect on audit effort/hours and audit fees.

TABLE 6.6

OLS REGRESSION RESULTS FOR AUDIT HOURS, RELATIVE PRESS TEST VARIABLE

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Relative number of press mentions during the financial period (REL_PRES)	+	0.015 (2.13) **	0.018 (2.87) ***
Total number of directors (TOT_DR)	+	0.017 (1.75) **	0.016 (1.87) **
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.038 (-0.97)	
Company has an audit committee (ADT_CMTE)	-	-0.011 (-0.53)	0.004 (0.23)
CEO is director (CEO_DR)	+	-0.023 (-0.70)	-0.028 (-0.93)
Control Variables			
Revenue *ln*(REV)	+	0.276 (8.25) ***	0.253 (9.29) ***
Number of subsidiaries (SUBS)	+	0.014 (4.35) ***	0.013 (4.32) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.043 (-0.49)	-0.043 (-0.55)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.013 (0.29)	0.026 (0.67)
Company made a loss during the financial period (LOSS)	+	0.078 (2.60) ***	0.055 (2.37) ***
Auditor is one of the Big Five (ADTR_TYP)	-	-0.030 (-1.20)	-0.033 (-1.56) *
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	-	-0.024 (-0.83)	-0.018 (-0.73)
Auditor switched in past year (SWTCH_1)	+	-0.067 (-1.41) *	-0.044 (-1.08)
Auditor switched two years ago (SWTCH_2)	+	-0.044 (-0.79)	0.051 (1.23)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.034 (-2.60) ***	-0.038 (-3.19) ***
Company is listed on NZSE (LISTED)	+	-0.020 (-0.40)	-0.009 (-0.19)
Intercept		1.242	1.430
N		214	275
Adj. R^2		0.684	0.665
F statistic (two-tailed test)		22.91 ***	28.18 ***

Industry indicator variables not shown.
Significance levels are one-tailed for coefficients shown.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

TABLE 6.7

OLS REGRESSION RESULTS FOR AUDIT FEES, RELATIVE PRESS TEST VARIABLE

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Relative number of press mentions during the financial period (REL_PRES)	+	0.009 (1.37) *	0.010 (1.59) *
Total number of directors (TOT_DR)	+	0.011 (1.15)	0.015 (1.79) **
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.061 (1.62) *	
Company has an audit committee (ADT_CMTE)	-	0.003 (0.15)	0.019 (1.08)
CEO is director (CEO_DR)	+	-0.009 (-0.30)	0.001 (0.05)
Control Variables			
Revenue ln(REV)	+	0.320 (9.88) ***	0.316 (12.02) ***
Number of subsidiaries (SUBS)	+	0.025 (7.72) ***	0.026 (9.17) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.121 (-1.41) *	-0.207 (-2.74) ***
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.012 (-0.27)	0.024 (0.65)
Company made a loss during the financial period (LOSS)	+	0.046 (1.58) *	0.043 (1.90) **
Auditor is one of the Big Five (ADTR_TYP)	+	0.085 (3.56) ***	0.084 (4.14) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.037 (1.32) *	0.037 (1.51) *
Auditor switched in past year (SWTCH_1)	-	-0.051 (-1.11)	-0.059 (-1.50) *
Auditor switched two years ago (SWTCH_2)	-	-0.120 (-2.24) **	-0.109 (-2.76) ***
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.025 (-1.96) **	-0.030 (-2.56) ***
Company is listed on NZSE (LISTED)	+	0.018 (0.38)	0.009 (0.20)
Intercept		-0.083	-0.041
N		214	275
Adj. R^2		0.827	0.817
F statistic (two-tailed test)		49.52 ***	62.20 ***

Industry indicator variables not shown.

Significance levels are one-tailed for coefficients shown.

*** Significant at the .01 level based.

** Significant at the .05 level based.

* Significant at the .1 level based.

TABLE 6.8

OLS REGRESSION RESULTS FOR AUDIT HOURS DIVIDED BY REVENUE

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Total number of press mentions during the financial period divided by revenue (TO_PR_RV)	+	7.955 (4.54) ***	7.678 (4.66) ***
Total number of directors (TOT_DR)	+	0.000 (-0.06)	0.000 (-0.48)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.005 (-1.32) *	
Company has an audit committee (ADT_CMTE)	-	-0.007 (-3.48) ***	-0.006 (-3.20) ***
CEO is director (CEO_DR)	+	-0.004 (-1.28)	-0.005 (-1.52) *
Control Variables			
Number of subsidiaries divided by revenue (SUBS_REV)	+	31.189 (1.77) **	24.087 (5.19) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.008 (-0.96)	-0.005 (-0.58)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.004 (0.89)	0.004 (1.02)
Company made a loss during the financial period (LOSS)	+	0.012 (4.17) ***	0.007 (2.72) ***
Auditor is one of the Big Five (ADTR_TYP)	-	-0.009 (-3.77) ***	-0.010 (-4.75) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	-	0.000 (-0.02)	-0.001 (-0.27)
Auditor switched in past year (SWTCH_1)	+	0.000 (0.06)	-0.001 (-0.14)
Auditor switched two years ago (SWTCH_2)	+	0.000 (-0.02)	0.006 (1.27)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.002 (-1.36) *	-0.002 (-1.92) **
Company is listed on NZSE (LISTED)	+	-0.004 (-0.78)	-0.005 (-1.10)
Intercept		0.025	0.025
N		214	275
Adj. R^2		0.375	0.376
F statistic (two-tailed test)		7.40 ***	9.68 ***

Industry indicator variables not shown.
Significance levels are one-tailed for coefficients shown.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

TABLE 6.9

OLS REGRESSION RESULTS FOR AUDIT FEES DIVIDED BY REVENUE

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Total number of press mentions during the financial period divided by revenue (TO_PR_RV)	+	0.554 (5.08) ***	0.557 (5.63) ***
Total number of directors (TOT_DR)	+	0.000 (-0.48)	0.000 (-0.61)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.000 (-0.61)	
Company has an audit committee (ADT_CMTE)	-	0.000 (-2.84) ***	0.000 (-2.34) **
CEO is director (CEO_DR)	+	0.000 (-0.76)	0.000 (-1.05)
Control Variables			
Number of subsidiaries divided by revenue (SUBS_REV)	+	2.807 (2.55) ***	3.495 (12.55) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.001 (-1.45) *	-0.001 (-1.40) *
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.000 (0.14)	0.000 (0.63)
Company made a loss during the financial period (LOSS)	+	0.001 (4.58) ***	0.000 (3.32) ***
Auditor is one of the Big Five (ADTR_TYP)	+	0.000 (-2.38) ***	0.000 (-2.83) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.000 (0.81)	0.000 (0.75)
Auditor switched in past year (SWTCH_1)	-	0.000 (-0.08)	0.000 (-0.52)
Auditor switched two years ago (SWTCH_2)	-	0.000 (-0.72)	0.000 (-1.20)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	0.000 (-2.16) **	0.000 (-2.77) ***
Company is listed on NZSE (LISTED)	+	0.000 (-0.39)	0.000 (-0.84)
Intercept		0.002	0.002
N		214	275
Adj. R^2		0.400	0.557
F statistic (two-tailed test)		8.11 ***	19.15 ***

Industry indicator variables not shown.

Significance levels are one-tailed for coefficients shown.

*** Significant at the .01 level.

** Significant at the .05 level.

* Significant at the .1 level.

TABLE 6.10

OLS REGRESSION RESULTS FOR AUDIT FEES DIVIDED BY AUDIT HOURS

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Total number of press mentions during the financial period divided by audit hours (TO_PR_HR)	+	0.078 (1.95) **	0.092 (2.36) ***
Total number of directors (TOT_DR)	+	0.000 (0.07)	0.001 (0.58)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.033 (4.19) ***	
Company has an audit committee (ADT_CMTE)	-	0.001 (0.25)	0.005 (1.39) *
CEO is director (CEO_DR)	+	-0.008 (-1.19)	-0.002 (-0.36)
Control Variables			
Revenue per audit hour (REV_HR)	+	0.000 (1.45) *	0.000 (2.04) **
Number of subsidiaries divided by audit hours (SUBS_HRS)	+	3.916 (9.89) ***	3.219 (9.67) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.019 (-0.98)	-0.022 (-1.27)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.009 (-0.88)	-0.001 (-0.13)
Company made a loss during the financial period (LOSS)	+	-0.007 (-1.11)	-0.007 (-1.42) *
Auditor is one of the Big Five (ADTR_TYP)	-	0.021 (4.07) ***	0.022 (4.80) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	-	0.015 (2.49) ***	0.015 (2.77) ***
Auditor switched in past year (SWTCH_1)	+	0.010 (1.00)	0.010 (1.13)
Auditor switched two years ago (SWTCH_2)	+	-0.013 (-1.13)	-0.019 (-2.04) **
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	0.003 (1.29) *	0.004 (1.35) *
Company is listed on NZSE (LISTED)	+	0.006 (0.53)	-0.003 (-0.34)
Intercept		0.035	0.042
N		214	275
Adj. R^2		0.594	0.524
F statistic (two-tailed test)		15.84 ***	16.10 ***

Industry indicator variables not shown.
Significance levels are one-tailed for coefficients shown.
*** Significant at the .01 level based.
** Significant at the .05 level based.
* Significant at the .1 level based.

Table 6.10 presents regression results where the dependent variable is auditors' average hourly rate (i.e., total audit fees are divided by total audit hours). The results in Table 6.10 suggest that the average audit rate is positively affected by the level of media coverage, supporting H1. In addition, the proportion of busy directors on the board (BUSY_DR), the complexity of the auditee (SUBS_HRS), the auditor being one of the Big 5 auditors (ADTR_TYP), and the auditor being an industry specialist (SPCLST) also are positively related to the hourly rate.

The latter findings suggest that there is a possible brand name premium in Big 5 auditors' hourly rate and that there is also a component of the hourly rate which is a premium for industry specialisation.

6.4 ADDITIONAL ANALYSIS

6.4.1 Incremental effect of the board effectiveness variables

To assess whether political risk variable (TOT_PRES) and board effectiveness variables (TOT_DR, BUSY_DR, ADT_CMTE and CEO_DR) as a group have incremental explanatory power above and beyond other variables in the model, I use an F-test.

The F-statistic for the board effectiveness variables is 13.74 for the audit effort/hours model ($p < 0.01$, two-tailed) and 13.15 for the audit fees model ($p < 0.01$, two-tailed). Thus, even though not all board effectiveness variable are significant individually (e.g., Tables 6.4 and 6.5), they are significant as a group.

Together, these results show that both political risk and board effectiveness are important additions to the more traditional audit effort/hours explanatory variables. I further explore the significance of the board variables using factor analysis as discussed in section 6.4.5.

6.4.2 Analysis using the fixed effects model

This study uses a longitudinal, or panel, data on audit effort and audit fees of New Zealand public sector companies and it combines the cross-section and time series data for years 1998-2000 on such entities. That is, this study uses pooled data. When cross-sectional and time-series is pooled, the cross-sectional parameters might shift over time. The result is that with time-series data the disturbance terms is likely to consist of time series-related disturbances, cross-section disturbances and a combination of both.

There are a number of alternative specifications that are useful in studying pooled data. The usual technique is to simply combine all the time-series and cross-sectional data and then estimate the underlying model by utilising OLS regression. That approach is taken in the main analysis of this study, as reported in sections 6.2.1 and 6.2.2. The difficulty with the least square pooling procedure is that the assumption of constant intercept and slope may be unreasonable. The obvious procedure, then, is to introduce dummy variables that allow the intercept to vary over time and over cross-sectional units. These models are known as fixed effects models (Pindyck and Rubinfeld, 1988).

To test for the effects of pooling data in this study, a fixed effects model was run by introducing dummy variables for each company (less one) and for each year (less one). The results, excluding the coefficients for the dummy variables are shown in tables 6.11 and 6.12. The industry variables were dropped from the fixed effects model because of collinearity.

TABLE 6.11

OLS REGRESSION RESULTS FOR AUDIT HOURS, FIXED EFFECTS MODEL

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000	0.000
		(0.98)	(0.87)
Total number of directors (TOT_DR)	+	0.019	0.021
		(1.65)*	(2.23)**
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.036	
		(0.78)	
Company has an audit committee (ADT_CMTE)	-	-0.097	-0.064
		(-2.15)**	(-2.00)**
CEO is director (CEO_DR)	+	0.075	0.043
		(1.28)	(0.93)
Control Variables			
Revenue *ln*(REV)	+	-0.016	0.001
		(-0.17)	(0.01)
Number of subsidiaries (SUBS)	+	0.015	0.015
		(2.53)***	(2.86)***
(Inventory+Receivables)/Total Assets (INVREC)	+	0.267	0.099
		(2.12)**	(1.12)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.003	0.014
		(-0.06)	(0.32)
Company made a loss during the financial period (LOSS)	+	0.030	0.032
		(1.09)	(1.68)**
Auditor is one of the Big Five (ADTR_TYP)	-	0.079	-0.025
		(0.99)	(-0.54)
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	-	-0.047	-0.039
		(-0.93)	(-1.10)
Auditor switched in past year (SWTCH_1)	+	-0.068	-0.033
		(-1.33)*	(-0.93)
Auditor switched two years ago (SWTCH_2)	+	-0.018	0.024
		(-0.29)	(0.67)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.045	-0.041
		(-1.77)**	(-2.14)**
Company is listed on NZSE (LISTED)	+	-0.182	-0.161
		(-1.32)*	(-1.32)*
Intercept		3.647	3.613
N		213	274
Adj. R^2		0.887	0.890
F statistic (two-tailed test)		16.05***	19.03***

Firm- and time-specific indicator variables not shown.

*** Significant at the .01 level based on one-tailed test.

** Significant at the .05 level based on one-tailed test.

* Significant at the .1 level based on one-tailed test.

TABLE 6.12

OLS REGRESSION RESULTS FOR AUDIT FEES, FIXED EFFECTS MODEL

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000	0.000
		(0.27)	(0.19)
Total number of directors (TOT_DR)	+	0.002	-0.003
		(0.33)	(-0.42)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.049	
		(1.68) **	
Company has an audit committee (ADT_CMTE)	-	-0.017	0.030
		(-0.60)	(1.21)
CEO is director (CEO_DR)	+	0.040	0.022
		(1.06)	(0.62)
Control Variables			
Revenue *ln*(REV)	+	0.242	0.229
		(3.85) ***	(5.06) ***
Number of subsidiaries (SUBS)	+	0.011	0.010
		(2.83) ***	(2.39) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	0.060	0.002
		(0.75)	(0.03)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.059	0.065
		(1.86) **	(1.95) **
Company made a loss during the financial period (LOSS)	+	-0.008	0.004
		(-0.46)	(0.24)
Auditor is one of the Big Five (ADTR_TYP)	+	0.040	0.011
		(0.78)	(0.31)
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	-0.010	-0.064
		(-0.32)	(-2.30) **
Auditor switched in past year (SWTCH_1)	-	-0.049	-0.105
		(-1.48) *	(-3.75) ***
Auditor switched two years ago (SWTCH_2)	-	-0.119	-0.136
		(-2.96) ***	(-4.88) ***
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.015	-0.013
		(-0.92)	(-0.88)
Company is listed on NZSE (LISTED)	+	0.001	0.007
		(0.01)	(0.08)
Intercept		1.266	1.512
N		213	274
Adj. R^2		0.973	0.960
F statistic (two-tailed test)		69.61 ***	55.06 ***

Firm- and time-specific indicators not shown.

*** Significant at the .01 level based on one-tailed test.

** Significant at the .05 level based on one-tailed test.

* Significant at the .1 level based on one-tailed test.

According to Pindyck and Rubinfeld (1988), the decision to add dummy variables is made on the basis of the comparison of the error sum of squares associated with OLS model and associated with the fixed effects model. Since the OLS model includes more parameter restrictions than the fixed effects model does, it is expected that the error sum of squares will be higher for the OLS model. If the increase in the error sum of squares is not significant when the restrictions are added, the conclusion is that the restrictions are proper and that the OLS model is adequate. If the error sum of squares is changed substantially with additions of dummy variables, then the fixed effects model is applicable.

The test statistic for comparing the fixed effects model to the OLS model (pooled data) in this study is calculated as:

$$= \frac{(\text{Error Sum of Squares}_{OLS} - \text{Error Sum of Squares}_{Fixed\ Effects})/(m+T-2)}{(\text{Error Sum of Squares}_{Fixed\ Effects})/(N-m-T)}$$

where N is the total number of observations, m is the number of companies and T is the number of years. The F-statistic has (m+T-2) and (N-m-t) degrees of freedom. The test statistic comparing the fixed effects and OLS audit hours models is 5.45, which is significant at the 1 percent level. The test statistic comparing the fixed effects and OLS audit fees models is 15.07, which is significant at the 1 percent level. This suggests that the fixed effects model is more appropriate for analysing the pooled data in this study.

Using the fixed effects model, does have implications in interpreting the coefficients of interest. The political risk/visibility variable (TOT_PRES) is not significant in explaining audit effort/hours when fixed effects model is used (Table 6.11) while it is significant in the main analyses (Tables 6.4 and 6.5) that used OLS model. However, the board effectiveness variable (TOT_DR) remains

significant in both models while audit committee variable (ADT_CMT) becomes significant in explaining audit effort/hours in the fixed effects model (Table 6.11).

In regard to audit fees, the political risk/visibility variable (TOT_PRES) is again not significant in the fixed effects model (Table 6.12) but is significant in the OLS model (Table 6.5). The board effectiveness busy directors (BUSY_DR) variable remains significant across both models (Table 6.5 and Table 6.12).

These results suggest that the significance of the political risk/visibility variable (TOT_PRES) is associated with one of the years under the observation in this study rather than all of the years. To test for the political risk/visibility significance in explaining audit effort/hours and audit fees in relation to a particular year under the observation the regression model is run separately for each year under the observation. The results for these analyses are reported in Tables 6.13 and 6.14.

TABLE 6.13

OLS REGRESSION RESULTS FOR AUDIT HOURS, BY YEAR

	Predicted Sign	Full Model Parameter Estimate (*t*-value)		
Industry		1998	1999	2000
Test Variables				
Total number of press mentions during the financial period (TOT_PRES)	+	0.000	0.001	0.001
		(-0.06)	(1.04)	(2.37) **
Total number of directors (TOT_DR)	+	0.003	0.021	0.039
		(0.12)	(1.18)	(2.27) **
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.001	-0.079	-0.081
		(0.01)	(-1.18)	(-1.02)
Company has an audit committee (ADT_CMTE)	-	0.017	-0.023	-0.067
		(0.33)	(-0.60)	(-2.04) **
CEO is director (CEO_DR)	+	-0.029	-0.043	0.010
		(-0.41)	(-0.71)	(0.18)
Control Variables				
Revenue *ln*(REV)	+	0.239	0.340	0.270
		(2.80) ***	(5.67) ***	(4.61) ***
Number of subsidiaries (SUBS)	+	0.010	0.017	0.017
		(1.19)	(2.62) ***	(3.20) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.250	0.114	-0.098
		(-1.01)	(0.85)	(-0.62)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.049	-0.066	-0.076
		(0.26)	(-0.77)	(-1.14)
Company made a loss during the financial period (LOSS)	+	0.009	0.183	0.123
		(0.09)	(3.25) ***	(1.50)
Auditor is one of the Big Five (ADTR_TYP)	-	0.016	-0.023	-0.102
		(0.29)	(-0.51)	(-2.58) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	-0.016	0.035	-0.049
		(-0.25)	(0.60)	(-1.10)
Auditor switched in past year (SWTCH_1)	+	-0.117	0.095	-0.240
		(-0.94)	(1.07)	(-3.01)
Auditor switched two years ago (SWTCH_2)	+	0.186	-0.046	-0.057
		(1.01)	(-0.30)	(-0.83)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.002	-0.026	-0.019
		(-0.08)	(-0.82)	(-0.92)
Company is listed on NZSE (LISTED)	+	0.054	-0.115	-0.011
		(0.44)	(-1.31)	(-0.13)
Intercept		1.533	0.994	1.400
N		62	76	76
Adj. R^2		0.546	0.703	0.741
F statistic (two-tailed test)		4.49 ***	9.45 ***	11.21 ***

Industry indicator variables not shown.

*** Significant at the .01 level based on one-tailed test.

** Significant at the .05 level based on one-tailed test.

* Significant at the .1 level based on one-tailed test.

TABLE 6.14

OLS REGRESSION RESULTS FOR AUDIT FEES, BY YEAR

	Predicted Sign	Full Model Parameter Estimate (*t*-value)		
Industry		1998	1999	2000
Test Variables				
Total number of press mentions during the financial period (TOT_PRES)	+	0.000	0.000	0.001
		(-0.51)	(0.66)	(2.84) ***
Total number of directors (TOT_DR)	+	0.003	0.019	0.027
		(0.12)	(1.11)	(1.54) **
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.126	0.015	0.025
		(1.54) *	(0.23)	(0.31)
Company has an audit committee (ADT_CMTE)	-	0.035	-0.016	-0.028
		(0.77)	(-0.44)	(-0.82)
CEO is director (CEO_DR)	+	-0.029	-0.002	0.010
		(-0.41)	(-0.04)	(0.18)
Control Variables				
Revenue *ln*(REV)	+	0.304	0.343	0.334
		(4.00) ***	(5.95) ***	(5.59) ***
Number of subsidiaries (SUBS)	+	0.016	0.027	0.019
		(2.16) **	(4.39) ***	(3.41) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.046	-0.108	-0.136
		(-0.21)	(-0.84)	(-0.85)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.023	-0.046	-0.123
		(0.14)	(-0.56)	(-1.80) **
Company made a loss during the financial period (LOSS)	+	-0.009	0.111	0.123
		(-0.10)	(2.05) **	(1.50)
Auditor is one of the Big Five (ADTR_TYP)	+	0.016	0.110	0.029
		(0.29)	(2.52) ***	(0.71)
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.040	0.049	0.069
		(0.67)	(0.87)	(1.51) *
Auditor switched in past year (SWTCH_1)	+	-0.360	0.074	-0.013
		(-3.27) ***	(0.87)	(-0.16)
Auditor switched two years ago (SWTCH_2)	+	0.062	-0.411	-0.052
		(0.38)	(-2.84)	(-0.74)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	0.006	-0.020	-0.004
		(0.23)	(-0.64)	(-0.18)
Company is listed on NZSE (LISTED)	+	0.011	-0.018	0.048
		(0.10)	(-0.22)	(0.58)
Intercept		0.016	-0.200	-0.130
N		62	76	76
Adj. R^2		0.790	0.838	0.846
F statistic (two-tailed test)		11.95 ***	19.45 ***	20.59 ***

Industry indicator variables not shown.

*** Significant at the .01 level based on one-tailed test.

** Significant at the .05 level based on one-tailed test.

* Significant at the .1 level based on one-tailed test.

The results in Tables 6.13 and 6.14 indicate that only in 2000 do the political risk/visibility (TOT_PRES) and board of directors effectiveness variables (TOT_DR, ADT_CMTE) have significant effects on both audit effort/hours and audit fees. The political risk/visibility variable (TOT_PRES) significance is largely due to TVNZ 462 press mentions in 2000 versus 328 mentions in 1999 and 384 mentions in 1998. Other press mentions in 2000 above the mean coverage level (Table 6.1) of 25 press mentions are: Ag Research (49), Auckland Healthcare (39), Auckland Airport (53), Canterbury Health (31), Capital Coast Health (62) and Ports of Auckland (51). Of those only Ag Research's press coverage increased in 2000 compared to press coverage in 1998 and 1999. All other entities with larger press coverage show slight decrease in press coverage in 2000. That result implies that the 134 increase in press mentions of TVNZ in 2000 drives the significance of political risk/visibility in this study's results.

The board of directors effectiveness variable (TOT_DR) also has significant effect on audit effort/hours and audit fees only in 2000. This is largely due to the increase in size of the boards of directors in 2000 for NZ Post, Healthcare Hawkes Bay, Southern Health and TVNZ. All of these entities increased the size of their boards by 1-2 directors reaching a board size of 10 directors, which is significantly higher than the mean board size of 6 directors as reported in Table 6.1.

6.4.3 Analysis of the change in independent variables and the change in audit hours and audit fees

To examine whether auditors respond to the level of political risk or board effectiveness or changes in the level of political risk or board effectiveness, I run a changes model that examines the relationship between changes in the independent and dependent variables. Table 6.15 presents descriptive statistics for the year-on-year changes in the sample used in this study while tables 6.16 and 6.17 provide results of the variables change analyses.

TABLE 6.15

DESCRIPTIVE STATISTICS FOR YEAR-ON-YEAR CHANGES IN A SAMPLE OF 163 PUBLIC SECTOR CORPORATE ENTITY AUDITS BETWEEN 1998 AND 2000 WITH MORE THAN 200 AUDIT HOURS

Continuous Variables		Mean	Std. Deviation	Minimum	Maximum
D_AU_FEE	Change in Audit hours	-0.15	36.80	-410.00	140.00
D_AU_HRS	Change in Audit fee ($000)	9.44	277.71	-2,314.00	1,357.00
D_TOPRES	Change in Total number of press mentions during the financial period	-1.42	20.83	-119.00	103.00
D_TOT_DR	Change in Total number of directors	-0.01	0.86	-3.00	3.00
D_BUSYDR	Change in Proportion of busy directors (>3 directorships)	0.03	0.24	-0.71	0.83
D_OTHRFE	Change in Proportion of non-audit fees to audit fees	-0.04	0.50	-3.28	1.71
D_REV	Change in Total revenue ($000)	-5,690	70,209	-536,000	275,055
D_SUBS	Change in Number of subsidiaries	-0.03	2.15	-22.00	10.00
D_INVREC	Change in (Inventory+Receivables)/Total Assets	-0.01	0.10	-0.78	0.64
D_LEVGE	Change in Leverage (Total Liabilities/Total Assets)	0.01	0.20	-0.46	2.07

Indicator Variables		Proportion of cases equal to 1
D_LOSS	Change in Company made a loss during the financial period	-0.141
D_LISTED	Change in Company is listed on NZSE	0.006
D_ADTCMT	Change in Company has an audit committee	0.055
D_CEO_DR	Change in CEO is director	-0.000
D_ADRTYP	Change in Auditor is one of the Big Five	-0.000
D_SPCLST	Change in Auditor is an industry specialist (>20% share of industry audit fees)	-0.006
D_SWTCH1	Change in Auditor switched in past year	-0.006
D_SWTCH2	Change in Auditor switched two years ago	-0.000
	Industry:	
D_INAIRP	Change in Airport	0.000
D_INHLTH	Change in Health service provider	0.000
D_INENGY	Change in Energy company	-0.006
D_INPORT	Change in Port	0.000
D_INRES	Change in Crown Research Institute	0.000
D_INOTHR	Change in Other	0.006

Table 6.16 shows that when the change in audit effort/hours is the dependent variable, the overall model is significant ($F = 4.79$, $p < .01$) and the adjusted R^2 is 34.7 percent. The number of observations in Table 6.16 is reduced (N= 114 for the full model and N=162 for the reduced model) compared to previously reported number of observation in Tables 6.4-6.15 due to observations in the analysis of the changes being changes in audit effort/hours rather than absolute numbers/data. The change in total number of press mentions during the financial period (D_TOPRES) and changes in board effectiveness variables (D_TOT_DR, D_BUSYDR, D_ADTCMT and D_CEO_DR) do not have a significant effect on changes in audit effort/hours. That finding suggests that auditors appear to base their audit effort and fees on the level of press coverage and the size of the board rather than changes in these variables (recall TOT_PRES and TOT_DR are significant in the main model reported in Table 6.4).

At the same time, it appears that auditors are more responsive to the traditional audit risk variables. In particular, Table 6.16 shows that the D_REV, D_SUBS, D_INVREC, and D_LEVGE are significant with positive coefficients. Thus, auditors adjust their audit hours upward in response to increases in revenues, subsidiaries, inventories and receivables, and leverage, which is not that surprising since auditors would actively monitor these variables on year-to-year basis.

TABLE 6.16

OLS REGRESSION RESULTS FOR CHANGE IN AUDIT HOURS

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Change in total number of press mentions during the financial period (D_TOPRES)	+	-0.006	-0.006
		(-0.86)	(-0.97)
Change in total number of directors (D_TOT_DR)	+	0.154	0.012
		(0.97)	(0.09)
Change in proportion of busy directors (>3 directorships) (D_BUSYDR)	+	0.494	
		(0.91)	
Change in company having an audit committee (D_ADTCMT)	-	-0.177	-0.106
		(-0.28)	(-0.22)
Change in CEO being a director (D_CEO_DR)	+	0.578	0.685
		(0.72)	(1.02)
Control Variables			
Change in revenue ln(D_REV)	+	0.028	0.032
		(1.60) *	(2.32) **
Change in number of subsidiaries (D_SUBS)	+	0.372	0.366
		(6.75) ***	(7.10) ***
Change in (Inventory+Receivables)/Total Assets (D_INVREC)	+	2.139	2.138
		(1.39) *	(1.83) **
Change in leverage (Total Liabilities/Total Assets) D_LEVGE)	+	1.600	1.449
		(2.36) **	(2.38) ***
Company changed from being in loss to being in profit during the financial period (D_LOSS)	+	0.231	0.101
		(0.66)	(0.39)
Change in auditor being one of the Big Five (D_ADTRTYP)	+	-1.411	1.880
		(-0.69)	(2.32) **
Change in auditor being an industry specialist (>20% share of industry audit fees) (D_SPCLST)	+	-0.698	-0.649
		(-1.21)	(-1.45) *
Auditor switched in past year (SWTCH_1)	+	-3.381	-1.329
		(-2.13) **	(-1.71) **
Auditor switched two years ago (SWTCH_2)	+	-0.326	0.004
		(-0.38)	(0.01)
Change in proportion of non-audit fees to audit fees (D_OTHRFE)	-	-0.762	-0.531
		(-2.18) **	(-1.92) **
Change in company listing on NZSE (D_LISTED)	+	-0.127	0.420
		(-0.07)	(0.25)
Intercept		0.187	0.178
N		114	162
Adj. R^2		0.347	0.340
F statistic (two-tailed test)		4.79 ***	6.57 ***

Significance levels are one-tailed.

*** Significant at the .01 level.

** Significant at the .05 level.

* Significant at the .1 level.

TABLE 6.17

OLS REGRESSION RESULTS FOR CHANGE IN AUDIT FEES

	Predicted Sign	Column A Full Model	Column B Reduced Model
Test Variables			
Change in total number of press mentions during the financial period (D_TOPRES)	+	0.015 (0.78)	0.008 (0.45)
Change in total number of directors (D_TOT_DR)	+	0.471 (1.01)	0.445 (1.07)
Change in proportion of busy directors (>3 directorships) (D_BUSYDR)	+	0.323 (0.20)	
Change in company having an audit committee (D_ADTCMT)	-	-3.351 (-1.82) **	-1.560 (-1.07)
Change in CEO being a director (D_CEO_DR)	+	2.402 (1.01)	0.769 (0.37)
Control Variables			
Change in revenue ln(D_REV)	+	0.009 (0.17)	0.058 (1.37) *
Change in number of subsidiaries (D_SUBS)	+	0.490 (3.02) ***	0.362 (2.28) **
Change in (Inventory+Receivables)/Total Assets (D_INVREC)	+	8.333 (1.84) **	1.208 (0.34)
Change in leverage (Total Liabilities/Total Assets) D_LEVGE)	+	1.254 (0.63)	3.343 (1.79) **
Company changed from being in loss to being in profit during the financial period (D_LOSS)	+	1.939 (1.88) **	1.394 (1.75) **
Change in auditor being one of the Big Five (D_ADTRTYP)	+	-5.163 (-0.86)	-0.052 (-0.02)
Change in auditor being an industry specialist (>20% share of industry audit fees) (D_SPCLST)	+	-2.887 (-1.70) **	-0.400 (-0.29)
Auditor switched in past year (SWTCH_1)	-	-9.388 (-2.01) **	-0.378 (-0.16)
Auditor switched two years ago (SWTCH_2)	-	6.240 (2.49) ***	4.040 (1.90) **
Change in proportion of non-audit fees to audit fees (D_OTHRFE)	-	-1.975 (-1.92) **	-1.207 (-1.42) *
Change in company listing on NZSE (D_LISTED)	+	-8.984 (-1.70) **	-6.114 (-1.21)
Intercept		0.356	0.185
N		114	162
Adj. R^2		0.152	0.076
F statistic (two-tailed test)		2.28 ***	1.88 **

Significance levels are one-tailed.

*** Significant at the .01 level.

** Significant at the .05 level.

* Significant at the .1 level.

The change in proportion of non-audit fees to audit fees (D-OTHRFEE) is significant in the changes model at 0.05 level and it is negatively signed. This is consistent with previous analysis reported in Table 6.5 and suggests that there is a knowledge spillover effect from non-audit services to audit effort. Also, SWTCH_1 (which is not first differenced) remains negative and significant which is consistent with previous studies that find that audit hours are lower in the initial audit engagement year.

Table 6.17 presents results of the regression of the changes in the independent variables on the change in audit fees. Similar to the results in Table 6.16, the audit fee change model has some explanatory power (F=2.28 and adjusted R^2=15.2).

In this model, the change in the number of subsidiaries (D_SUBS) again has the strong explanatory power, which suggests the audit pricing sensitivity to clients' change in size and complexity. Possibly the most interesting result in Table 6.17 is the effect of the change in audit committee. The significant, negative coefficient for the change in audit committee on audit fees (but not on audit effort/hours, as reported in Table 6.16) suggests that, consistent with the agency theory on corporate governance, the introduction of an audit committee to the corporate board has an effect on overall corporate governance and strengthens the board oversight role in controlling corporate costs (such as audit fees).

Changes in other variables, such as change in company listing status (D_LISTED), change in auditor industry specialisation status (SPCLST), change in auditor learning and knowledge spillover variables (SWTCH_1, SWTCH_2 and D_OTHERFEE), also show some, but weak, explanatory power. This suggests that audit fees, as expected, do fluctuate with changes in client characteristics such as listing status but they also seem to fluctuate in response to auditor specific changes, such as a change in auditor specialisation status. This is

consistent with the OAG policy of adjusting otherwise three years fixed audit fees, for changes in client size and operations (the three year fixed fee policy is further explained in chapter 3 of this thesis).

6.4.4 Analyses of partitioned samples

To test the generalisability of the audit production and audit pricing models used in this study, additional analyses are conducted on various sub-samples within the main sample. The additional analysis was conducted by partitioning the sample based on auditee characteristics first. That is, the main sample was partitioned based on the number of actual audit hours (Tables 6.18 and 6.19) and high or low press coverage (Tables 6.20 and 6.21). Then the main sample was partitioned based on the auditor characteristics, specifically auditor type (Tables 6.22 and 6.23) and auditor specialisation (Tables 6.24 and 6.25). Finally, the additional analysis was conducted based on industry classification (Tables 6.26 and 6.27) in order to capture the effects of industry characteristics on the audit production and audit fees models. While admittedly ad hoc, given the novelty of data and setting, it is worth exploring the data further.

Audit Hours

Tables 6.18 and 6.19 report findings of analyses on the sample partitioned into low and high actual audit hours based on the mean hours of 579.

In Table 6.18, the adjusted R^2's for the two models differ markedly. While the adjusted R^2 for the low audit hour clients is 18.4 percent, the adjusted R^2 for the high audit hour clients is 75 percent. Moreover, the coefficients for TOT_PRES and INVREC, although significant at conventional levels, have the wrong signs in the model for the low audit hours sub-sample.

For entities with high audit effort/hours, TOT_PRES is positive and significant. Thus, the relation between audit hours and TOT_PRES only holds for larger audit

clients. Additionally, auditor industry specialisation (SPCLST) has a significant negative effect on audit effort of entities with high audit hours, suggesting economies of scale for specialisation, while REV, SUBS and INVREC are all significant with positive coefficients, as expected, for the large audit hours sub-sample.

For the audit fee models in Table 6.19, the R^2's are more similar across the two samples, i.e., 67.8 percent for the low hours sub-sample and 80.4 percent for the high fees sub-sample. Thus, the factors affecting audit pricing appear to be more similar between the sub-samples than the factors affecting audit effort.

REV, SUB and ADTR_TYP are significant and positive for both subsamples. The latter suggests that the Big 5 auditor premium found in Table 6.5 applies to both small and large audit clients.

Consistent with Table 6.18, TOT_PRES is significantly related to audit fees only for large audit clients. Thus, political risk may not be an issue for clients with low audit hours because they are too small to attract political attention from the wider public.

TABLE 6.18

OLS REGRESSION RESULTS FOR AUDIT HOURS, PARTITIONED ON AUDIT HOURS

	Predicted Sign	Column A Full Model	Column B
Audit hours		**Low**	**High**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	-0.001	0.000
		(-2.15) **	(1.50) *
Total number of directors (TOT_DR)	+	0.009	0.001
		(0.82)	(0.05)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.047	-0.001
		(-1.08)	(-0.02)
Company has an audit committee (ADT_CMTE)	-	-0.013	-0.016
		(-0.53)	(-0.72)
CEO is director (CEO_DR)	+	0.029	0.059
		(0.89)	(1.18)
Control Variables			
Revenue *ln*(REV)	+	0.137	0.208
		(3.94) ***	(5.51) ***
Number of subsidiaries (SUBS)	+	0.005	0.014
		(0.97)	(4.73) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.288	0.205
		(-2.42) ***	(2.21) **
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.038	-0.014
		(0.50)	(-0.36)
Company made a loss during the financial period (LOSS)	+	0.086	0.023
		(2.34) **	(0.80)
Auditor is one of the Big Five (ADTR_TYP)	-	-0.014	-0.018
		(-0.53)	(-0.57)
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	-0.023	-0.073
		(-0.78)	(-1.97) **
Auditor switched in past year (SWTCH_1)	+	-0.025	-0.020
		(-0.51)	(-0.38)
Auditor switched two years ago (SWTCH_2)	+	-0.041	-0.033
		(-0.41)	(-0.69)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.054	0.005
		(-2.50) ***	(0.37)
Company is listed on NZSE (LISTED)	+	0.049	0.048
		(0.97)	(0.62)
Intercept		1.972	1.808
N		101	113
Adj. R^2		0.184	0.750
F statistic (two-tailed test)		2.07 **	16.98 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

TABLE 6.19

OLS REGRESSION RESULTS FOR AUDIT FEES, PARTITIONED ON AUDIT HOURS

	Predicted Sign	Column A Full Model	Column B Full Model
Audit hours		**Low**	**High**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (0.17)	0.000 (1.31) *
Total number of directors (TOT_DR)	+	0.011 (0.84)	-0.005 (-0.33)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.046 (0.86)	0.102 (1.73) **
Company has an audit committee (ADT_CMTE)	-	0.009 (0.29)	-0.021 (-0.69)
CEO is director (CEO_DR)	+	0.024 (0.59)	0.062 (0.91)
Control Variables			
Revenue *ln*(REV)	+	0.288 (6.59) ***	0.262 (5.07) ***
Number of subsidiaries (SUBS)	+	0.026 (4.10) ***	0.021 (5.23) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.295 (-1.99) **	0.059 (0.46)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.033 (-0.35)	0.010 (0.19)
Company made a loss during the financial period (LOSS)	+	0.039 (0.84)	0.003 (0.08)
Auditor is one of the Big Five (ADTR_TYP)	+	0.075 (2.36) **	0.089 (2.12) **
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.019 (0.50)	0.004 (0.09)
Auditor switched in past year (SWTCH_1)	+	-0.044 (-0.70)	-0.009 (-0.13)
Auditor switched two years ago (SWTCH_2)	+	0.015 (0.12)	-0.097 (-1.47) *
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.068 (-2.52) ***	0.015 (0.82)
Company is listed on NZSE (LISTED)	+	0.044 (0.70)	0.164 (1.56) *
Intercept		0.110	0.330
N		101	113
Adj. R^2		0.678	0.804
F statistic (two-tailed test)		11.01 ***	22.92 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

Press Coverage

Tables 6.20 and 6.21 present analyses of the results where the sample is partitioned by press coverage (i.e., high, low). In both tables, the overall explanatory power for the high press coverage sub-sample exceeds that for the low press coverage sub-sample. However, even for the low press sub-sample, the R^2's are 46.4 percent and 57.6 percent for Tables 6.20 and 6.21 respectively.

The coefficient for TOT_PRES, whether the dependent variable is audit hours or fees, is significant only for the high press coverage subsample. Thus, there is no relation between TOT_PRES and audit hours or audit fees for the low press coverage sub-sample. This suggests that until press coverage reaches a threshold (here represented by the mean coverage level, i.e. 25 press mentions in the period), political risk is too low to affect audit planning or audit pricing.

Of the remaining variables, REV, SUBS and OTHR_FEE are significant and correctly signed in both models where audit hours is the dependent variable. The latter result suggests that the knowledge spillover effect, reported in Table 6.4, is not affected by the level of press coverage. CEO_DR and LOSS are also significant and correctly signed for the low press coverage sub-sample while ADTR_TYP is significant and correctly signed for the high press coverage sub-sample.

For the entities with large press coverage, audit fees are significantly and positively influenced by the press coverage (TOT_PRES) (as expected), busy directors (BUSY_DR) and the presence of a Big 5 auditor (ADTR_TYP) auditor (Table 6.21). This suggests an audit pricing premium as a result of increased audit risk and political risk, as well as the brand name premium for such entities. On the other hand, auditor switch two years ago (SWTCH_2) and presence of non-audit fees (OTHR_FEE) have significant negative effect on audit pricing for

TABLE 6.20

OLS REGRESSION RESULTS FOR AUDIT HOURS, PARTITIONED ON PRESS COVERAGE

	Predicted Sign	Column A Full Model	Column B
Total press coverage		**Low**	**High**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	-0.002 (-0.36)	0.000 (1.64) *
Total number of directors (TOT_DR)	+	0.012 (0.79)	0.016 (1.13)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.062 (-1.30) *	0.023 (0.34)
Company has an audit committee (ADT_CMTE)	-	0.022 (0.71)	-0.026 (-0.73)
CEO is director (CEO_DR)	+	0.062 (1.65) *	-0.165 (-2.51) ***
Control Variables			
Revenue *ln*(REV)	+	0.238 (5.05) ***	0.290 (5.64) ***
Number of subsidiaries (SUBS)	+	0.015 (1.88) **	0.012 (2.69) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.216 (-1.46) *	0.034 (0.24)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.070 (0.73)	-0.018 (-0.30)
Company made a loss during the financial period (LOSS)	+	0.103 (2.87) ***	0.035 (0.74)
Auditor is one of the Big Five (ADTR_TYP)	-	0.005 (0.16)	-0.064 (-1.49) *
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	-0.069 (-1.48) *	0.025 (0.56)
Auditor switched in past year (SWTCH_1)	+	-0.103 (-1.49) *	-0.057 (-0.79)
Auditor switched two years ago (SWTCH_2)	+	-0.094 (-0.80)	-0.069 (-0.94)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.102 (-2.13) **	-0.037 (-2.20) **
Company is listed on NZSE (LISTED)	+	0.012 (0.16)	-0.015 (-0.19)
Intercept		1.581	1.375
N		100	114
Adj. R^2		0.464	0.671
F statistic (two-tailed test)		5.08 ***	11.99 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

TABLE 6.21

OLS REGRESSION RESULTS FOR AUDIT FEES, PARTITIONED ON PRESS COVERAGE

	Predicted Sign	Column A Full Model	Column B Full Model
Total press coverage		**Low**	**High**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (-0.02)	0.000 (1.95) **
Total number of directors (TOT_DR)	+	-0.014 (-0.77)	0.015 (1.42) *
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.024 (-0.41)	0.190 (3.79) ***
Company has an audit committee (ADT_CMTE)	-	0.063 (1.73) **	-0.022 (-0.81)
CEO is director (CEO_DR)	+	0.099 (2.18) **	-0.217 (-4.41) ***
Control Variables			
Revenue *ln*(REV)	+	0.286 (5.00) ***	0.268 (6.95) ***
Number of subsidiaries (SUBS)	+	0.032 (3.23) ***	0.024 (7.33) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.299 (-1.66) *	0.037 (0.35)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.024 (-0.21)	0.005 (0.11)
Company made a loss during the financial period (LOSS)	+	0.067 (1.54) *	0.011 (0.29)
Auditor is one of the Big Five (ADTR_TYP)	+	0.054 (1.35) *	0.097 (3.00) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.077 (1.34) *	0.095 (2.80) ***
Auditor switched in past year (SWTCH_1)	+	0.031 (0.37)	-0.049 (-0.92)
Auditor switched two years ago (SWTCH_2)	+	-0.027 (-0.19)	-0.146 (-2.65) ***
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.036 (-0.62)	-0.034 (-2.68) ***
Company is listed on NZSE (LISTED)	+	0.033 (0.38)	0.026 (0.46)
Intercept		0.199	0.149
N		100	114
Adj. R^2		0.576	0.877
F statistic (two-tailed test)		7.39 ***	39.54 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

the entities with large press coverage although the former result is contrary to expectations.

Entities with small press coverage, on the other hand, do not seem to have their audit pricing affected by political risk, as their political risk exposure is low, but their audit fees are affected, with positive coefficients, by board characteristics such as audit committee existence (ADT_CMTE) and CEO duality (CEO_DR).

In sum, it appears from the analyses in Tables 6.20 and 6.21 that the results for TOT_PRES depend on levels of press coverage. When the level of press coverage is low, political risk is likely to be low, and the auditor's effort and fees will be driven by non-political factors. For these firms, whether the CEO is a director has significant explanatory power for both hours and fees.

Auditor Type

Tables 6.22 and 6.23 present the analyses of the partitioned sample based on whether the auditor is a Big 5 auditor. The sample of entities under observation is fairly evenly divided between entities which have a Big 5 auditor (102) and entities which use non-Big 5 auditor (112). However, as noted above, 103 of the 112 in the latter category were audited by Audit New Zealand.

Revenue (REV) size measure and subsidiary (SUBS) complexity measure are significant in explaining audit effort of Big 5 auditors. However, only revenue (REV) is significant for non-Big 5 auditors. This may be due to non-Big 5 auditors having majority of their clients in sectors, such as health, where auditees customarily either have none or very few subsidiaries.

Within the risk variables client listing status (LISTED), the political risk measure (TOT_PRESS) and CEO duality (CEO_DR) are significant in explaining non-Big 5 auditors' effort/hours. This finding suggests that non-Big 5 auditors (mainly Audit NZ) are sensitive to political risk and corporate governance effectiveness.

TABLE 6.22

OLS REGRESSION RESULTS FOR AUDIT HOURS, PARTITIONED ON AUDITOR TYPE

	Predicted Sign	Column A Full Model	Column B
Auditor is Big 5		**Yes**	**No**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (1.08)	0.002 (2.69) ***
Total number of directors (TOT_DR)	+	0.008 (0.60)	0.009 (0.68)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.014 (0.22)	-0.022 (-0.49)
Company has an audit committee (ADT_CMTE)	-	0.001 (0.03)	-0.022 (-0.80)
CEO is director (CEO_DR)	+	-0.090 (-1.75) **	0.159 (3.02) ***
Control Variables			
Revenue *ln*(REV)	+	0.401 (8.29) ***	0.197 (4.55) ***
Number of subsidiaries (SUBS)	+	0.015 (3.91) ***	-0.002 (-0.34)
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.082 (-0.56)	0.025 (0.21)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.063 (-1.20)	-0.021 (-0.25)
Company made a loss during the financial period (LOSS)	+	0.038 (0.85)	0.058 (1.64) *
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	-0.023 (-0.60)	
Auditor switched in past year (SWTCH_1)	+	-0.111 (-2.18) **	-0.005 (-0.04)
Auditor switched two years ago (SWTCH_2)	+	-0.150 (-2.60) ***	
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.058 (-3.92) ***	-0.120 (-3.27) ***
Company is listed on NZSE (LISTED)	+	-0.074 (-1.24)	-0.443 (-2.87) ***
Intercept		0.868	1.686
N		102	112
Adj. R^2		0.798	0.579
F statistic (two-tailed test)		21.94 ***	9.49 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

TABLE 6.23

OLS REGRESSION RESULTS FOR AUDIT FEES, PARTITIONED ON AUDITOR TYPE

	Predicted Sign	Column A Full Model	Column B Full Model
Auditor is Big 5		**Yes**	**No**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (0.97)	0.000 (0.22)
Total number of directors (TOT_DR)	+	0.011 (0.95)	-0.002 (-0.16)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.243 (4.36) ***	-0.005 (-0.11)
Company has an audit committee (ADT_CMTE)	-	0.025 (0.83)	-0.010 (-0.33)
CEO is director (CEO_DR)	+	-0.055 (-1.22)	0.136 (2.39) ***
Control Variables			
Revenue *ln*(REV)	+	0.374 (8.83) ***	0.272 (5.81) ***
Number of subsidiaries (SUBS)	+	0.024 (6.97) ***	0.017 (2.44) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	0.137 (1.08)	-0.165 (-1.25)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.064 (-1.39) *	-0.072 (-0.78)
Company made a loss during the financial period (LOSS)	+	-0.017 (-0.44)	0.074 (1.93) **
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.038 (1.13)	
Auditor switched in past year (SWTCH_1)	+	-0.096 (-2.15) **	0.003 (0.02)
Auditor switched two years ago (SWTCH_2)	+	-0.194 (-3.84) ***	
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.045 (-3.44) ***	-0.050 (-1.25)
Company is listed on NZSE (LISTED)	+	0.004 (0.08)	-0.136 (-0.81)
Intercept		-0.259	0.297
N		102	112
Adj. R^2		0.893	0.675
F statistic (two-tailed test)		45.37 ***	13.84 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

This is possibly due to the fact that Audit NZ, which audits other more politically sensitive sectors of public sector (such as various Government departments, Treasury, NZ police) has developed audit strategies that are sensitive to auditees' political risks and media exposure.

Table 6.23 presents the separate analyses for audit fees using the Big 5 and non-Big 5 auditor sub-samples. Comparing Tables 6.22 and 6.23, the audit fees of non-Big 5 auditors are not risk adjusted for political risk.

Tables 6.24 and 6.25 present analyses of the partitioned sample based on whether the auditor is a specialist or non-specialist where 131 entities in the sample use a specialist auditor while the remaining 83 entities do not. In both models using actual audit hours (Table 6.24) and audit fees (Table 6.25) as dependent variables, independent variables measuring size (REV and SUBS) have strong explanatory power. This is as expected.

Media coverage (TOT_PRES) is significant at 0.01 level for non-specialists, in both the audit effort/hours and audit fees models. This finding suggests that non-specialists auditors are sensitive to political risk in their auditing approach, which is also reflected in their audit pricing. On the other hand, specialists, due to perhaps their specialised and in-depth knowledge of auditees, do not seem to adjust their audit effort for political costs. This finding suggests that the political risk findings in the main analyses (reported in Tables 6.4 and 6.5) are likely to be driven by non-specialists' sensitivity to political risks.

The effect of specialisation on audit fees also suggests in Table 6.25 that there is an audit fee premium charged by Big 5 auditing firms that applies to both specialist and non-specialist auditors.

TABLE 6.24

OLS REGRESSION RESULTS FOR AUDIT HOURS, PARTITIONED ON AUDITOR SPECIALIST

	Predicted Sign	Column A Full Model	Column B Full Model
Auditor is specialist		**Yes**	**No**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.001 (1.15)	0.001 (1.67) *
Total number of directors (TOT_DR)	+	0.018 (1.41) *	0.019 (1.10)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.048 (-1.17)	-0.070 (-0.73)
Company has an audit committee (ADT_CMTE)	-	0.000 (-0.01)	-0.031 (-0.75)
CEO is director (CEO_DR)	+	0.019 (0.57)	-0.009 (-0.07)
Control Variables			
Revenue *ln*(REV)	+	0.227 (5.36) ***	0.303 (5.21) ***
Number of subsidiaries (SUBS)	+	0.016 (3.28) ***	0.015 (2.60) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	0.046 (0.40)	-0.128 (-0.78)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.040 (0.49)	-0.027 (-0.38)
Company made a loss during the financial period (LOSS)	+	0.046 (1.23)	0.093 (1.82) **
Auditor is one of the Big Five (ADTR_TYP)	-	0.053 (1.55) *	-0.091 (-1.55) *
Auditor switched in past year (SWTCH_1)	+		-0.118 (-1.90) **
Auditor switched two years ago (SWTCH_2)	+	-0.138 (-1.84) **	-0.028 (-0.32)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.021 (-1.44) *	-0.061 (-1.61) *
Company is listed on NZSE (LISTED)	+	0.036 (0.66)	-0.029 (-0.19)
Intercept		1.490	1.438
N		131	83
Adj. R^2		0.687	0.697
F statistic (two-tailed test)		16.86 ***	10.92 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

TABLE 6.25

OLS REGRESSION RESULTS FOR AUDIT FEES, PARTITIONED ON AUDITOR SPECIALIST

	Predicted Sign	Column A Full Model	Column B
Auditor is specialist		**Yes**	**No**
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (0.25)	0.000 (1.51) *
Total number of directors (TOT_DR)	+	0.000 (-0.02)	0.012 (0.81)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.030 (0.67)	0.178 (2.28) **
Company has an audit committee (ADT_CMTE)	-	0.019 (0.70)	0.004 (0.11)
CEO is director (CEO_DR)	+	0.018 (0.51)	0.015 (0.14)
Control Variables			
Revenue *ln*(REV)	+	0.275 (6.01) ***	0.314 (6.60) ***
Number of subsidiaries (SUBS)	+	0.025 (4.79) ***	0.030 (6.12) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.106 (-0.86)	-0.090 (-0.67)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.132 (-1.50) *	0.002 (0.03)
Company made a loss during the financial period (LOSS)	+	0.022 (0.54)	0.062 (1.48) *
Auditor is one of the Big Five (ADTR_TYP)	+	0.101 (2.75) ***	0.075 (1.57) *
Auditor switched in past year (SWTCH_1)	-		-0.085 (-1.67) **
Auditor switched two years ago (SWTCH_2)	-	-0.062 (-0.77)	-0.151 (-2.08) **
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	0.018 (1.15)	-0.101 (-3.28) ***
Company is listed on NZSE (LISTED)	+	0.060 (1.01)	0.060 (0.49)
Intercept		0.254	-0.025
N		131	83
Adj. R^2		0.788	0.876
F statistic (two-tailed test)		27.88 ***	31.58 ***

Industry indicator variables not shown.
Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

Another interesting finding in Table 6.25 is that presence of non-audit fees is associated with the reduction in audit fees for non-specialist auditors in New Zealand public sector. This finding is consistent with the main analyses of the total sample using audit fees as the dependent variable (Table 6.5) where there is evidence of cross-subsidisation of audit services by non-audit services.

Thus, the results from Table 6.22-6.25 provide evidence that the relation between TOT_PRES and audit hours and audit fees is driven by non-Big 5, non-specialists auditors. These tables also provide additional support for a Big 5 pricing premium and some evidence of Big 5 efficiencies and knowledge spillover effects on audit effort and audit prices. Finally, none of the effectiveness board variables are consistently significant for these sub-samples.

Industry

Tables 6.26 and 6.27 present analyses of results for the sample partitioned based on industry classification. However, these results should be viewed with caution given the small sample sizes and large number of independent variables. For this reason, I only discuss the results for the energy industry where there are 71 firm-year observations.

It appears in these tables that energy industry entities' corporate governance effeciveness variables busy directors (BUSY_DR) and audit committee (ADT_CMTE) have significant effect on audit effort/hours on energy industry audits. However, their effects are contrary to expectations. Instead of increasing audit effort, the presence of busy directors on the boards of energy entities decreases audit effort. This could be explained by the fact that the pool of directors for such specialised industry is small and directors are reasonably well known to each other and their auditors. Hence, auditors might perceive such boards of directors familiar and less risky. The opposite (than expected) effect of

TABLE 6.26

OLS REGRESSION RESULTS FOR AUDIT HOURS, PARTITIONED ON AUDITEE INDUSTRY

	Predicted Sign	Full Model Parameter Estimate (*t*-value)				
Industry		**IND_ENGY**	**IND_HLTH**	**IND_PORT**	**IND_RES**	**IND_OTHR**
Test Variables						
Total number of press mentions during the financial period (TOT_PRES)	+	0.001 (1.08)	0.001 (0.69)	-0.001 (-0.48)	0.003 (1.59) *	0.001 (1.47) *
Total number of directors (TOT_DR)	+	0.003 (0.16)	0.001 (0.05)	0.019 (0.58)	0.053 (2.91) ***	0.003 (0.14)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	-0.136 (-2.22) **	-0.029 (-0.44)	0.054 (0.48)	-0.037 (-0.42) ***	0.153 (1.04)
Company has an audit committee (ADT_CMTE)	-	0.096 (2.40) ***	0.010 (0.25)	0.067 (1.03)	-0.097 (-2.66) **	-0.031 (-0.47)
CEO is director (CEO_DR)	+			-0.089 (-1.83) **		
Control Variables						
Revenue ln(REV)	+	0.233 (3.81) ***	0.345 (5.64) ***	0.445 (4.27) ***	0.009 (0.02)	0.374 (4.22) ***
Number of subsidiaries (SUBS)	+	0.015 (2.33) **	-0.003 (-0.20)	0.061 (2.89) ***	0.035 (1.44) *	0.014 (1.62) *
(Inventory+Receivables)/Total Assets (INVREC)	+	0.129 (0.99)	-1.170 (-2.37) **	0.340 (0.44)	0.732 (1.23)	-0.070 (-0.32)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.075 (-0.80)	0.227 (1.07)	0.263 (1.03)	0.350 (0.83)	-0.076 (-0.81)
Company made a loss during the financial period (LOSS)	+	0.113 (1.71) **	0.029 (0.89)	0.015 (0.12)		0.168 (2.23) **
Auditor is one of the Big Five (ADTR_TYP)	-			0.174 (2.55) **	0.053 (0.51)	-0.187 (-2.15) **
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.099 (2.32) **	-0.007 (-0.16)	-0.032 (-0.56)	0.331 (2.47) **	

	Predicted Sign	Full Model Parameter Estimate (*t*-value)				
Industry		**IND_ENGY**	**IND_HLTH**	**IND_PORT**	**IND_RES**	**IND_OTHR**
Auditor switched in past year (SWTCH_1)	+	0.018	-0.145	0.046		-0.228
		(0.28)	(-1.56) *	(0.50)		(-2.00) **
Auditor switched two years ago (SWTCH_2)	+	-0.078	-0.058			0.117
		(-1.10)	(-0.60)			(0.58)
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.017	-0.003	-0.083	-0.175	-0.078
		(-1.03)	(-0.06)	(-1.60)	(-1.82)	(-1.48) *
Company is listed on NZSE (LISTED)	+			-0.113		
				(-1.40) *		
Intercept		1.552	1.071	-0.858	1.751	0.972
N		71	38	31	21	45
Adj. R^2		0.778	0.714	0.862	0.866	0.671
F statistic (two-tailed test)		19.89 ***	8.10 ***	13.54 ***	12.75 ***	7.90 ***

Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

TABLE 6.27

OLS REGRESSION RESULTS FOR AUDIT FEES, PARTITIONED ON AUDITEE INDUSTRY

	Predicted Sign	Full Model Parameter Estimate (*t*-value)				
Industry		**IND_ENGY**	**IND_HLTH**	**IND_PORT**	**IND_RES**	**IND_OTHR**
Test Variables						
Total number of press mentions during the financial period (TOT_PRES)	+	0.001 (0.85)	0.004 (3.68) ***	-0.001 (-0.48)	0.002 (1.37)	0.001 (1.87) **
Total number of directors (TOT_DR)	+	0.005 (0.22)	-0.017 (-1.13)	0.019 (0.58)	0.008 (0.47) ***	-0.008 (-0.40)
Proportion of busy directors (>3 directorships) (BUSY_DR)	+	0.030 (0.42)	0.122 (2.17) **	0.054 (0.48)	-0.087 (-1.07)	0.263 (2.15) **
Company has an audit committee (ADT_CMTE)	-	0.114 (2.42) ***	0.004 (0.11)	0.067 (1.03)	-0.043 (-1.29)	-0.030 (-0.54)
CEO is director (CEO_DR)	+			-0.089 (-1.83) **		
Control Variables						
Revenue ln(REV)	+	0.208 (2.91) ***	0.167 (3.17) ***	0.445 (4.27) ***	0.679 (1.62) *	0.313 (4.24) ***
Number of subsidiaries (SUBS)	+	0.019 (2.59) ***	0.028 (2.10) **	0.061 (2.89) ***	0.011 (0.51)	0.032 (4.54) ***
(Inventory+Receivables)/Total Assets (INVREC)	+	-0.124 (-0.81)	0.806 (1.90) **	0.340 (0.44)	0.220 (0.40)	-0.175 (-0.97)
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	-0.130 (-1.19)	-0.194 (-1.07)	0.263 (1.03)	0.465 (1.20)	-0.012 (-0.15)
Company made a loss during the financial period (LOSS)	+	0.051 (0.66)	-0.054 (-1.94) **	0.015 (0.12)		0.137 (2.17) **
Auditor is one of the Big Five (ADTR_TYP)	+			0.174 (2.55) **	-0.036 (-0.38)	0.071 (0.98)
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	+	0.157 (3.16) ***	0.024 (0.67)	-0.032 (-0.56)	0.039 (0.32)	

	Predicted Sign	Full Model Parameter Estimate (*t*-value)									
Industry		**IND_ENGY**		**IND_HLTH**		**IND_PORT**		**IND_RES**		**IND_OTHR**	
Auditor switched in past year (SWTCH_1)	+	-0.001		-0.007		0.046				-0.179	
		(-0.01)		(-0.09)		(0.50)				(-1.88)	**
Auditor switched two years ago (SWTCH_2)	+	-0.027		-0.022						-0.166	
		(-0.33)		(-0.27)			*			(-0.99)	
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	0.026		0.026		-0.083		-0.075		-0.101	
		(1.34)	*	(0.59)		(-1.60)		(-0.86)		(-2.29)	**
Company is listed on NZSE (LISTED)	+					-0.113					
						(-1.40)					
Intercept		0.484		0.818		-0.858		-1.718		0.106	
N		71		38		31		21		45	
Adj. R^2		0.834		0.791		0.862		0.812		0.868	
F statistic (two-tailed test)		28.12	***	11.78	***	13.54	***	8.84	***	23.31	***

Significance levels are one-tailed.
*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

audit committee on audit effort could be explained by the fact that audit committee variable for energy entities might also proxy for complexity.

Table 6.27 shows that energy entities' fees are affected by the audit committee variable. This could also be due to the complexity of such entities (that is, entities with audit committees are also more complex and require more audit effort and therefore higher audit fees). Another interesting finding for the energy industry is that both audit effort and audit fees in that industry increase when the auditor is a specialist. This may reflect the changes/restructuring of energy sector in New Zealand in the mid to late 1990s leading some auditors to develop more intensive audit procedures and to charge more for such energy industry specialised procedures.

6.4.5. Factor analysis

Given the nature of the selection and construction of the corporate governance effectiveness variables in this study and the high correlation between the size measure of the board of directors (TOT_DR) and other board effectiveness variables (BUSY_DR), (ADT_CMTE) and (CEO_DR), it is difficult to draw conclusions about the board of directors effectiveness based on a single corporate governance characteristic. To mitigate this problem I performed the principal component (factor) analysis to identify commonalities between these variables.

Factor analysis is used to identify underlying variables or factors that explain the pattern of correlations within a set of observed variables. That is, factor analysis is used for data reduction in order to identify a small number of factors that explain most of the variance observed in a larger number of variables. Therefore, factor analysis is used in this study to reduce the number of corporate governance effectiveness variables and to assess whether a smaller number of factors has

better explanatory power of relationship between corporate governance and audit effort and audit fees.

The component matrix extracted using principal component analysis is shown in Table 6.28.

TABLE 6.28

THE COMPONENT MATRIX FOR FACTOR ANALYSIS

	FACT_1	FACT_2	FACT_3	FACT_4
TOT_DR	0.7309	-0.3780	0.1720	0.5415
ADT_CMTE	0.7705	-0.2737	0.1122	-0.5647
CEO_DR	0.2387	0.7966	0.5550	0.0192
BUSY_DR	0.5435	0.5464	-0.6340	0.0638
Eigenvalues	1.480	1.151	0.752	0.617
Cumulative variance	37.0%	65.8%	84.6%	100.0%

Only the first two factors have eigenvalues greater than one and hence only these factors have been considered further for the purpose of data reduction.[4]

FACT_1 is largely an average of TOT_DR and ADT_CMTE with some weighting on BUSY_DR and a slight weighting on CEO_DR. As such this "latent" factor could be viewed as reflecting the board composition and attributes likely to be associated with larger and more sophisticated companies. A combination of large board size and an audit committee existence would suggest, in general a larger and stronger corporate governance and hence lower audit effort.

[4] The factors reported in this thesis are unrotated factors. Oblique rotation was also used in the above factor analysis as it relies on the assumption that factors are not independent. The oblique rotation yielded virtually identical results to reported unrotated factors.

FACT_2 is a contrast between TOT_DR and ADT_CMTE versus CEO_DR and BUSY_DR, with the most weighting on CEO_DR. FACT_2 will have the highest value for a small board with no audit committee, busy directors and the CEO being on the board. A combination of such board characteristics might be associated with the potential for weak corporate governance, greater audit risk and hence greater audit effort and audit fees.

It is hypothesised that FACT_1 is likely to be associated with reduced audit risk and hence reduce audit effort and audit fees. However, no sign is assigned to FACT_1 since, consistent with previous discussions in chapter 4 and in this chapter, the board size and the existence of audit committee can have opposite effects on audit effort (in general larger board size is associated with increases in audit effort, while audit committee existence is associated with decrease in audit effort.). FACT_2 is associated with greater audit risk and hence greater audit effort and audit fees. Thus, I run a regression model substituting the variables FACT_1 and FACT_2 for TOT_DR, ADT_CMTE, BUSY_DR and CEO_DR. The results are presented in the Table 6.29.

Using Factor 1 (FACT_1) and Factor 2 (FACT_2) instead of individual corporate governance effectiveness variables provides comparable to the R^2 reported in Tables 6.4 and 6.5. Also, total number of press mentions (TOT_PRES) as a measure of political risk is still significant for audit effort and audit fees in Table 6.29.

TABLE 6.29

OLS REGRESSION RESULTS FOR AUDIT HOURS AND AUDIT FEES, USING BOARD FACTORS

	Predicted Sign	Column A Audit Hours (Full Model)	Column B Audit Fees (Full Model)
Test Variables			
Total number of press mentions during the financial period (TOT_PRES)	+	0.000 (1.90) **	0.000 (1.58) *
Board factor 1 (FACT_1)	?	-0.001 (-0.05)	0.016 (1.37) *
Board factor 2 (FACT_2)	+	-0.017 (-1.62) *	0.002 (0.19)
Control Variables			
Revenue *ln*(REV)	+	0.290 (8.89) ***	0.322 (10.29) ***
Number of subsidiaries (SUBS)	+	0.015 (4.58) ***	0.025 (8.11) ***
(Inventory + Receivables)/Total Assets (INVREC)	+	-0.049 (-0.55)	-0.131 (-1.53) *
Leverage (Total Liabilities/Total Assets) (LEVGE)	+	0.004 (0.09)	-0.011 (-0.27)
Company made a loss during the financial period (LOSS)	+	0.081 (2.71) ***	0.051 (1.76) **
Auditor is one of the Big Five (ADTR_TYP)	-	-0.032 (-1.29) *	0.082 (3.46) ***
Auditor is an industry specialist (>20% share of industry audit fees) (SPCLST)	-	-0.025 (-0.85)	0.033 (1.20)
Auditor switched in past year (SWTCH_1)	+	-0.067 (-1.40) *	-0.047 (-1.02)
Auditor switched two years ago (SWTCH_2)	+	-0.044 (-0.79)	-0.115 (-2.14) **
Proportion of non-audit fees to audit fees (OTHR_FEE)	-	-0.034 (-2.56) ***	-0.023 (-1.78) **
Company is listed on NZSE (LISTED)	+	-0.021 (-0.42)	0.017 (0.36)
Intercept		1.375	0.047
N		213	213
Adj. R^2		0.709	0.828
F statistic (two-tailed test)		24.86	55.01

Industry indicator variables not shown.
Significance levels are one-tailed except for the industry variables.

*** Significant at the .01 level.
** Significant at the .05 level.
* Significant at the .1 level.

Factor 1 (FACT_1), which is associated with larger and more sophisticated auditees, has no significance for audit effort. This is likely to be a result of the opposite effects of board size (expected to increase audit effort) and audit committee existence (expected to decrease audit effort). Factor 1 (FACT_1), however, has a weak positive effect on audit fees. This is expected to the extent that FACT_1 is related to auditee size.

Factor 2 (FACT_2), which is associated with weaker corporate governance, has a weak negative effect on audit hours in Table 6.29. This negative effect is contrary to expectations but not that surprising given the main findings of the study reported in Table 6.4. There, the non-significance of busy directors and CEO/director duality (which are main components of Factor 2) are consistent with previous studies (Cohen et al 2002, Goodwin and Seow 2002) that find that auditors place more significance in their auditing on auditees' internal controls than on corporate governance mechanisms.

6.5 Summary and Conclusion

This chapter examines empirical evidence testing the effects of client characteristics in New Zealand public sector on audit effort and audit fees.

While New Zealand public sector entities have many similarities to private sector corporate entities, two aspects make them different relative to samples used in previous audit effort research.

First, in line with Zimmerman (1977), New Zealand public sector entities face significant political pressure. Second, lacking alienable residual rights, boards of directors in New Zealand public sector entities play a predominant role in the control environment.

Thus, in addition to using audit hour data which itself is relatively unique, this study contributes to the existing audit production literature by examining two new determinants of audit effort, i.e., political costs and board effectiveness.

Overall, after controlling for other factors affecting audit effort/hours, there is evidence to support the political cost hypothesis as applied to the New Zealand public sector audit environment. Based on empirical results in this study, auditors expend more effort (audit hours) in auditing public sector entities that are in the public or political spotlight compared to those entities that are politically less visible. This finding further extends the literature on political risk and political cost in financial accounting research (i.e. Cahan 1992, Hall 1993, Cahan et al 1997, Key 1997) and suggests that the implications of political risk hypothesis have wider application than previously documented.

Also the results of this study provide weak evidence for the connection between board of directors effectiveness, measured by board size, and audit effort. However, this study does not provide consistent evidence that other characteristics of board of directors (such as proportion of busy directors on the board, the presence of the CEO on the board and the existence of an audit committee) have a systematic effect on audit effort.

The additional analyses in this chapter was conducted on alternative political risk variable specification, using dependent variables specifications adjusted for size, using the fixed effects model, analyses for sub-samples of the main sample where the main sample was partitioned based on various client and auditor characteristics and industry classification and using composite measures for the board variables based on a factor analysis.

The additional tests using the size adjusted specifications of dependent variable provide evidence that press coverage as a measure of political risk remains significant after size adjustments for both audit production and audit fees models. The fixed effects model analysis, however, provides results that show that political risk/visibility is particularly significant and specific to the year 2000. Further, the additional tests for the incremental effect of political risk and board effectiveness show that both political risk and board effectiveness variables used in this study are important additions to both audit production and audit fee models.

The additional analyses of sub-samples present evidence that large clients and entities with higher than average media coverage seem to drive the main results of this study. Additionally, Audit New Zealand, as one of the major auditors in this study, through their inherent knowledge of the public sector, seems to have their audit production more adjusted for political risk than any other auditor group in this study. Non-specialists also seem to be more likely to adjust audit effort for political risks than specialist auditors.

While the evidence on corporate governance effectiveness and auditing is mixed, this study contributes to the body of knowledge in both audit production and corporate governance, as it is the first study to link the corporate governance research and audit effort research. This link is particularly important given the post-Enron environment in business, recent legislation (e.g. Sarbanes-Oxley Act in the US) and proposals by regulators to strengthen the relationship between corporate governance mechanisms and the auditing.

The next chapter 7 outlines the summary and conclusion for the whole thesis.

CHAPTER 7

SUMMARY AND CONCLUSION

7.0 INTRODUCTION

The preceding chapter reports the results for the hypotheses tests. This chapter summarises and concludes the thesis.

It begins with a brief review of the purpose and motivation of the study in section 7.2. Section 7.3 outlines the structure of the thesis while section 7.4 presents a summary of the major findings of this study and their implications. Section 7.5 details this study's limitations and it is followed by section 7.6 that suggests some future research avenues. Finally, section 7.7 concludes the chapter.

7.1 PURPOSE AND MOTIVATION

The purpose of this study is to examine the relations between client characteristics and audit effort in audit production. In particular, this study examines the relations between political risk and audit effort measured in audit hours and board of directors effectiveness, measured through board characteristics (i.e., board size, CEO duality, multiple directorships, and presence of an audit committee) and audit effort measured in audit hours.

This study is motivated by several factors. First, it is a clear that to understand audit markets, researchers in auditing need to understand the audit production process. However, audit production has been scarcely researched due to the proprietary nature of audit hours data which is required for audit production

studies. This study uses such data on audits of public sector corporate entities provided by the New Zealand Auditor-General.

Secondly, after the collapse of Enron and WorldCom, two of the largest business failures in US history, there is heightened interest in the effect of corporate governance on the audit process. As a matter of fact, the audit process has been under scrutiny and has attracted the attention of professional institutes, oversight boards, the investing public and legislators around the world. This study addresses the relationship between the corporate governance and the auditing process, as well as between political risk and the auditing process. Political risk and political costs have been mostly researched within an earnings management and financial accounting context. This study provides evidence that the political risk/cost hypothesis applies to more settings than was previously believed.

Last but not least, consistent with the call by Stein et al. (1994) on extensions of audit production studies in varied settings and the call by Mock and Wright (1999) to consider a broader set of audit-related risks, this study combines both audit production and audit risk model studies and addresses both Stein et al. (1994) and Mock and Wright's (1999) concerns.

7.2 THESIS ORGANISATION

Chapter 1 introduces this thesis while Chapter 2 discusses the literature that provides a framework for audit market and audit production research.

Chapter 3 discusses the institutional settings of the study. It provides a review of the background for both public sector reporting and auditing in New Zealand. Chapter 4 provides the conceptual model that is the basis of the study and outlines the hypotheses.

Chapter 5 discusses the research design while Chapter 6 presents the results of empirical tests. Chapter 7 concludes the study.

7.3 Summary of Major Findings and Contributions of the Study

I extend O'Keefe et al's (1994) model on audit production to include two new factors – political risk and corporate governance. I expect that political risk will affect inherent risk which will impact on audit risk and audit effort. I expect that corporate governance factors will affect control risk which will impact on audit risk and audit effort.

I measure political risk using the number of times an entity is mention in the press in the period covered by the audit. I measure corporate governance factors using four separate measures of board effectiveness, i.e., board size, CEO being a member of the board, multiple directorships of the directors and existence of an audit committee, although I also use composite measures based on a factor analysis. I expect that audit effort will be positively related to the number of press mentions, board size, percentage of busy directors, and CEO membership on the board, while I expect a negative relation between audit effort and existence of an audit committee.

To test these hypotheses, I use a sample of 275 entity/year observations related to public sector companies in New Zealand for the years 1998-2000. The public sector is an ideal setting to examine political and board factors because, by their nature, public sector entities operate in the political arena and because, lacking alienable rights, boards are the predominant governance mechanism for public sector entities. As a result, I am able to maximise the power of my tests.

The audit hours data for audits of 200+ hours was provided by the New Zealand Auditor General. The data on audit fees and other variables, except for press

coverage, were collected from public sector corporate entities annual reports for the years under observation. The data on press coverage was gathered from the New Zealand News Index Database.

After controlling for other factors affecting audit effort, this study finds strong evidence supporting the political risk hypothesis that also appears to be specific to the year 2000, as applied to the audit environment. Namely, auditors expend more effort (hours) in audit production of public sector entities audits for those entities that are in the public/political spotlight compared to those that are politically less visible.

This finding supports evidence from the empirical financial accounting research of political risk/cost (e.g., Cahan 1992, Hall 1993, Cahan et al 1997, Key 1997) and suggests that the implications of the political cost hypothesis are more widespread than previously believed.

This study also provides evidence that board effectiveness when measured by board size can have an impact on audit effort. However, there is no evidence of a consistent relationship between other measures of board effectiveness – specifically, the production of busy directors, the presence of the CEO on the board and the existence of an audit committee – and audit production.

While the evidence related to board effectiveness is mixed, this study is the first to link the corporate governance literature and the audit production research. This type of research is particularly important given that some recently enacted laws and regulatory requirements (e.g., the Sarbanes-Oxley Act in the US and new NZX listing requirements regarding audit committees in New Zealand) are based on the assumption that a more rigorous audit function is needed in the post-Enron environment. If the audit function is to be improved, politicians and regulators

will need to understand how the corporate governance environment affects the audit.

Regarding the control variables in this study, revenue and the number of subsidiaries are found to be highly significant in audit production. That is consistent with previous production studies.

Various other controlling variables used to capture audit risk, such as leverage and loss, provide conflicting results. While leverage is not significant in audit production, a prior loss increases the number of audit hours. The former result is consistent with Berkman and Bradbury (1998) who find evidence of a reduced threat of bankruptcy in public sector due to implicit government guarantees. Thus, leverage may not increase audit risk in the New Zealand public sector to the extent it does in private sector entities. On the other hand, since the performance and remuneration in public sector is linked to accounting measures of performance (New Zealand Business Round Table, 1988), managers of New Zealand public sector entities may have added incentive to manage earnings upward to avoid losses, and as a result, more diligence and effort is required on the part of the auditor.

This study also does not find any association between detection risk variables, i.e., auditor type and specialisation, and audit production. This suggests that the skills required to audit public sector corporate entities are fairly homogeneous.

Finally, this study provides some, but limited, evidence of knowledge spillovers from non-audit services to auditing. This finding is inconsistent with Davis et al (1993) and O'Keefe et al (1994). However, these prior studies use more detailed information on non-audit services (e.g., they had a detailed information about the proportion of consulting services versus taxation services) than this study. They find that management consulting services had a weak negative effect on audit

effort while taxation services has the opposite effect. Thus, without more detailed information about the type of non-audit services provided to entities under observation, it is hard to make any further inferences about the possible effects of non-audit services on audit production. Nevertheless, the findings of this study on knowledge spillovers add to our understanding of the interaction between audit and non-audit services in audit production.

This study also explores alternative political risk variable specifications using dependent variables specifications adjusted for size. The tests using size adjusted specifications of the dependent variable, in this study, provide important evidence that press coverage, as a measure of political risk is fairly robust and significant in both audit production and audit fee models. Further, additional analyses of sub-samples used in this study present evidence that large auditees with higher then average media coverage seem to drive the main results of this study, namely the significance of political risk on audit production.

In addition, this study also identifies that Audit New Zealand, as one of the major auditors in New Zealand public sector, through their inherent knowledge of public sector auditing environment, have their audit production more adjusted for political risk than any other audit group.

This study makes several important contributions to the existing literature. Firstly, it uses actual audit hours data to examine audit production/effort, which is relatively unique. The actual audit hours are acquired from the New Zealand Auditor-General's office and are used to examine audit production in the New Zealand public sector context.

Secondly, this study combines the research on the audit risk model and on audit production and extends the audit risk model by examining two new determinants of audit risk, i.e., political risk and board of directors effectiveness, as elements of

inherent and internal control risk. The findings on political risk also add to the existing literature that examines the effect of political risk/visibility on earnings management while the findings on corporate governance also add to the growing literature on board characteristics and board effectiveness.

Thirdly, this study provides evidence on the robustness of the audit production model first used by O'Keefe et al. (1994) by applying it to the New Zealand public sector. In that way, this study responds to Stein et al. (1994) call for additional audit production research in other settings and using different auditors.

7.4 LIMITATIONS OF THE STUDY

As with all studies that use proxies to capture and model audit risk, this study has limitations. In particular, while the measure of political visibility in this study is derived from prior research, it is a proxy for a construct that is unobservable and very complex. So, in that sense, although providing strong empirical evidence, this study cannot prove in any absolute sense that a chosen proxy for political risk and political visibility is the only and the best one.

Secondly, it is possible that political risk not only increases auditor's assessment of audit risk but also increases other stakeholders concerns about their own risks which flow from political risk. In other words, an increase in political risk could increase the demand for audit assurance. This study examines the supply side of audit production and does not consider the demand effect on audit effort.

Further, the absence of a strong support for the relation between board effectiveness and audit production effort is symptomatic of a wider issue, i.e., whether and to what extent auditors rely on the strength of internal control when planning and performing their audit procedures.

Recent studies (such as Goodwin and Seow 2002) examine how auditors regard corporate governance mechanisms by using experiments and investigate perceptions by auditors and directors. In general terms, since corporate governance is a complex and far reaching mechanism of corporate control, experimental studies may be better suited for discovering relations between corporate control and auditing process than an archival study like this one.

Another limitation of this study is that the data used in this study is aggregate audit hours. While any study on audit production that uses actual audit hours data makes a valid contribution to the under-researched area of audit production, it is advisable to use disaggregated audit hours information when possible. Using aggregate audit hours data can result in losses of information and lower statistical power, because aggregation treats hours spent on different tasks and incurred by different levels of auditors as all being the same.

Finally, this study uses a sample drawn from the New Zealand public sector auditing market and from a recent period (1998-2000). The results of this study may be idiosyncratic and may only relate to the setting and period under observation. That means the results may not be generalisable to other settings or other time periods.

7.5 Future Research Avenues

There are several future research avenues that may flow from this study.

First, this study can be extended by examining the content of press articles used to proxy for political visibility. For example, future research can use content analysis to examine whether a favourable press article carries the same weight as an unfavourable article in determining audit production hours.

Secondly, future research can extend this study be examining disaggregated audit hour data, by rank/grades within the audit service provider firm (partner, manager, senior, staff, such as O'Keefe et al. 1994) or by grades and audit activities (planning, internal control evaluation, substantive procedures, review, etc., such as Hackenbrack and Knechel 1997). This would allow for a more thorough investigation of knowledge spillovers.

Thirdly, further research could examine the audit tender process in the public sector more closely. In particular, Table 6.5 provides some evidence of lowballing early in the contract period. By using a time-series, rather than cross-sectional, approach, it would be possible to focus on specific changes in fees over time, and with audit hour data, it would be possible to examine how changes in fees relate to changes in audit hours (similar to Dopuch et al 2003).

Finally, using a control group of corporate entities from the private sector would provide valuable insights about the audit production process and audit pricing in the public sector versus the private sector.

7.6 CONCLUSION

This chapter summarises and concludes the thesis by reviewing the purpose and motivation of the study. It also summarises the major findings and implications. Limitations are discussed and future research avenues suggested. This study provides evidence that political risk and political visibility effect audit production and audit effort. On the other hand, this study does not provide strong evidence that corporate governance mechanisms have an effect on audit production.

This evidence suggests that political cost/risk theory is applicable to wide settings. However, the results also suggest that the audit production process is

less sensitive to a client's internal control environment relative to what is implied by auditing theory.

REFERENCES AND BIBLIOGRAPHY

Abdel-Khalik, A. (1990). Why Do Private Companies Demand Auditing? A Case for Organisational Loss of Control. *Journal of Accounting Auditing and Finance* (Vol. 5): 31-52.

Abowd, J. (1990). Does Performance-Based Managerial Compensation Affect Corporate Performance? *Industrial and Labor Relations Review* (Vol. 43, No. 3): 52-73.

Abowd, J. and Bognanno, M. (1995). International Differences in Executive and Managerial Compensation, in R. Freeman and L. Katz, ed. *Differences and Changes in Wage Structures,* Chicago: The University of Chicago Press: 67-103.

Adams, R.B. and Mehran, H. (2002). Board Structure and Banking Firm Performance.Working paper, Federal Reserve Bank of New York.

Agrawal, A. and Knoeber, C.R. (2001). Firm Performance and Mechanisms to Control Agency Problems Between Managers and Shareholders. *Journal of Financial and Quantitative Analysis (*Vol. 31, No. 3, September): 377-397.

Albrecht, W. D. (1991). The Determinants of the Market Reaction to an Announcement of a Change in Auditor. PhD dissertation, Virginia Polytechnic Institute and State University, Blacksburg.

Alchian, A.A. (1965). Some Economics of Property Rights. *Il Politico* (Vol. 30, December): 816-829.

Alchian, A. A. (1977). *Some Economics of Property Rights in Economic Forces*

at Work. Indianapolis, IN: Liberty Press.

Alchian, A.A. (1984). Specificity, Specialization and Coalitions. *Journal of Institutional and Theoretical Economics* (Vol. 140, No.1): 34-39.

Alchian, A.A. and Demsetz, H. (1972). Production, Information Costs and Economic Organisation. *American Economic Review* (Vol. 62, No.5.): 777-796.

Alchian, A.A. and Woodward, S. (1987). Reflections on the Theory of the Firm. *Journal of Institutional and Theoretical Economics* (Vol. 143, No. 1): 110-136.

Alexix, M. (1982). The Applied Theory of Regulation: Political Economy at the Interstate Commerce Commission. *Public Choice* (Vol. 39, No1): 5-27.

Allen, A.C. (1994). The Effect of Large-Firm Audits on Municipal Bond Rating Decisions. *Auditing: A Journal of Practice and Theory* (Vol. 13, No 1, Spring): 115-125.

Allen, M.P. (1974, June). The Structure of Interorganisational Elite Cooptation: Interlocking Corporate Directorates. *American Sociological Review* (Vol. 39, June): 393-406.

American Institute of Certified Public Accountants. 1983. Statement on Auditing Standards No. 47. *Audit Risk and Materiality in Conducting an Audit.* New York: AICPA.

American Institute of Certified Public Accountants. 1988. Statement on Auditing Standards No. 53. *The Auditor's Responsibility to Detect and Report Errors and Irregularities.* New York: AICPA.

American Institute of Certified Public Accountants 1988. Statement on Auditing Standards No. 55. *Internal Control Structure in a Financial Statement Audit.* New York: AICPA.

Anderson, D., Francis, J.R. and Stokes, D. (1993). Auditing, Directorships and the Demand for Monitoring. *Journal of Accounting and Public Policy* (Vol. 12): 353-375.

Anderson, D. and Stokes, D. (1992). An Explanation of Production Differentiation on Auditing and Some Research Implications. Unpublished working paper, University of Southern Queensland.

Antle, R. and Smith, A. (1986). An Empirical Investigation of the Relative Performance Evaluation on Corporate Executives. *Journal of Accounting Research* (Vol. 24, No. 1): 1-39.

Arens, A.A. and Loebbecke, J. K.(1997). *Auditing: An Integrated Approach.* Englewood Cliffs, NJ: Prentice Hall.

Arens, A.A., Best, P. J., Shailer, G.E.P., Fielder, B. A. and Loebbecke, J. K. (1998). *Auditing in Australia: An Integrated Approach,* 4th Edition, Pearson Education, Australia.

Arens, A.A., Best, P.J., Shailer, G.E.P., Fielder, B.A. and Loebbecke, J.K. (2002). *Auditing in Australia: An Integrated Approach*, 5th edition, Pearson Education, Australia.

Ashton, R.H. (1974). An Experimental Study of Internal Control Judgements. *Journal of Accounting Research* (Vol. 12, No.1, Spring): 143-157.

Ashton, R.H. and Ashton, A.H. (1988). Sequential Belief Revision in Auditing. *The Accounting Review* (Vol. 63, October): 623-641.

Ashton, R.H. and Ashton A.H. eds. (1995). *Judgement and Decision Research in Accounting and Auditing.* New York: Cambridge University Press.

Ashton, R., Elliot, R. and Willingham, J. (1989). The Pricing of Audit Services: Evidence from a Big Eight Firm". Working paper, Duke University (July).

Ashton, R.H., Graul, P. and Newton, J. (1989). Audit Delay and the Timeliness of Corporate Reporting. *Contemporary Accounting Research* (Vol. 6, Spring): 657-673.

Ashton, R.H., Willingham, J. and Elliot, R. (1987). An Empirical Analysis of Audit Delay. *Journal of Accounting Research* (Vol. 25, Autumn): 275-292.

Atkinson, A.B. and Stiglitz, J.E. (1980). *Lectures on Public Economics*, McCraw-Hill, New York.

The Audit Office (1993). Annual Report 1992-1993. Wellington: The Audit Office.

The Audit Office (1997). Annual Report 1996-1997. Wellington: The Audit Office.

The Audit Office (1998) Annual Report 1997-1998, Wellington: The Audit Office.

The Audit Office (1999). Annual Report 1998-1999, Wellington: The Audit Office.

The Audit Office (2000). Annual Report 1999-2000, Wellington: The Audit Office.

The Audit Office (2001). Annual Report 2000-2001, Wellington: The Audit Office.

The Audit Office (2002). Annual Report 2001-2002, Wellington: The Audit Office.

The Controller and Auditor-General (2003). Annual Report 2002-2003, Wellington: The Audit Office.

Ball, R. and Foster, G. (1982). Corporate Financial Reporting: A Methodological Review of Empirical Research. *Journal of Accounting Research* (Vol. 20, Supplement): 161-234.

Baber, W. R. (1983). Toward Understanding the Role of Auditing in the Public Sector. *Journal of Accounting and Economics* (Vol. 5): 213-227.

Baber, W.R. (1990). Toward a Framework for Evaluating the Role of Accounting and Auditing in Political Markets: The Influence of Political Competition. *Journal of Accounting and Public Policy* (Vol. 9): 57-73.

Baber, W.R. (1994). The Influence of Political Competition on Government Reporting and Auditing. *Research in Governmental and Nonprofit Accounting* (Vol. 8): 109-127.

Baber, W.R., Brooks, E.H. and Ricks, W.E. (1987). An Empirical Investigation of the Market for Audit Services in the Public Sector. *Journal of Accounting*

Research (Vol. 25, Autumn): 293-305.

Baber, W.R. and Sen, P. (1984). The Role of Generally Accepted Reporting Methods in the Public Sector: An Empirical Test. *Journal of Accounting and Public Policy* (Vol. 3, No. 2): 91-106.

Baiman, S. and Verrecchia, R. (1995). Earnings and Price-Based Compensation Contracts in Presence of Discretionary Trading and Incomplete Contracting. *Journal of Accounting and Economics* (Vol. 20, No. 1): 93-121.

Baker, G. P. (1992). Incentive Contracts and Performance Measurement. *Journal of Political Economy* (Vol. 100): 598-614.

Baker, G.P., Jensen, M.C., Murphy, K. J. (1988). Compensation and Incentives: Practice vs. Theory. *Journal of Finance* (Vol. 43): 593-616.

Ball, I. (1992). The New Approach: Financial Management Reform. *Accountants' Journal* (Vol. 72, June): 17-21.

Bamber, E. M., Bamber, L. S. and Schoderbek, P. (1993). Audit Structure and Other Determinants of Audit Report Lag: An Empirical Analysis. *Auditing A Journal of Practice and Theory* (Vol. 12, No. 1, Spring): 1-23.

Bandyopadhyaya, S. P. and Kao, J. L. (2000), Competition and Big-Six Brand Name Reputation: Evidence from the Ontario Municipal Audit Market. Unpublished working paper, University of Waterloo.

Banker, R.D., Cooper, W.W. and Potter G. (1992). A Perspective on Research in Governmental Accounting. *The Accounting Review* (Vol. 67, No. 3, July): 496-510.

Banker, R.D., Chang, H. and Cunningham, R. (2003). The Public Accounting Industry Production Function. *Journal of Accounting and Economics* (Vol. 35): 255-281.

Banks, D. W. and Kinney, W. R. Jr. (1982). Loss Contingency Reports and Stock Prices: An Empirical Study. *Journal of Accounting Research* (Vol. 20, Spring): 240-254.

Barkess, L. (1997). Auditor Switching: Reasons for Change. Working Paper, University of Melbourne.

Barkess, L. and Simnett, R. (1994), The Provision of Other Services by Auditors: Independence and Pricing Issues. *Accounting and Business Research* (Vol. 24, Spring): 99-108.

Bathala, C. and Rao. R. P. (1995). The Determinants of Board Composition: An Agency Theory Perspective. *Managerial and Decision Economics* (Vol. 16, No. 1): 59-69.

Baumol, W.J., Panzar, C. and Willig, D. (1982). *Contestable Markets and the Theory of Industry Structure.* Harcourt Brace Jovanonvich, San Diego, CA.

Beasley, M. S. (1996). An Empirical Analysis of the Relation Between the Board of Director Composition and Financial Statement Fraud. *The Accounting Review* (Vol. 71, No. 4, October): 443-465.

Beasley, M. S., Carcello, J. V. and Hermanson, D. R. (1999). *Fraudulent financial reporting: 1987-1997, An analysis of U.S. public companies.* New York: Committee of Sponsoring Organizations of the Treadway Commission.

Beasley, M. S., Carcello, J. V., Hermanson, D.R. and Lapides, P. D. (2000). Fraudulent Financial Reporting: Consideration of Industry traits and Corporate Governance Mechanisms. *Accounting Horizons* (Vol. 14, No. 4): 441-454.

Beasley, M. S. and Salterio, S. E. (2001). The Relationship between Board Characteristics and Voluntary Improvements in Audit Committee Composition and Experience. *Contemporary Accounting Research* (Vol. 18, No. 4): 539-570.

Beasley, M. S. and Petroni, K. R. (2001). Board Independence and Audit-Firm Type. *Auditing: A Journal of Practice and Theory* (Vol. 20, No. 1, March): 97-115.

Beatty, R. P. (1989). Auditor Reputation and the Pricing of Initial Public Offerings. *The Accounting Review* (October): 693-709.

Beattie, V. A. and Fearnley, S. C. (1994). The Changing Structure of the Market for Audit Services in the UK – A Descriptive Study. *British Accounting Review* (Vol. 26. No. 4): 301-322.

Beattie, V. A., Goodacre, A., Pratt, K. and Stevenson, J. (2000). The Determinants of Audit Fees – Evidence from the Voluntary Sector. Unpublished working paper, University of Sterling.

Beatty, R. and Zajack, E. (1994). Managerial Incentives, Monitoring and Risk Bearing: A Study of Executive Compensation, Ownership, and Board Structure in Initial Public Offerings. *Administrative Science Quarterly* (Vol. 39): 313-335.

Becker, C.L., DeFond, M.L., Jimbalvo, J. and Subramanyam, K.R. (1995), The Effect of Audit Quality on Earnings Management. Working Paper, University of

Washington.

Bedard, J. (1989). Archival Investigation of Audit Program Planning. *Auditing: A Journal of Practice and Theory* (Vol. 8, Fall): pp 57-71.

Bedard, J. and Wright, A. (1994). The Functionality of Decision Heuristics: Reliance on Prior Audit Adjustments in Evidential Planning. *Behavioral Research in Accounting* (Vol. 6, Supplement): 62-89.

Bedard, J. and Wright, A. (1998). Auditors' Adaptive Behaviour in Evidential Planning. Working paper, Northeastern Univeristy.

Belkaoui, A. and Karpik, G. (1989). Determinants of the Corporate Decision to Disclose Social Information. *Accounting, Auditing and Accountability Journal* (Vol. 2, No.1): 36-51.

Bell, T.B.,Landsman, W.R. and Shackelford, D.S. (2001). Auditors' Perceived Business Risk and Audit Fees: Analysis and Evidence. *Journal of Accounting Research* (Vol. 39, No. 1): 35-43.

Bell, T. B., Knechel, W. R. and Willinghan, J. J. (1994). An Exploratory Analysis of the Determinants of Audit Engagement Resource Allocations. In: *Audit Symposium XIV: Proceedings of the 1994 Kansas Symposium on Auditing Problems*, ed. R. P. Srivastava, University of Kansas Press.

Berkman, H. and Bradbury, M. (1998). The Influence of Ownership Structure on Risk Management: Evidence from New Zealand State Owned Enterprises. *Journal of International Financial Management and Accounting* (Vol. 9, Issue 2): 171-181.

Bernstein, P. (1979), Competition Comes to Accounting. *Fortune* (July, 17): 89-96.

Biggs, S., Mock, T., Watkins, P. (1988). Auditor's Use of Analytical Review in Audit Program Design. *The Accounting Review (*Vol. 63, January): 148-161.

Blokdijk, H., Drieenhuizen, F., Simunic, A. and Stein, M. (2003). Determinants of the Mix of Audit Procedures: Key Factors that Cause Auditors to Change What They Do. Working paper. The University of British Columbia.

Boardman, A.E. and Vining, A.R. (1990). Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed and State-owned Enterprises. *Journal of Law and Economics* (Vol. 32, Supplement): pp 1-32.

Bonner, S. and Lewis, B. (1990). Determinants of Auditor Expertise. *Journal of Accounting Research* (Vol. 32, Supplement): 1-28.

Bowen, R., Noreen, E. and Lacey, J. (1981). Determinants of Corporate Decisions to Capitalize Interest. *Journal of Accounting & Economics* (Vol. 3, August): 151-179.

Boyd, B. (1990). Corporate Linkages and Organizational Environment: A Test of the Resource Dependence Model. *Strategic Management Journal* (Vol. 11, No. 6): 419-430.

Bradbury, M. (1990). The Incentives for Voluntary Audit Committee Formation. *Journal of Accounting and Public Policy* (Vol. 9, No. 1): 19-36.

Bradbury, M. (1999). Government Ownership and Financial Performance in a

Competitive Environment: Evidence From the Corporatisation of the New Zealand Government Computing Services. *Asia Pacific Journal of Management* (Vol. 16), pp. 157-172.

Brenton, A. and Wintrobe, R. (1975). The Equilibrium Size of a Budget-Maximizing Bureaucracy: A Note on Niskanen's Theory of Bureaucracy. *Journal of Political Economy* (Vol. 83, No.1): 195-208.

Brickley, J., Bhagat, S. and Lease, R. (1985). The Impact of Long-range Managerial Compensation Plans on Shareholder Wealth. *Journal of Accounting and Economics* (Vol. 7, No. 1-3): 115-129.

Brickley, J., Coles, J. L. and Jarell, G. (1997). Leadership Structure: Separating the CEO and Chairman of the Board. *Journal of Corporate Finance* (Vol. 3): 189-220.

Brickley, J. A., Coles, J. L. and Terry, R. L. (1994). Outside Directors and the Adoption of Poison Pills. *Journal of Financial Economics* (Vol. 35, No. 2, June), pp. 371-390.

Brickley, J. A. and James, C. M. (1987). The Takeover Market, Corporate Board Composition, and Ownership Structure: The Case of Banking. *Journal of Law and Economics* (Vol. 30): 161-181.

Brickley, J.A., Linck, J.S. and Coles, J. L. (1999). What Happens to CEOs after They Retire? New Evidence on Career Concerns, Horizon Problems and CEO Incentives. *Journal of Financial Economics* (Vol. 52, No. 3): 341-377.

Brinn, T., Peel, M.J. and Roberts, R.A. (1994), Audit Fee Determinants of Independent and Subsidiary Unquoted Companies in the UK: An Exploratory

Study. *British Accounting Review (*Vol. 26, No. 2): 101-121.

Broadbent, J. and Guthrie, J. (1992). Changes in the Public Sector: A Review of Recent Alternative Accounting Research. *Accounting, Auditing and Accountability Journal* (Vol. 5, No. 2): 3-31.

Buchanan, J. and Bowman, R.G. (1990). The Effect of Agency Costs on the Pricing of Audit Services. *Financial Accountability and Management* (Vol. 6): 77-91.

Buchanan, R. and Simpkins, K. (2001). A New Age for Public Auditing. *Chartered Accountants Journal (*Vol. 80, No, 6, July): 8-12.

Bushman, R, Indjejikian, R. and Smith, A. (1996). CEO Compensation: The Role of Individual Performance Evaluation. *Journal of Accounting and Economics* (Vol. 2, No. 2): 161-193.

Cahan, S.F. (1992). The Effect of Antitrust Investigations on Discretionary Accruals: A Refined Test of the Political-Cost Hypothesis. *The Accounting Review* (Vol. 67, No.1, January): 77-95.

Cahan, S.F.and Botica Redmayne, N. (1998). The Effect of Agency Costs on the Pricing of Audit Services. *Accounting Research Journal* (Vol. 11, No. 2): 352-364.

Cahan, S.F., Chavis, B.M. and Elmendorf, R.G. (1997). Earnings Management of Chemical Firms in Response to Political Costs from Environmental Legislation. *Journal of Accounting, Auditing and Finance* (Vol. 12, No. 1, Winter): 37-65.

Cahan, S. F., Chua, F. and Nyamori, R. (2000). Corporate Governance and Executive Compensation in the Public Sector. Unpublished working paper, Massey University.

Cahan, S.F. and Wilkinson, B.R. (1999). Board Composition and Regulatory Change: Evidence from the Enactment of New Companies Legislation in New Zealand. *Financial Management* (Vol. 28, No. 1, Spring): 32-42.

Carcello, J. V. and Neal, T. L. (2000). Audit Committee Composition and Auditor Reporting. *The Accounting Review* (Vol. 75, October): 453-467.

Carcello, J.V., Hermanson, D.R., Neal, T.L. and Riley Jr., R.R. (2000, April). Board Characteristics and Audit Fees. Unpublished working paper, University of Tennessee.

Carpenter, V.L. (1991). The Influence of Political Competition on the Decision to Adopt GAAP. *Journal of Accounting and Public Policy* (Vol. 10, No. 2): 105-134.

Caves, D.W. and Christensen, L.R. (1980). The Relative Efficiency of Public and Private Firms in a Competitive Environment: The Case of Canadian Railroads. *Journal of Political Economy* (Vol. 88): 958-76.

Chapman, J. (1993). Auditor-General Enters Brave New World. *Accountants' Journal* (Vol. 73, June): 53-55.

Chan, D. (1999). "Low-balling" and Efficiency in a Two-period Specialization Model of Auditing Competition. *Contemporary Accounting Research* (Vol. 16, No. 4): 609-642.

Chan, D., Ferguson, A., Simunic, D. A. and Stokes, D. (2001). A Spatial Analysis and Test of Oligopolistic Competition in the Market for Audit Services. Working paper, University of British Columbia.

Chan, P., Ezzamel, M. and Gwilliam, D (1993). Determinants of Audit Fees for Quoted UK Companies. *Journal of Business Finance & Accounting (*Vol. 20, No. 6, November): 765-786.

Chaganti, R.S., Mahajan, V. and Sharma, S. (1985). Corporate Board Size, Composition and Corporate Failures in Retailing Industry. *Journal of Management Studies* (Vol. 22, July): 400-417.

Cheng, R.H. (1994). A Politico-Economic Model of Government Accounting Policy Choice. *Research in Governmental and Nonprofit Accounting* (Vol. 8): 39-68.

Cheung, S.N.S. (1983). The Contractual Nature of the Firm. *Journal of Law and Economics* (Vol. 26, No. 1): 1-21.

Chong, K-M., Dolley, C., Houghton, K. A. and Monroe, G.S. (2001) The Effect of Contracting-out Audits on Resource Allocation and Efficiency in Public Sector Audits. Unpublished working paper, University of New South Wales.

Christie, A.A. (1990). Aggregation of Test Statistics: An Evaluation of the Evidence on Contracting and Size Hypotheses. *Journal of Accounting and Economics* (Vol.12, No. 1-3): 15-36.

Clarke, R. and Porter, M. G. (1982). State Enterprise Accountability – A Contradiction in Terms? Paper presented to a conference on "The Dilema of Accountability in the Quango State", Monash University, Melbourne (July): 10.

Clarkson, P. M. and Simunic D. A. (1994). The Association between Audit Quality, Retained Ownership, and Firm-Specific Risk in U.S. vs. Canadian IPO Markets. *Journal of Accounting and Economics* (Vol. 17): 207-228.

Clatworthy, M., Mellett, H. and Peel, M. (2000). External Audit Fee Levels in NHS Trusts. *Public Money and Management* (Vol. 20, No. 1, January-March): 63-68.

Cohen, J. R. and Hanno, D. M. (2000). Auditors' Consideration of Corporate Governance and Management Control Philosophy in Preplanning and Planning Judgements. *Auditing: A Journal of Practice and Theory* (Vol. 19, No. 2, Fall): 133-146.

Cohen, J., Krishnamoorthy, G. and Wright, A. M. (2002). Corporate Governance and the Audit Process. *Contemporary Accounting Research* (Vol. 19, No. 4): 573-594.

Coles, J. L. and Hoi, C-K. (2003). New Evidence on the Market for Directors: Board Membership and Pennsylvania State Bill 1310. *Journal of Finance* (Vol. 58, No.1, February): 197-230.

Companies Act, No.105 of 1993. Wellington: GP Print.

Congleton, R. (1982). A Model of Asymmetric Bureaucratic Inertia and Bias. *Public Choice* (Vol. 39, No.3): 421-425.

Conyon, M. (1997). Corporate Governance and Executive Compensation. *International Journal of Industrial Organization* (Vol. 15, No. 4): 493-510.

Copley, P.A. (1989). The Determinants of Local Government Audit Fees: Additional Evidence. *Research in Governmental and Nonprofit Accounting* (Vol. 5): 3-32.

Copley, P. A. (1991). The Association between Municipal Disclosure Practices and Audit Quality. *Journal of Accounting and Public Policy* (Vol. 10): 245-266.

Copley, P.A. and Doucet, M.S. (1993a,). The Impact of Competition on the Quality of Governmental Audits. *Auditing: A Journal of Practice and Theory* (Vol. 12, No. 1): 88-89.

Copley, P.A., and Doucet, M.S. (1993b). Auditor Tenure, Fixed Fee Contracts and Supply of Substandard Single Audit. *Public Budgeting and Finance* (Vol. 12, No. 3): 23-35.

Copley, P.A. Doucet, M.S. and Gaver, K.M. (1994). A Simultaneous Equations Analysis of Quality Control Review Outcomes and Engagement Fees for Audit Recipients of Federal Financial Assistance. *The Accounting Review* (Vol. 69, No.1): 244-256.

Copley, P.A., Gaver, J.J. and Gaver, K.M. (1995). Simultaneous Estimation of the Supply and Demand for Differentiated Audits: Evidence from the Municipal Audit Market. *Journal of Accounting Research* (Vol. 55, No. 1): 137-154.

Core, J.E., Holthausen, R.W. and Larcker, D.F. (1999). Corporate Governance, Chief Executive Officer Compensation, and Firm Performance. *Journal of Financial Economics* (Vol. 51): 371-406.

Cotter, J. F., Shivdasani, A. and Zenner, M. (1996). Do Independent Directors

Enhance Target Shareholder Wealth during Tender Offers? *Journal of Financial Economics* (Vol. 43, February): 195-218.

Coughlan, A.T. and Schmidt, R.M. (1985). Executive Compensation, Management Turnover and Firm Performance: An Empirical Investigation. *Journal of Accounting and Economics* (Vol. 7): 43-66.

Craswell, A.T. (1992). Audit Pricing in Australia 1980-1989. *Australian Accounting Review* (Vol. 3, May): 28-33.

Craswell, A.T. (1997). Audit Quality Uncertainty and the Pricing of Initial Engagements. Unpublished Working Paper, The Australian National University.

Craswell, A.T., Francis, J.R. and Taylor, S.L. (1995). Auditor Brand Name Reputations and Industry Specialisations. *Journal of Accounting and Economics* (Vol. 20): 297-322.

Craswell, A.T., Francis, J.R. and Taylor, S.L. (1996). The Effect of Audit Market Deregulation on the Pricing of Brand Name Reputation. *Australian Accounting Review* (Vol. 7): 1-19.

Craswell, A.T., and Taylor, S.L. (1991). The Market Structure of Auditing in Australia: The Role of Industry Specialisation. *Research in Accounting Regulation* (Vol. 5): 55-77.

Crown Company Monitoring Unit Web site – http://www.ccmau.govt.nz

Cryer, J. (1992). Ready, Steady, Action on Accountability. *Chartered Accountants Journal* (Vol. 80, No. 6, July): 24-25.

Cyert, R., Kang, S., Kumar, P. and Shah, A. (1997). Corporate Governance, Ownership Structure, and CEO Compensation. Unpublished working paper, Carnegie Mellon University (January).

Cushing, B., Graham, L., Palmrose, Z., Roussey, R., and Solomon, I. (1995). Risk Orientation. In Auditing Practice, Research and Education: A Productive Collaboration, edited by T. Bell, and A. Wright, 11-54. New York, NY: AICPA.

Danos, P. and Eichenseher, J. (1986). Long-term Trends Toward Seller Concentration in the U.S. Audit Market. *The Accounting Review* (Vol. 61: 633-650.

Davidson, A.G., Dolley, C. and Monroe, G. S. (1997). The Relation of Auditor Industry Specialisation to Local Government Audit Fees. Unpublished Working Paper, Edith Cowan University, Western Australia.

Davidson, R. and Gist, W. (1996) Empirical Evidence on the Functional Relation between Audit Planning and Total Audit Effort. *Journal of Accounting Research (*Vol. 34 No. 1, Spring): 111-124.

Davidson, R. and Neu, D. (1993). A Note on the Association between Audit Firm Size and Audit Quality. *Contemporary Accounting Research* (Vol. 9): 479-488.

Davis, E. (1984). Express Coaching Since 1980: Liberalisation in Practice. *Fiscal Studies (*Vol. 5): 76-86.

Davis, A.G., Ricchiute, D. and Trompeter, G. (1993). Audit Effort, Audit Fees and the Provision of Non-audit Service to Audit Clients. *The Accounting Review* (Vol. 68, No.1, January): 135-150.

Davison, A.G., Stening, B.W. and Wai, W.T. (1984, Spring). Auditor Concentration and Impact of Interlocking Directorates. *Journal of Accounting Research* (Vol. 22, No. 1): 313-317.

DeAngelo, L.E. (1981a). Auditor Size and Auditor Quality. *Journal of Accounting and Economics* (Vol. 3): 183-199.

DeAngelo, L. E. (1981b). Auditor Independence, " Low Balling" and Disclosure Regulation". *Journal of Accounting and Economics* (Vol. 3): 113-127.

DeAngelo, L.E. (1982, December). Mandated Successful Efforts and Auditor Choice. *Journal of Accounting and Economics* (Vol. 4, No. 3, December): 171-203.

DeAngelo, L. E. (1988). Managerial Competition, Information Costs and Corporate Governance. *Journal of Accounting and Economics* (Vol. 10): 3-36.

De Alessi, L. (1980). The Economics of Property Rights: A Review of the Evidence. *In Research in Law and Economics*, Vol. 2, edited by Richard O. Zerbe: 1-47, Greenwich, Conn.: JAI.

Dechow, P. M. and Sloan, R. G. (1991). Executive Incentives and the Horizon Problem. *Journal of Accounting and Economics* (Vol. 14, No. 1): 51-89.

Dechow, P. M., Huson, M. and Sloan, R. G. (1994). The Effect of Restructuring Charges on Executives' Cash Compensation. *The Accounting Review* (Vol. 69, No. 1): 138-156.

Dechow, P. M., Sloan, R. G. and Sweeney, A. P. (1996). Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC. *Contemporary Accounting Research* (Vo. 13, No. 1, Spring): 1-36.

Deegan, C. and Hallam, A. (1991). The Voluntary Presentation of Value Added Statements in Australia: A Political Cost Perspective. *Accounting and Finance* (Vol. 31, May): 1-21.

DeFond, M. (1992). The Association between Changes in Client Firm Agency Costs and Auditor Switching. *Auditing: A Journal of Practice and Theory* (Vol. 11, No. 1, Spring): 16-31.

DeFond, M.L., Francis, J.R. and Wong, T.J. (2000). Auditor Industry Specialisation and Market Segmentation: Evidence from Hong Kong. *Auditing: A Journal of Practice and Theory* (Vol. 19, No. 1, Spring): 49-66.

Deis, D.R. Jr and Giroux, G.A. (1992, July). Determinants of Audit Quality in the Public Sector. *The Accounting Review* (Vol. 67): 462-479.

Deis, D.R. Jr and Giroux, G.A. (1993). Public Sector Evidence of Product Differentation Effects on Audit Prive and Audit Effort. Working Paper, Louisiana State University.

Deis, D.R. Jr and Giroux, G.A. (1996). The Effect of Auditor Change on Audit Fees, Audit Hours and Audit Quality. *Journal of Accounting and Public Policy* (Vol. 15): 55-76.

Demsetz, H. (1973). *The Market Concentration Doctrine.* Stanford, CA: American Enterprise Institute – Hoover Institute on War, Revolution and Peace.

DeZoort, F. T., Hermanson, D. R., Archambeault, D. S. and Reed, S. A. (2002). Audit Committee Effectiveness: A Synthesis of the Empirical Audit Committee Literature. *Journal of Accounting Literature* (Vol. 21): 38-75.

DeZoort, F. T. and Salterio, S. (2001). The Effects of Corporate Governance Experience and Audit Knowledge on Audit Committee Members' Judgements. *Auditing: A Journal of Practice and Theory* (Vol. 20, No. 2, September): 31-47.

Dhaliwal, D. and Palmrose, Z. (1985). An Investigation of Cross-sectional Differences in Achieved Audit Risk. Working paper, University of Arizona.

DiPietro, J., Mock, T., and Wright, A. (1994). An Investigation of Adaptability in Evidential Planning. Proceedings of Symposium on Auditing Problems XII. Lawrence, KS: University of Kansas.

Dirsmith, M. and Haskins, M. (1991). Inherent Risk Assessment and Audit Firm Technology: A Contrast in World Theories. *Accounting, Organizations and Society* (Vol. 16, No. 1): 61-90.

Dooley, P.C. (1969). The Interlocking Directorate. *American Economic Review* (Vol. 59, No.1): 314-323.

Dopuch, N., Gupta, M., Simunic, D. and Stein, M. (2003). Production Efficiency and the Pricing of Audit Services. *Contemporary Accounting Research* (Vol. 20, No.1): 47-77.

Dopuch, N., and Simunic, D. (1980). The Nature of Competition in the Auditing Profession: A Descriptive and Normative View. In *Regulation and the Accounting Profession,* edited by J. W. Buckley and F. Weston. Belmont, CA:

Lifelong Learning Publications, pp.77-94.

Downs, A. (1957). *An Economic Theory of Democracy*, Harper and Row, New York.

Duncan, I. and Bollard, A. (1992). Corporatisation and Privatisation: Lessons From New Zealand, Oxford University Press, Auckland.

Dwyer, P.D. and Wilson, E.R. (1989). An Empirical Investigation of Factors Affecting the Timeliness of Reporting by Municipalities. *Journal of Economic Literature* (Vol. 27, Spring): 1856-1902.

Dyck, I. and Wruck, K. (1999). The Government as Venture Capitalist: Organisational Structure and Contract Design in Germany's Privatisation Process. *European Financial Management* (Vol. 5, No. 1): 43-68.

Eichenseher, J.W. and Danos, P. (1981). The Analysis of Industry Specific Concentration: Toward an Explanatory Model. *The Accounting Review (*Vol. 56): 479-492.

Eichenseher, J.W. and Shields, D. (1989). Corporate Capital Structure and Auditor "Fit". *Advances in Accounting* (Vol. 6, Supplement): 39-56.

Eisenhardt, K.M. (1988). Agency Theory: An Assessment and Review. *Academy of Management Review* (Vol. 14, No. 1): 57-74.

Emanuel, C. and McKinon, J.L. (1989). Political Visibility and Management Lobbying on Foreign Currency Translation. Working paper, Macqaurie University (September).

Evans, L., Grimes, A., Wilkinson, B. and Teece, D. (1996). Economic Reform in New Zealand 1984-95: The Pursuit of Efficiency. *Journal of Economic Literature* (Vol. 34): 1856-1902.

Evans, R.J. and Patton, J.M. (1987). Signalling and Monitoring in Public-Sector Accounting. *Journal of Accounting Research* (Vol. 25, Supplement): 130-158.

Ezzamel, M., Gwilliam, D. and Holland, K. (1996). Some Empirical Evidence from Publicly Quoted UK Companies on the Relationship between the Pricing of Audit and Non-audit Services. *Accounting and Business Research* (Vol. 27, No. 1): 3-16.

Ezzamel, M, Gwilliam, D.R. and Holland, K.M. (1999). The Relationship between Categories of Non-audit Services and Audit Fees: Evidence from UK Companies. Working paper, University of Manchester/University of Wales.

Fama, E.F. and Jensen, M.C. (1983a). Separation of Ownership and Control. *Journal of Law and Economics* (Vol. 26): 301-25.

Fama, E.F. and Jensen, M.C. (1983b). Agency Problems and Residual Claims. *Journal of Law and Economics* (Vol. 26): 327-49.

Feltham, G. A., Hughes, J. S. and Simunic, D. A. (1991). Empirical Assessment of the Impact of Auditor Quality on the Valuation of New Issues. *Journal of Accounting and Economics* (Vol. 14): 375-399.

Ferguson, A. (1994, September 12). Life Gets Tough for the Super Directors. *Business Review Weekly* (Vol. 12, September): 50-54.

Ferguson, A., Francis, J.R. and Stokes, D.J. (2003). The Effects of Firm-wide and Office-level Industry Expertise on Audit Pricing. *The Accounting Review* (Vol. 78, No. 2): 429-448.

Ferguson, A. and Stokes, D.J. (2002). Brand Name Audit Pricing, Industry Specialization, and Leadership Premiums Post-Big 8 and Big 6 Mergers. *Contemporary Accounting Research* (Vol. 19, No 1, Spring): 77-110.

Ferris, S.P., Murali, J. and Pritchard, A.C. (2003). Too Busy to Mind the Business? Monitoring by Directors with Multiple Board Appointments. *Journal of Finance* (Vol. 58, No. 3): 1087-1113.

Firth, M. (1985, Spring). An Analysis of Audit Fees and Their Determinants in New Zealand. *Auditing: A Journal of Practice and Theory* (Vol. 14, Spring): 23-37.

Firth, M. (1987). Multiple Directorships and Corporate Interlocks in New Zealand Firms. *Australian and New Zealand Journal of Sociology* (Vol. 23, No. 2): 274.

Firth, M. (1997). The Provision of Non-Audit Services and the Pricing of Audit Fees. *Journal of Business Finance & Accounting (*Vol. 24, No. 3 and 4, April): 511-525.

Firth, M. (2002). Auditor- provided Consultancy Services and their Associations with Audit Fees and Audit Opinions. *Journal of Business Finance and Accounting* (Vol. 29, No. 5 and 6, June/July): 661-693.

Francis, J.R. (1984). The Effect of Audit Firm Size on Audit Prices: A Study of the Australian Market. *Journal of Accounting and Economics* (Vol. 6): 133-

151.

Francis, J.R., Anderson D., and Stokes D. (1999). City Markets as a Unit of Analysis in Audit Research and the Re-examination of Big 6 Market Shares. *Abacus* (Vol. 35): 185-206.

Francis, J.R. and Stokes, D.J. (1986). Audit Prices, Product Differentiation, and Scale Economies: Further Evidence from the Australian Market. *Journal of Accounting Research* (Vol. 24): 383-393.

Francis, J.R. and Simon, D.T. (1987). A Test of Audit Pricing in the Small-Client Segment of the U.S. Audit Market. *The Accounting Review* (Vol. 62, January): 145-157.

Francis, J. and Wilson, E. (1988). A Joint Test of Theories Relating to Agency Costs and Auditor Differentiation. *The Accounting Review* (Vol. 63): 663-682.

Frost, C. A. (1991). Loss Contingency Reports and Stock Prices: A Replication and Extension of Banks and Kinney. *Journal of Accounting Research* (Vol. 29, No. 1., Spring): 157-169.

Galbraith, J. K. (1976). *The New Industrial State.* New York: New American Library.

Garen, J. (1994). Executive Compensation and Principal-Agent Theory. *Journal of Political Economy* (Vol. 102, No. 6): 1175-1199.

Gaver, J.M., and Gaver, K.M. (1995). Simultaneous Estimation of the Demand and Supply of Differentiated Audits. *Review of Quantitative Finance and Accounting* (Vol. 4, No. 1): 50-70.

Gaver, J. M., Gaver, K. M. and Austin, J. (1995). Additional Evidence on Bonus Plans and Income Management. *Journal of Accounting and Economics* (Vol. 19, No. 1): 3-28.

Gibbons, R. and Murphy, K. J. (1992). Does Executive Compensation Affect Investment? *Journal of Applied Corporate Finance* (Vol. 5, No. 2): 99-109.

Gigler, F. and Penno, M. (1995). Imperfect Competition in Audit Markets and Its Effect on the Demand for Audit-Related Services. *The Accounting Review* (Vol. 69): 317-336.

Gill, G.S., Cosserat, G., Leung, P. and Coram, P. (2001). *Modern Auditing and Assurance Services*, 6th edition, John Wiley & Sons, Australia.

Gilling, D.M. (1985). Audit Concentration in New Zealand. *Accountants' Journal* (Vol. 64, May): 23-26.

Gist, W.E. (1994). Empirical Evidence on the Effect of Audit Structure on Audit Pricing. *Auditing: A Journal of Practice and Theory* (Vol. 13, No 2., Fall): 25-40.

Gist, W.E. (1989). A Research Note on the Relationship Between Regulation and Audit Firm Size on Audit Fees. *Journal of Accounting, Auditing and Finance (*Vol. 4): 381-396.

Gist, W.E. and Davidson, R.A. (1999). An Exploratory Study of the Influence of Client Factors on Audit Time Budget Variances. *Auditing: A Journal of Practice and Theory* (Vol. 18, No. 1, Spring): 101-116.

Goodman, J.B. and Loveman, G.W. (1991). Does Privatisation Serve the Public Interest? *Harvard Business Review* (November-December): 27-37.

Goodwin, J. and Seow, J. L. (2002). The Influence of Corporate Governance Mechanisms on the Quality of Financial Reporting and Auditing: Perceptions of Auditors and Directors in Singapore. *Accounting and Finance* (Vol. 42, No. 3, November): 195-223.

Graef, C. (1993). Token Directors: Serving Too Many Masters. *Pensions and Investment Age* (Vol. 21, No.17): 12.

Green, D. L. (1994). Canadian Audit Committees and their Contribution to Corporate Governance. *Journal of International Accounting, Auditing and Taxation (*Vol. 3, No. 2): 135-151.

Grossman, S. J. and Hart, O. D. (1980). Takeover Bids, the Free-rider Problem, and the Theory of the Corporation. *The Bell Journal of Economics* (Vol. 2, Spring): 42-64.

Hackenbrack, K. and Knechel W.R. (1997). Resource Allocation Decisions in Audit Engagements. *Cotemporary Accounting Research* (Vol. 14, No. 3): 481-499.

Hagerman, R. L. and Zmijewski, M. E. (1979). Some Economic Determinants of Accounting Policy Choice. *Journal of Accounting and Economics* (Vol. 1, No. 2): 141-161.

Hair, J. F. Jr., Anderson, R. E., Tatham, R. L. and Black, W. C. *Multivariate Data Analysis*, Prentice-Hall International, NY, 1989.

Hall, S.C. (1993). Political Scrutiny and Earnings Management in the Oil Refining Industry. *Journal of Accounting and Public Policy* (Vol. 12): 325-351.

Han, J.C.Y., and Wang, S. (1998). Political Costs and Earnings Management of Oil Companies During the 1990 Persian Gulf Crisis. *The Accounting Review* (Vol. 73, No.1): 103-117.

Hartley, P. R. (1986). Privatisation: Lessons from Public Utilities, Perth, Australian Institute for Public Policy: 14-15.

Hay, D. (1991). The Revolution Changes to Financial Reporting for Central Government Departments. *Accountants' Journal* (Vol. 70, No. 2): 31-34.

Hay, D. (1992). Public Sector Accounting in New Zealand: An Update and Clarification. *Financial Accountability and Management* (Vol. 8 No. 1, Spring): 1-6.

Hay, D. (1997). Knowledge Transfer Costs and the Costs of Inconsistent Objectives as Determinants of Financial Reporting in the Public Sector. Working paper, University of Auckland.

Hay, D. (2003). Knowledge Transfer Costs and Dependence as Determinants of Financial Reporting. *Accounting and Finance* (Vol. 43, November): 311-330.

Hay, D. and Davis, D. (2002). The Voluntary Choice of an Audit of Any Level and Quality. Working paper, University of Auckland.

Hay, D. and Foo, K.M. (1995). Determinants of Audit Fees of State-Owned Enterprises in New Zealand. Working Paper, Lincoln University, Canterbury, NZ.

Hay, D., Knechel, W. R. and Wong, N. (2004). Audit Fees: A Meta-analysis of the Effect of Supply and Demand Attributes. Working paper, University of Auckland.

Healy, P. (1985). The Effect of Bonus Schemes on Accounting Decisions. *Journal of Accounting and Economics* (Vol. 7): 85-107.

Healy, P. and Lys, T. (1986). Auditor Changes: A Joint Test of Theories Relating to Agency Costs and Auditor Differentiation. *The Accounting Review* (Vol. 61, October): 251-265.

Hill, M. (1995). Auditor Evidential Planning Judgements: Experimental Evidence on Response to Error Information. Working paper, University of Georgia.

Hobgood, G. and Sciarrino, J. (1972). Management Looks at Audit Services. *Financial Executive* (April): 26-32.

Hogan, C.E. and Jeter, D. C. (1999). Industry Specialization by Auditors, *Auditing: A Journal of Practice and Theory* (Vol. 18, No. 1, Spring): 1-17.

Holthausen, R., Larcker, D. and Sloan, R. (1995). Annual Bonus Schemes and the Manipulation of Earnings. *Journal of Accounting and Economics* (Vol. 19, No. 1): 29-74.

Houghton, K.A. and Jubb, C. (1988). Auditor Low Balling: Fee Recoupment and Non-audit Services. Working Paper, School of Accounting, Faculty of Business, Edith Cowan University, Perth, Western Australia.

Houghton, C.W. and Fogarty, J. A. (1991). Inherent Risk. *Auditing: A Journal of Practice and Theory (*Vol. 10, Spring): 1-21.

Houston, R. W., Peters, M.F. and Pratt, J.H. (1999). The Audit Risk Model, Business Risk and Audit-Planning Decisions. *The Accounting Review* (Vol.74, No.3, July): 281-298.

Huss, H.F., and Jacobs, F.A. (1991). Risk Containment: Exploring Auditor Decisions in the Engagement Process. *Auditing: A Journal of Practice and Theory* (Vol. 10, No.2, Fall): 16-32.

Institute of Chartered Accountants of New Zealand (2002). *New Zealand Codified Auditing Standards and Audit Guidance Statements*, Publishing Press, Auckland.

Jensen, M.C. (1976). Toward a Theory of the Press. Harvard Business School working paper series (June).

Jensen, M.C. (1993). The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems. *Journal of Finance* (Vol. 48, No. 3, July): 831-880.

Jensen, M.C. and Meckling, W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* (Vol.3): 305-360.

Jensen, M.C. and Meckling, W.H. (1979). Rights and Production Functions: An Application to Labour-Managed Firms and Codetermination. *Journal of Business* (Vol. 52, No. 4): 469-507.

Joe, J. R. (2003). Why Press Coverage of a Client Influences the Audit Opinion.

Journal of Accounting Research (Vol. 41, No. 1, March): 109-133.

Johnson, E.N., Walker, K.B. and Westergaard, E. (1995). Supplier Concentration and Pricing of Audit Services in New Zealand. *Auditing: A Journal of Practice and Theory* (Vol. 14, Fall): 74-89.

Johnson, W. and Lys, T. (1990). The Market for Audit Services: Evidence From Voluntary Auditor Changes. *Journal of Accounting and Economics* (Vol. 12, No. 1-3, January): 281-308.

Jones. J. (1991). Earnings Management During Import Relief Investigations. *Journal of Accounting Research* (Vol. 29): 193-228.

Jubb, C. (2000). Selecting An Auditor: The Role of Multiple Directorships. Working paper, University of Melbourne.

Jubb, C. and Houghton, K. (1999). Auditor Choice: The Role of Interlocking Directorates. Working paper, University of Melbourne.

Kahneman, D. and Tversky, A. (1972). Subjective Probability: A Judgement of Representativeness. *Cognitive Psychology* (Vol. 4, No. 3, July): 430-454.

Kahneman, D. and Tversky, A. (1973). On the Psychology of Prediction. *Psychological Review* (Vol. 80, July): 237-251.

Karpoff, J.M. and Rice, E.M. (1989). Organisational Form, Share Transferability and Firm Performance. *Journal of Financial Economics* (Vol. 24): 69-105.

Kay, K.G. (1997). Political Cost Incentives for Earnings Management in the

Cable Television Industry. *Journal of Accounting and Economics* (Vol. 23): 309-337.

Kennedy, P.A. *Guide to Econometrics.* Cambridge, Mass.: The MIT Press, 1985.

Killough, L.N. and Koh, H.C. (1991). Projecting the Audit Fees of Government Audits Contracted to Public Accounting Firms. *Government Accountants Journal* (Vol. 40, Summer): 65-70.

Kinney, W. R. (1986). Audit Technology and Preferences for Auditing Standards. *Journal of Accounting and Economics* (Vol. 8, No. 1, March): 73-89.

Klein, B. (1985). Self-Enforcing Contracts. *Journal of Institutional and Theoretical Economics* (Vol. 141, No. 4): 594-600.

Klein, B. and Leffler, K. (1981). The Role of Market Forces in Assuring Contractual Performance. *Journal of Political Economy* (Vol. 89, No. 4): 615-641.

Knechel, W. and Payne, J.L. (2001). Additional Evidence on Audit Report Lag. *Auditing: A Journal of Practice and Theory (*Vol. 20, No.1): 137-146.

Kosnic, R. D. (1987). Greenmail: A Study of Board Performance in Corporate Governance. *Administrative Science Quarterly* (Vol. 32, No. 2.): 163-185.

Kosnic, R. D. (1990). Effects of Board Demography and Directors' Incentives on Corporate Greenmail Decisions. *Academy of Management Journal* (Vol. 33): 129-150.

Kreutzfeldt, R.W. and Wallace, W. A. (1986). Error Characteristics in Audit Populations: Their Profile and Relationship to Environmental Factors. *Auditing: A Journal of Practice and Theory (*Vol. 5, Fall): 20-43.

Kreutzfeldt, R. W. (1990). Control Risk Assessments: Do They Relate to Errors? *Auditing: A Journal of Practice and Theory* (Vol. 9, Supplement): 1-26.

Krishnan, G. V. (2003). Does Big 6 Auditor Industry Expertise Constrain Earnings Management? *Accounting Horizons* (Vol. 17, Supplement): 1-16.

Krishnan, J. (2001). Corporate Governance and Internal Control: An Empirical Analysis. American Accounting Association (AAA) Annual Meeting. Atlanta, GA: AAA.

Krishnan, J and Krishnan, J. (1997). Litigation Risk and Auditor Resignations. *Accounting Review.* (Vol. 72, No. 4):539-560.

Laband, D.N. (1983). Federal Budget Cuts: Bureaucrats Trim the Meat, Not the Fat. *Public Choice* (Vol. 41, No.2): 311-314.

Lambert, R. and Larcker, D. (1988). An Analysis of the Use of Accounting and Market Measures of Performance in Executive Compensation Contracts. *Journal of Accounting Research* (Vol. 25): 85-129.

Langendijk, H. (1997). The Market for Audit Services in the Netherlands. *The European Accounting Review* (Vol. 6, No.2): 253-264.

Lee, C.I., Rosenstein, S., Rangan, N. and Davidson III, W.N. (1992). Board Composition and Shareholder Wealth: The Case of Management. *Financial Management* (Vol. 21, Spring): 58-72.

Leftwich, A. (1984). *What is Politics? The Activity and Its Study*, Blackwell.

Leland, H. (1998). Agency Costs, Risk Management and Capital Structure. *Journal of Finance (*Vol. 53): 1213-1243.

Li, V. Y., Hay, D. and Knechel, W. R. (2003). Non-audit Services and Auditor Independence: New Zealand Evidence. Unpublished working paper, University of Auckland.

Libby, R. (1979). Bankers' and Auditors' Perceptions of the Message Communicated by the Audit Report. *Journal of Accounting Research (*Vol. 17, Spring): 99-122.

Louwers, T. (1998). The Relation Between Going–concern Opinions and the Auditor's Loss Function. *Journal of Accounting Research.* (Vol. 36, No. 1, Spring): 143-156.

Low, L.C., Tan, P. and Koh, H.C. (1990). The Determinants of Audit Fees: An Analysis in the Singapore Context. *Journal of Business Finance and Accounting* (Vol. 17, No. 2, Spring): 285-295.

Lowensohn, S.H. and Collins, F. (1997). The Effects of Perceived Rewards and Political Risk Factors on Audit Partner Motivation to Pursue Governmental Audits. Working paper, University of Southern Main.

Mace, M. L. (1986). *Directors: Myth and Reality.* Boston, MA: Harvard Business School Press.

Maddala, G. S. *Introduction to Econometrics*, Macmillan Publishing Company,

New York, 1989.

Maher, M.W., Tiessen, P., Colson, R. and Broman, A.J. (1992). Competition and Audit Fees. *The Accounting Review* (Vol. 67, January): 199-211.

Matthews, R., Jubb, C.A. & Houghton, K.A. (1997). The Premium for Specialisation: Does it Exist for Non-Big 6 Audit Firms? Research Paper 97-14 (December), Department of Accounting and Finance, The University of Melbourne.

Mayers, D., Shivdasani, A. and Smith, C. W. (1997). Board Composition and Corporate Control: Evidence from the Insurance Industry. *Journal of Business* (Vol. 70, January): 33-62.

Mayhew, B. W. and Wilkins, M. (2002). Audit Firm Industry Specialization as a Differentiating Strategy: Evidence from Fees Charged to Firms Going Public, Working paper, University of Wisconsin.

McCulloch, B.W. and Ball, I. (1992). Accounting in the Context of Public Sector Management Reform. *Financial Accountability and Management* (Vol. 8, No. 1): 7-12.

McMullen, D. A. (1996). Audit Committee Performance: An Investigation of the Consequences Associated with Audit Committees. *Auditing: A Journal of Practice and Theory* (Vol. 15, No. 1, Spring): 87-103.

Meckling, W.H. (1976). Toward a Theory of Representative Government. A Paper Presented at the Third Annual Conference on Analysis and Ideology, Interlaken, Switzerland.

Megginson, W.L., Nash, R.C. and van Randenborgh, M. (1994). The Financial and Operating Performance of Newly Privatised Firms: An International Empirical Analysis. *Journal of Finance* (Vol. 49): 403-452.

Mello, A. and Parsons, J. (1992). Measuring the Agency Cost of Debt. *Journal of Finance* (Vol. 47): 1887-1904.

Menon, K. and Williams, D.D. (2001, March). Long Term Trends in Audit Fees. *Auditing: A Journal of Practice and Theory* (Vol. 20, No. 1): 115-136.

Miah, N. Z. (1991). Attempts at Developing a Conceptual Framework for Public Sector Accounting in New Zealand. *Financial Accountability and Management* (Vol. 7, No. 2): 83-97.

Miller, G. S. (2003). The Press as a Watchdog for Accounting Fraud. Working paper. Graduate School of Business Administration, Harvard University, Boston, MA.

Miller, A.H., Goldenberg, E.N. and Erbring, L. (1979). Type-Set Politics: Impact of Newspapers on Public Confidence. *The American Political Science Review* (Vol. 73): 67-84.

Mock, T., and Wright, A. (1993). An Exploratory Study of Auditor Evidential Planning. *Auditing: A Journal of Practice and Theory (*Vol. 12, Fall): pp 39-61.

Mock, T. and Wright, A. (1999). Are Audit Program Plans Risk-Adjusted? *Auditing: A Journal of Practice and Theory (*Vol. 18, No. 1, Spring): 55-74.

Moizer, P. and Turley, S. (1987). Surrogates for Audit Fees in Concentration Studies. *Auditing: A Journal of Practice and Theory (*Vol. 6, Fall): 118-123.

Morellec, E. (2001). Managerial Discretion, Leverage and Firm Value. Unpublished working paper, Simon School of Business, University of Rochester.

Morgan, J. and Stocken, P. (1998). The Effects of Business Risk on Audit Pricing. *Review of Accounting Studies* (Vol.3): 365-385.

Morris, M. (1993). Government as Owner, Public Attitudes. *Accountants' Journal* (Vol. 72, No. 5, June): 20-21.

Moyer, S. (1990). Capital Adequacy Ratio Regulations and Accounting Choices in Commercial Banks. *Journal of Accounting and Economics* (Vol. 13, July): 123-154.

Murphy, K. J. (1985). Corporate Performance and Managerial Remuneration: An Empirical Analysis. *Journal of Accounting and Economics* (Vol. 7, No. 1-3): 11-42.

Murphy, K. J. (1997). Executive Compensation and the Modern Industrial Revolution. *International Journal of Industrial Organization* (Vol. 15. No. 4), pp. 417-426.

Murphy, K. J. (1998). Executive Compensation. Unpublished working paper, University of Southern California.

Mutchler, J. F. (1984). Auditors' Perceptions of the Going-Concern Opinion Decision. *Auditing: A Journal of Practice and Theory* (Vol. 3, No. 2, Spring): 17-30.

Mutchler, J. F. (1985). A Multivariate Analysis of the Auditor's Going-Concern Opinion Decision. *Journal of Accounting Research* (Vol. 23, No. 2, Autumn): 668-682.

Mutchler, J. F. (1986). Empirical Evidence Regarding the Auditor's Going-Concern Opinion Decision. *Auditing: A Journal of Practice and Theory (*Vol. 6, No. 1, Fall): 148-163.

Mutchler, J. F., Hopwood, W. and McKeown, J. M. (1997). The Influence of Contrary Information and Mitigating Factors on Bankrupt Companies. *Journal of Accounting Research* (Vol. 35, No. 2, Autumn): 295-310.

National Business Review, 2000. Most Viewers Happy with TVNZ As Is. 3 March, 1.

National Business Review, 2000. Power Company Profits Line Government Coffers. 20 October, 7.

Nelson, P. (1970). Information and Consumer Behavior. *Journal of Political Economy* (Vol. 78): 311-329.

New Zealand Business Roundtable (1988). *State Owned Enterprise Policy: Issues in Ownership and Regulation.*

New Zealand Herald, 2000. New TVNZ Leader Attacks Ratings-driven Reporting. 8 March, 3.

Newton, J. and Ashton, R. (1989). The Association between Audit Technology and Audit Delay. *Auditing: A Journal of Practice and Theory* (Vol. 8, Supplement): 22-37.

Niemi, L. (2002). Do Firms Pay for Audit Risk? Evidence on Risk Premiums in Audit Fees After Direct Control for Audit Effort. *International Journal of Auditing* (Vol. 6): 37-51.

Office of the Auditor-General. *Manual for Audit Service Providers.* Wellington: The Office of the Auditor General.

O'Keefe, T., Simunic, D. and Stein, M. (1994). Audit Fees, Industry Specialisation, and Compliance with GAAS Reporting Standards. *Auditing: A Journal of Practice and Theory (*Vol. 13): 40-55.

O'Keefe, T. Simunic, D. and Stein, M. (1994). The Production of Audit Services: Evidence from a Major Public Accounting Firm. *Journal of Accounting Research (*Vol. 32): 241-261.

O'Keefe, T., and Westrot, P. (1992), Conformance to GAAS Reporting Standards in Municipal Audits and the Economics of Auditing: The Effect of Audit Firm Size, CPA Examination Performance and Competition. *Research in Accounting Regulation* (Vol. 6): 39-77.

O'Sullivan, N. (2000). The Impact of Board Composition and Ownership on Audit Quality: Evidence from Large UK Companies. *British Accounting Review* (Vol. 32): 397-414.

Osborne R. and Houghton B. (1988). *Legal Compliance Programmes as Part of OAG Auditing Standards: A Practical Approach for Public Sector Auditors.* Wellington: Office of the Controller and Auditor General.

O'Sullivan, N. (2000). The Impact of Board Composition and Ownership on

Audit Quality: Evidence From Large UK Companies. *British Accounting Review* (Vol. 32): 397-414.

Otago Daily Times, 2001. Significant Health Funds Likely to Clear Otago Deficit in Four Years. 11 December, 3.

Otago Daily Times, 2002. Hospital Cannot Meet Pay Rises. 13 April, 17.

Palmrose, Z. (1986). Audit Fees and Auditor Size: Further Evidence. *Journal of Accounting Research* (Vol. 24, Spring): 97-110.

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

Palmrose, Z. (1989). The Relation of Audit Contract Type to Audit Fees and Hours. *The Accounting Review* (Vol. 64, July): 489-499.

Panchapakesan, S. and McKinnon, J. (1999). Proxies for Political Visibility: A Preliminary Examination of the Relation Among Some Potential Proxies. *Accounting Research Journal* (Vol.7): 71-80.

Panel on Audit Effectiveness (2000). *The Public Oversight Board, Report and Recommendations*, Stamford, CT.

Panel on Audit Effectiveness (2001). *The Public Oversight Board, Final Report and Recommendations,* Stamford, CT.

Patton, A. and Baker, J. C. (1987). Why Won't Directors Rock the Boat? *Harvard Business Review* (Vol. 65): 10-18.

Pearson, T. and Trompeter, G. (1994). Competition in the Market for Audit Services: The Effect of Supplier Concentration on Audit Fees. *Contemporary Accounting Research* (Vol. 11): 115-135.

Pelzman, S. (1976). Toward a More General Theory of Regulation. *Journal of Law and Economics (*Vol. 19, August): 211-240.

Pennings, J.M. (1980s). *Interlocking Directorates: Origins and Consequences of Connections Among Organisations' Boards of Directors*, Jossey-Bass Publishers, San Francisco.

Pfeffer, J. (1972). Size and Composition of Corporate Boards of Directors: The Organisation and its Environment. *Administrative Science Quarterly* (Vol. 16): 218-228.

Pfeffer, J. and Salancik, G. (1978). *The External Control of Organizations: A Resource Dependence Perspective.* New York: Harper & Row.

Pfeffer, J. (1981). *Power in Organisations*. Boston, MA: Pitman.

Pindyck, R.S. and Rubinfeld, D.L. (1998). *Econometric Models and Econometric Forecasts.* Boston, MA: McGrawHill.

Pong, C.M. and Whittington, G. (1994, December). The Determinants of Audit Fees: Some Empirical Models. *Journal of Business Finance & Accounting (*Vol. 21, No. 8): 1071-1095.

Porter, M. G. (1986) Privatisation – A Blue Herring? *IPA Review* (Vol. 39): 5

Porter, B. and Gendall, P. (1995, June). Audit Committees: Panacea for

Failure? *Accountants Journal* (Vol. 74): 28-31.

Posner, R.A. (1974). Taxation by Regulation. *Bell Journal of Economics and Management Science* (Vol. 2): 22-50.

Pratt, J. and Stice, J.D. (1994). The Effects of Client Characteristics on Auditor Litigation Risk Judgements, Required Audit Evidence, and Recommended Audit Fees. *The Accounting Review* (Vol. 69): 639-656.

Prevost, A. K., Rao, R.P. and Hossain, M. (2002). Board Composition in New Zealand: An Agency Perspective. *Journal of Business Finance & Accounting* (Vol. 29, No. 5 and 6, June/July): 731-759.

PricewaterhouseCoopers (2000). *Auditing Manual.*

Public Audit Act, No. 10 of 2001. Wellington: GP Print.

Public Finance Act, No. 44 of 1989. Wellington: GP Print.

Quadackers, L., Mock, T. and Maijoor, S. (1996). Audit Risk and Audit Programs: Archival Evidence from Four Dutch Audit Firms. *European Accounting Review* (Vol. 5, No. 2): 217-237.

Rediker, K.J. and Seth, A. (1995). Boards of Directors and Substitution Effects of Alternative Governance Mechanisms. *Strategic Management Journal* (Vol. 16): 85-99.

Ritson, B., Jubb, C.A. and Houghton, K.A. (1997). Specialisation in the Market for Audit Services: Its Role in Explaining Auditor/Client Realignment. Working Paper, University of Melbourne (March).

Roberts, D. M. and Wedemeyer, P. D. (1988). Assessing the Likelihood of Financial Statements Errors Using a Discriminant Model. *Journal of Accounting Literature* (Vol. 7): 133-146.

Roberts, R.W., Glezen, G.W. and Jones, T.W. (1990). Determinants of Auditor Change in the Public Sector. *Journal of Accounting Research (*Vol. 28, Spring): 220-228.

Rosenstein, S. and Wyatt, J. G. (1990). Outside Directors, Board Independence and Shareholder Wealth. *Journal of Financial Economics* (Vol. 26): 175-191.

Rubin, M.A. (1988, April). Municipal Audit Fee Determinants. *The Accounting Review (*Vol. 63): 219-236.

Rubin, M.A. (1992). Municipal Selection of a State or External Auditor for Financial Statement Audits. *Journal of Accounting and Public Policy* (Vol. 11): 155-178.

Sanders, G., Allen, A and Korte, L. (1995). Municipal Audit Fees: Has Increased Competition Made a Difference? *Auditing: A Journal of Practice and Theory (*Vol. 14, Spring): 105-114.

Sarbanes-Oxley Act of 2002 (An Act to protect investors by improving the accuracy and reliability of corporate disclosures made pursuant to the securities laws, and for other purposes.) Enacted by the Senate and House of Representatives of the United States of America in Congress assembled on 23rd January 2002.

Savas, E.S. (1974). Municipal Monopolies versus Competition in Delivering

Urban Services. *Urban Affairs Annual Reviews* (Vol. 8): 473-500.

Schelleman, C. and Knechel, W. R. (2003). The Impact of Potential Earnings Management on the Pricing and Production of Audit Services. Ameriacn Accounting Association (AAA) Auditing Section Midyear Conference. Clearwater, FL; AAA.

Schockley, R. and Holt, R. (1983). A Behavioral Investigation of Supplier Differentiation in the Market for Audit Services. *Journal of Accounting Research* (Vol. 21, No. 2, Autumn): 545-564.

Schoorman, F.D., Bazerman, M.H. and Aitken, R.S. (1981). Interlocking Directorates: A Strategy for Reducing Environmental Uncertainty. *Academy of Management Review* (Vol. 6, No. 2): 243-251.

Scott, G. and Gorringe, P. (1988, March). Reform of the Core Public Sector: The New Zealand Experience. *Australian Journal of Public Administration* (Vol. 48, No. 1): 81-92.

Securities and Exchange Commission (SEC). (1999). *Final Rule: Audit Committee Disclosure*. Washington, D.C.: Government Printing Office.

Shailer, G. (1997). Determinants of Financial Statement Audit Fees Charged by the Australian National Audit Office. Working Paper, The Australian National University, Canberra.

Shapiro, C. (1983). Premiums for High Quality Products as Returns to Reputations. *Quarterly Journal of Economics (*Vol. 98): 659-679.

Shapiro, C. (1983). Optimal Pricing of Experience Goods. *The Bell Journal of*

Economics (Vol. 14): 497-507.

Shepherd, W. G. (1982). Monopoly Profits and Economies of Scale. In *Industrial Organisation, Antitrust and Public Policy*, edited by J. Craven. Boston, MA: Kluwer Nijhof.

Sheperd, W.G. (1990). *The Economics of Industrial Organisation.* Englewood Cliffs, NJ: Prentice-Hall.

Shivdasani, A. and Yermack, D. (1999). CEO Involvement in the Selection of New Board Members: An Empirical Analysis. *Journal of Finance* (Vol.54): 1829-1853.

Simon, D.T. (1985). The Audit Services Market: Additional Empirical Evidence. *Auditing: A Journal of Practice and Theory* (Vol. 4, Fall): 71-78.

Simon, T.D. and Francis, J.R. (1988). The Effects of Auditor Change on Audit Fees: Tests of Price Cutting and Price Recovery. *The Accounting Review* (Vol. 63, April): 255-269.

Simon, T.S., Ramanan, R. and Dugar, A. (1986). The Market for Audit Services in India: An Empirical Examination. *International Journal of Accounting* (Vol. 21, Spring): 27-35.

Simon, T.S., Teo, S. and Trompeter, G. (1992). A Comparative Study of the Market for Audit Services in Hong Kong, Malaysia and Singapore. *International Journal of Accounting* (Vol.27, Fall): 234-240.

Simpkins, K. (2002). Public Sector Accounting Standards: Progress and Challenges. *Chartered Accountants Journal* (Vol. 81, No. 6, July): 20-23.

Simunic, D.A. (1980). The Pricing of Audit Services: Theory and Evidence. *Journal of Accounting Research* (Vol. 18, No. 1, Spring): 161-190.

Simunic, D. (1984). Auditing, Consulting and Auditor Independence. *Journal of Accounting Research* (Vol. 220): 679-702.

Simunic, D. A. and Stein, M. T. (1987). *Product Differentiation in Auditing: Auditor Choice in the Market for Unseasoned New Issues.* Research Monograph No. 13, Canadian Certified General Accountants research Foundation.

Simunic, D. and Stein, M.T. (1990). Audit Risk in a Client Portfolio Context. *Contemporary Accounting Research* (Vol. 7, Spring): 329-343.

Simunic, D. and Stein, M. (1996). The Impact of Litigation on Audit Pricing: A Review of the Economics and the Evidence. *Auditing: A Journal of Practice and Theory* (Vol. 15, Supplement): 119-134.

Sloan, R. (1993). Accounting Earnings and Top Executive Compensation. *Journal of Accounting and Economics (*Vol. 16, No. 1-2-3): 55-100.

Smith, C., and Watts, R. (1992). The Investment Opportunity Set, and Corporate Financing, Dividend and Compensation Policies. *Journal of Financial Economics* (Vol. 32): 262-292.

Snodgrass, W.R. (1983). The Question of Independence: Government Auditors vs Public Accountants. *Governmental Finance* (June): 29-31.

Solomon, I., Shields, M. and Whittington, O. R. (1999). What do Industry Specialists Know? *Journal of Accounting Research* (Vol. 37): 191-208.

State Owned Enterprises Act, No 124 of 1986. Wellington: GP Print

State Sector Act. No 20 of 1988. Wellington: GP Print

Stein, M., Simunic, D. and O'Keefe, T. (1994). Industry Differences in the Production of Audit Services. *Auditing: A Journal of Practice and Theory (*Vol. 13, Supplement): 128-142.

Stevens, M. (1981). *The Big Eight*, Macmillan, New York.

Stigler, G. J. (1958). The Economies of Scale. *Journal of Law and Economics* (Vol. 1, October): 54-71.

Stigler, G. J. (1971). The Theory of Economic Regulation. *Bell Journal of Economics and Management Science (*Vol. 2, Spring): 3-21.

Stulz, R. (1990). Managerial Discretion and Optimal Financial Policies. *Journal of Financial Economics* (Vol. 26): 3-27.

Subcommittee on Reports, Accounting and Management of the Commission on Government Operations, United States Senate. *The Accounting Establishment: A Staff Study*. Washington, DC.: Government Printing Office, 1977.

Sunday Star Times, 2001. Government Moves to Tighten Health. 9 September, A 1.

Sunday Star Times, 2001. Trouble for Government in Health, 9 September, A 3.

Taylor, M.H. and Simon, D.T. (1999). Determinants of Audit Fees: The

Importance of Litigation, Disclosure and Regulatory Burdens in Audit Engagements in 20 Countries. *The International Journal of Accounting* (Vol. 31): 1-18.

Teoh, S. and Wong, T. (1993). Perceived Auditor Quality and the Earning Response Coefficient. *The Accounting Review* (Vol. 68): 346-366.

The Dominion, 2001. Health Staff Loyalty Could Earn Rewards. 28 September, 7.

The Dominion, 2001. $3 Billion Injection for Health. 11 December, 1.

The Dominion, 2001. Sowry Claims King Appointees Will Gag District Health Boards. 22 December, 3.

The Dominion, 2002. King to Find Funds to Solve South Island Heart Crisis'. 19 February, 2.

The Dominion Post, 2002. $3.2m Patient Bill. 29 September, A, 2.

The Independent, 2000. Wanted: Cattery-Must be Suitable for Ex-TVNZ Board. 1 March, 36.

The Press, 2001. Mayor Defends Orion Decision. 14 February, 4.

The Press, 2002. Demands Exceed Limited Resources. 15 January, 7.

Tirole, J. (1988). *The Theory of Industrial Organisation.* Cambridge, MA: MIT Press.

Titman, S. and Treuman, B. (1986). Information Quality and the Value of New Issues. *Journal of Accounting and Economics.* (Vol. 8, No. 2.): 159-72.

Turpen, R. A. (1990). Differential Pricing on Auditors' Initial Engagements: Further Evidence. *Auditing: A journal of Practice and Theory* (Vol. 9, Spring): 69-76.

Vancil, R. (1987). *Passing the Baton: Managing the Process of CEO Succession*. Boston, MA: Harvard Business School Press.

Vanstraelen, A. (2000). Impact of Renewable Long-term Audit Mandates on Audit Quality. *The European Accounting Review.* (Vol. 9, No.3): 419-442.

Vanstraelen, A. (2002). Auditor Economic Incentives and Going-concern Opinions in a Limited Litigious Continental European Business Environment: Empirical Evidence from Belgium. *Accounting and Business Research.* (Vol.32, No. 3): 171-186.

Wallace, W.A. (1986). The Timing of Initial Independent Audits of Municipalities: An Empirical Analysis. *Research in Governmental and Nonprofit Accounting* (Vol. 2): 3-51.

Wallace, W. (1989). Are Audit Fees Sufficiently Risk Adjusted? *Advances in Accounting* (Vol. 6, Supplement 1): 3-38.

Waller, W.S. (1993). Auditors' Assessments of Inherent and Control Risk in Field Settings. *The Accounting Review* (Vol.68, No. 4, October): 783-803.

Walo, J.C. (1995). The Effects of Auditor's Business Risk on Audit Scope. *Auditing: A Journal of Practice and Theory* (Vol. 14, No. 1): 115-124.

Ward, D.D., Elder, R.J. and Kattelus, S.C. (1994). Further Evidence on the Determinants of Municipal Audit Fees. *The Accounting Review* (Vol. 69, No.2): 399-411.

Warner, J. (1977). Bankruptcy Costs: Some Evidence. *Journal of Finance* (Vol. 32): 337-48.

Warner, J., Watts, R. and Wruck, K. (1988). Stock Prices and Top Management Changes. *Journal of Financial Economics* (Vol. 20): 461-492.

Watts, R. L. (1977). Corporate Financial Statements, a Product of Market and Political Processes. *Australian Journal of Management* (Vol. 2, April): 53-75.

Watts, R. L. and Zimmerman, J. L. (1978). Toward a Positive Theory of Determination of Accounting Standards. *The Accounting Review* (Vol. 53, January): 112-134.

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

Watts, R. L. and Zimmerman, J. L. (1990). Positive Accounting Theory: A Ten Year Perspective. *The Accounting Review* (Vol. 65, No. 1, January): 131-156.

Webb, P. (1999). Institute of Directors. *Accountants Journal* (Vol. 78, February): 72.

Weisbach, M.S. (1988). Outside Directors and CEO Turnover. *Journal of Financial Economics* (Vol. 20): 431-460.

Whittred, G. and Zimmer, I. (1990). *Financial Accounting: Incentive Effects and Economic Consequences,* Holt, Rinehart and Winston.

Whisenant, S., Sankaraguruswamy, S. and Raghunandan, K. (2003). Evidence on the Joint Determination of Audit and Non-audit Fees. *Journal of Accounting Research* (Vol. 41, No. 4, September): 721-745.

Williams, D.D. (1988, Summer). The Potential Determinants of Auditor Change. *Journal of Business Finance and Accounting* (Vol. 15, No. 2): 243-261.

Williamson, O.E (1975). *Markets and Hierarchies: Analysis and Antitrust Implications*, Free Press, New York.

Williamson, O.E. (1983). Organisation Form, Residual Claimants and Corporate Control. *Journal of Law and Economics* (Vol. 26): 351-366.

Williamson, O.E. (1984). Corporate Governance, *The Yale Law Journal* (Vol. 93): 1197-1230.

Williamson, O.E. (1985). *The Economic Institutions of Capitalism*, Free Press, New York.

Williamson, O.E. (1988). Corporate Finance and Corporate Governance. *The Journal of Finance (*Vol. 43, No. 3, July): 567-591.

Williamson, O. E. (1999). Strategy Research: Governance and Competence Perspectives. *Strategic Management Journal* (Vol. 20, December): 1087-1108.

Willingham, J. J. and Wright, W. F. (1985). Financial Statements Errors and

Internal Control Judgements. *Auditing: A Journal of Practice and Theory* (Vol. 4, Fall): 57-70.

Wilson Jr., T.E. and Grimlund, R.A. (1990). An Examination of the Importance of an Auditor's Reputation. *Auditing: A Journal of Practice and Theory (*Vol. 9, No. 2, Spring): 43-59.

Winograd, B. N., Gerson, J. S. and Berlin, B.B. (2000). Audit Practices of PricewaterhouseCoopers. *Auditing: A Journal of Practice and Theory* (Vol. 19, No. 2, Fall): 175-182.

Wong, J. (1988). Agency Theory and Accounting Choices: A Theoretical Framework. *Pacific Accounting Review* (Vol. 1, December): 22-41

Wright, A. (1988). The Impact of Prior Working Papers on Auditor Evidential Planning Judgements. *Accounting Organizations and Society* (Vol. 13, No. 6): 595-605.

Wright, D. (1996). Evidence on the Relation between Corporate Governance Characteristics and the Quality of Financial Reporting. Working paper, University of Michigan.

Wright, S. and Wright A.M. (1997). The Effect of Industry Experience on Hypothesis Generation and audit Planning Decisions. *Behavioural Research in Accounting* (Vol.9): 273-294.

Wolfson, N. (1984). *The Modern Corporation: Free Market versus Regulation.* New York: McGraw-Hill.

Wong, J. (1988). Political Costs and an Intraperiod Accounting Choice for

Export Tax Credits. *Journal of Accounting & Economics* (Vol. 10, January): 37-51.

Xie, B., Davidson III, W.N. and DaDalt, P. J. (2001). Earnings Management and Corporate Governance: The Roles of the Board and the Audit Committee. Working paper, Southern Illinois University.

Yardley, J.A., Kauffman, N. L., Cairney, T.D. and Albrecht, W.D. (1992). Supplier Behavior in the U.S. Audit Market. *Journal of Accounting Literature* (Vol. 11): 151-184.

Yermack, D. (1996). Higher Market Valuation of Companies with a Small Board of Directors. *Journal of Financial Economics* (Vol. 40): 185-211.

Yermack, D. (2002). Remuneration, Retention and Reputation Incentives for Outside Directors. Unpublished working paper, New York University.

Zeff, S. and Fossum, R.L. (1967). An Analysis of Large Audit Clients. *The Accounting Review* (Vol. 42, April): 298-320.

Zimmer, I. (1986). Accounting for Interest by Real Estate Developers. *Journal of Accounting and Economics* (Vol. 8, March): 37-51.

Zimmerman, J. L. (1977). The Municipal Accounting Maze: An Analysis of Political Incentives. *Journal of Accounting Research* (Vol. 15, Supplement): 107-144.

Zimmerman, J. L. (1983). Taxes and Firm Size. *Journal of Accounting and Economics* (Vol.5): 119-149.

Zmijewski, M.E. and Hagerman, R. L. (1981). An Income Strategy Approach to the Positive Theory of Accounting Standard Setting Choice. *Journal of Accounting and Economics* (Vol.3, No. 2): 129-149.

APPENDIX 1

The list of entities used in the sample of this study.

1. ACC
2. AgResearch
3. Airways Corporation
4. Alpine Energy
5. Ashburton Contracting
6. Asure New Zealand
7. At Work Insurance
8. Auckland Healthcare
9. Auckland International Airport
10. Buller Electricity
11. Canterbury Health
12. Capital Coast Health
13. Central Electric
14. Centralines
15. Centre Port
16. Christchurch International Airport
17. Coast Health Care
18. Contact Energy
19. Counties Power
20. Crop & Food Research
21. Crown Forestry Management
22. Eastland Network
23. Electricity Ashburton
24. Electricity Corporation of NZ
25. Electricity Invercargill
26. ElectroNet Services
27. Enerco
28. Genesis
29. Good Health Wanganui
30. Government Property Services
31. Hawkes Bay Network
32. Health Care Hawkes Bay
33. Health Care Otago
34. Health South Canterbury
35. Health Waikato
36. Healthlink South
37. Horowhenua Energy
38. Horticulture & Food Research Institute
39. Housing New Zealand
40. Hutt Valley Health
41. Industrial Research

42. Infrastructure Auckland
43. Institute of Environmental Science
44. Institute of Geological and Nuclear Science
45. Lakeland Health
46. Landcare Research
47. Landcorp Farming
48. Learning Media
49. Lyttleton Port Company
50. Mainpower NZ
51. Manukau Consultants
52. Marlborough Lines
53. Meridian Energy
54. Meteorological Service of New Zealand
55. MidCentral Health
56. Mighty River Power
57. Nelson Marlborough Health Services
58. Network Tasman
59. Network Waitaki
60. New Zealand Post
61. New Zealand Symphony Orchestra
62. NIWA
63. Northland Health
64. Northland Port Corporation (NZ)
65. Northpower
66. NZ Forest Research Institute
67. Orion Group
68. Otago Power
69. Palmerston North Airport
70. Port Gisborne
71. Port Marlborough New Zealand
72. Port Nelson
73. Port of Napier
74. Port of Tauranga
75. Port of Timaru
76. Port Otago
77. Ports of Auckland
78. PowerNet
79. Quotable Value NZ
80. Radio New Zealand
81. ScanPower
82. Selwyn Plantation Board
83. Solid Energy
84. South Auckland Health
85. Southern Health
86. Taranaki Healthcare

87. Tasman Energy
88. TerraLink New Zealand
89. The Lines Company
90. Timberlands West Coast
91. Top Energy
92. Transpower New Zealand
93. Trust House
94. TVNZ
95. Vehicle Testing New Zealand
96. Waipa Power
97. Wairarapa Health
98. Waitaki Power
99. Waitemata Health
100. Waitomo Energy Services
101. Wanganui Gas
102. Watercare Services
103. WEL Energy Trust
104. Wellington International Airport
105. Western Bay Health
106. Westgate Transport
107. Westpower

APPENDIX 2

The list of entities classified as "Other Industry" in industry classification:

1. ACC
2. Airways Corporation
3. Ashburton Contracting
4. Asure New Zealand
5. At Work Insurance
6. Crown Forestry Management
7. Electricity Corporation of NZ
8. Government Property Services
9. Housing New Zealand
10. Infrastructure Auckland
11. Landcare Research
12. Landcorp Farming
13. Learning Media
14. Manukau Consultants
15. Meteorological Service of New Zealand
16. New Zealand Post
17. New Zealand Symphony Orchestra
18. Quotable Value NZ
19. Radio New Zealand
20. Selwyn Plantation Board
21. TerraLink New Zealand
22. Timberlands West Coast
23. Trust House
24. TVNZ
25. Vehicle Testing New Zealand
26. Watercare Services
27. Whitestone Roading