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EVIDENCE ON THE IMPACT OF INTERNAL CONTROL AND CORPORATE GOVERNANCE ON AUDIT FEES

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Abstract

Previous studies generally suggest that internal control and external auditing can substitute for each other, so that better internal control will be associated with lower audit fees. However, their empirical results do not support this view. In contrast, previous studies of the interaction between corporate governance and external audit services often assume that they are complementary, and that improved governance is associated with higher audit fees, although the evidence about this issue is also mixed. We examine whether the ‘substitution’ or ‘complementary controls’ views apply. We find that measures of internal auditing, corporate governance, and concentration of ownership are all positively related to audit fees, consistent with the explanation that controls are complementary. The study makes a contribution by assisting regulators in understanding the effects of regulation of corporate governance, and by showing auditors and auditing standard setters that the view that internal controls can substitute for external auditing may not be helpful. We also find that these relationships hold only in a relatively less regulated environment.

Keywords: corporate governance; internal control; audit fees.

EVIDENCE ON THE IMPACT OF ELEMENTS OF INTERNAL CONTROL AND CORPORATE GOVERNANCE ON AUDIT FEES

SUMMARY

Most previous research that examined relationships among external audits and other sources of control (e.g., internal auditing) is based on an assumption that decisions about risk reduction reflect the potential substitution of one control for another. In contrast, previous studies of the interaction between corporate governance and external audit services often suggest that they are complementary, although the evidence about this issue is also mixed. We present arguments that controls, governance and auditing are complements, not substitutes and that an increase in one will lead to an increase in the others. Our results are consistent with these propositions. This issue of the relationship between internal control and audit fees is of interest because there are two contrary views expressed in the literature regarding internal control on the one hand and corporate governance on the other, namely (1) that better control will lead to lower audit fees and (2) that better governance will lead to more auditing and thus higher audit fees.

We use a New Zealand setting in 1995 and 2005. New Zealand in 1995 was an interesting setting in which there were wide variations in the corporate governance mechanisms used, and we found support for our hypotheses. By contrast, in the more recent period, stock exchange listing requirements allow little variation in corporate governance arrangements so there are few differences among companies, and as a result the associations between control mechanisms and auditing can no longer be observed.

PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT

Prior research

Several prior internal control studies have argued that better internal control will allow reduced external audit work, i.e., control mechanisms in an organization can be substituted one for another (e.g., Simunic, 1980, 1984; Wallace 1984). Furthermore, a basic tenet of auditing is that better internal control reduces the need for substantive audit work by external auditors. Simunic (1980, 1984) argued that auditees can substitute internal control for external auditing if there is monopoly pricing, or substitute external auditing for internal control when knowledge spillovers reduce the cost of external auditing. Since the quality of internal control is not usually observable to researchers, several studies have used internal auditing as a proxy for internal control. Wallace (1984) reported that the relationship between internal audit expenditures and audit fee was negative in a study of 32 large US companies. However, other studies have not found this predicted result. Anderson and Zéghal (1994) found a significant positive relationship between the ratio of the auditees' internal audit costs to total assets and audit fees for large auditees (and no relationship for small auditees). Anderson and Zéghal (1994) suggest that there are certain firm characteristics which are not captured by size and complexity measures that result in high demand for both internal auditing and external auditing. Gerrard et al. (1994) suggest that internal auditing will have little effect, and they find no significant relationship. Gist (1995) found no relationship between internal audit payroll and external audit fees; Johnson *et al.* (1995) found no relationship between assistance provided by the internal audit function and external audit fees; and Walker and Casterella (2000) found a positive relationship between external audit fees and the presence of an internal audit department. Other studies have found that the expected reduction in the quantity of substantive audit work does not occur when

auditors are able to rely on internal control (O’Keefe, Simunic and Stein, 1994; Hackenbrack and Knechel, 1997; Mock and Wright, 1999). An exception occurs when the contribution of the internal auditors to the external audit is the issue examined (rather than the existence or extent of the internal audit). Felix et al. (2001) suggest that internal audit’s contribution to external audit work will reduced audit fees, and they find a significant negative relation. Goodwin-Stewart and Kent (2006) predict that audit fees will be positively related to the use of an internal audit function on the basis of the previous research and because “firms that are more committed to strong corporate governance are likely to engage in greater levels of internal auditing as well as being prepared to pay for a higher quality external audit.” They find a positive relation.

In contrast to the substitution view applied to internal control, the literature usually argues that the relationship between external auditing and corporate governance mechanisms such as outside directors and audit committees is complementary. Directors have an investment in reputation capital (Fama, 1980), are concerned about possible liability (Eichenseher and Shields, 1985) and do not themselves pay for improved internal control or external auditing (Carcello *et al.*, 2002). As a result independent directors are expected to demand more auditing and better governance to protect themselves from damage to reputation or personal liability arising from financial report misstatements. Research results have generally been consistent with this view. Eichenseher and Shields (1985) and Pincus *et al* (1989) found that companies switching to Big 8 auditors were more likely to voluntarily form an audit committee. Collier and Gregory (1996) found some support for higher audit fees when companies in the UK had an audit committee, although Goddard and Masters (2000) did not find this result in a later period. O’Sullivan (2000) found that audit fees were positively associated with the percentage of equity owned by executive directors. In the US, Carcello *et al.* (2002) found that board of director independence, diligence,

and expertise were associated with higher audit fees, and Abbott *et al.* (2003) found that audit committee independence and financial expertise were associated with higher audit fees. Knechel and Willekens (2006) argue that this occurs because “external auditing will increase in situations where there are multiple stakeholders with individual risk profiles who can shift some of the cost of monitoring to other stakeholders” – that is, that the external directors will demand additional assurance that helps to protect their reputation, especially when the cost is borne by the shareholders, not the directors themselves.

Another mechanism available for corporate governance includes the existence of a major shareholder (Shleifer and Vishny, 1997). Jensen (1993) describes active investors who hold large investments in a company and participate in its strategic direction as important to good governance and effective internal control. The existence of such a major shareholder may also lead to further demand for increased external auditing, both as a means for the major investor to monitor its investment, and for other shareholders to protect themselves from the major shareholder.

Hypothesis development

The substitution view, that more of one source of control leads to less of another, and so there will be a negative relationship between control or governance and external audit, is initially appealing. However, this relationship is not what is usually found in previous research, and positive relationships are more commonly found. It does not take account of the separate interests of individual stakeholders, as discussed above, nor of the circumstance that greater need for controls is usually met by investing in a number of forms of control, not one control to the exclusion of another. The substitution view implies that alternative sources of control will have a

negative relationship with external auditing. This viewpoint is implicitly based on a scenario comprising a single decision-maker minimizing risk to the entire system and having the ability to control all relevant decisions. In that case, the single decision maker can indeed adjust the portfolio of control mechanisms, and if one becomes stronger, then another can be reduced in strength.

In contrast, the perspective in the previous corporate governance research suggests there may be a complementary relationship among controls due to the multiple stakeholders in the process and the externalities of costs and benefits of their individual decisions. For instance, a company whose stakeholders wish to improve its control and governance might start by appointing higher-quality independent directors. While these directors will help to look after the interests of other stakeholders, they also have an interest in protecting their own reputations, and therefore have reason to demand better external auditing, more use of audit committees, and better internal audit functions.¹ In addition, it seems unreasonable that a company that is in need of greater controls would achieve this by utilising just one control dimension – it is more likely to make a broader investment in a range of mechanisms for control. These arguments show that it is quite reasonable to suggest that controls could be complementary, and that they are not necessarily substitutes for each other.

If the substitution view holds, controls can be offset against each other and there will be negative relationships between control mechanisms; if control mechanisms are complementary, the relationship will be positive. On the basis of the balance of arguments presented in previous

¹ This argument can apply to other parties as well – e.g., Big firm auditors might make recommendations that clients should make use of an audit committee; and audit committees sometimes recommend the use of a Big firm auditor.

studies, and the empirical results of those studies, positive relationships are predicted in our study.

Internal Control

If a company's control and governance decisions were made by a single stakeholder minimizing the total costs of control and audit, then internal auditing and external auditing could be perceived as substitutes. However, there are usually several stakeholders involved. The direct decision about how much to invest in internal auditing generally resides with management while outside directors and audit committee members may be able to exert some influence over implementing internal auditing. Consequently, directors and audit committee members may choose to increase investment in both internal *and* external auditing, in order to protect their reputations (Knechel and Willekens 2006), or because they see a need to invest in all forms of control (Goodwin-Stewart and Kent 23006), or because of some other firm characteristic which we cannot observe (Anderson and Zéghal 1994). If the personal risks and agency costs of managers or directors are reduced by higher internal and external auditing, but some of the costs are borne by the company as a whole and so passed on to other stakeholders (such as shareholders), we could expect to see a positive relationship between internal and external auditing (Knechel et al 2007). Therefore, our first hypothesis is based on the argument that internal auditing and external auditing are complements rather than substitutes:

Hypothesis 1: The greater the extent of internal auditing, the higher will be the demand for external auditing services.

Corporate Governance

Organizations are also subject to external forms of control and oversight, many of which are considered to be part of the overall control environment of the organization. Three forms of governance and control are of interest in this study: involvement by major shareholders, outside directors and audit committees.

A major shareholder that is actively involved in operations and decision-making may have such a broad span of control over activities and internal control that the need for external auditing may be reduced. On the other hand, a major outside shareholder may use this influence to increase external auditing to compensate for a lack of control over other internal decisions. An alternative explanation that would also support an increase of external auditing associated with a major shareholder is that minority shareholders demand increased external assurance as a balance against the power of the major shareholder. Different types of major shareholders may also have differing effects – for example multi-national corporations based in another country will not have the same effect on corporate governance as active investors based in the some country. These arguments indicate that the existence of a dominant shareholder could lead to an increased demand for external auditing, leading to our second hypothesis:

Hypothesis 2: The existence of major shareholders will be associated with greater demand for external auditing services.

Corporate governance is typically implemented through the board of directors. Outside directors, being independent of management, bear the primary responsibility of monitoring management's performance. As a component of the control environment, the board's responsibilities include monitoring the quality of financial reporting and developing controls related to key strategic risks. In the substitution view, a large number of outside directors, and the existence of an audit committee, may reduce the need for external auditing because of

improved oversight by the board itself. Alternatively, board members' professional and legal responsibilities, combined with their lack of direct interaction with the internal environment may lead to an increase in the demand for external auditing as they will wish to protect their reputations. Carcello *et al* (2002) found a positive relationship between outside directors and fees paid to auditors in the US, while Collier and Gregory (1996) and O'Sullivan (2000) found similar results in the UK.² This discussion leads to our third and fourth hypotheses:

Hypothesis 3: The existence of an audit committee will be associated with greater demand for external auditing services.

Hypothesis 4: Greater oversight by outside directors will be associated with greater demand for external auditing services.

RESEARCH METHOD

The empirical portion of this study seeks to determine how alternative control mechanisms interact with audit fees. In order to control for the riskiness of a specific organization and to establish a baseline model for audit fees based on prior literature, we use eight variables to reflect factors/risks that have been shown in prior research to be related to audit fees:³

- Size (LNASSETS): Larger companies are likely to face more and varied risks from their environment. Furthermore, it is well documented that audit fees are significantly associated with the size of an organization (e.g., see Bell and Knechel (1994) among others). We measure size as the natural log of total assets.
- Complexity (SQSUB): Organizations that are more diverse and widespread can also face incrementally more risks, and experience higher fees. We measure complexity as the square root of the number of subsidiaries, consistent with many previous studies.

² Collier and Gregory (1996) found that the increase of audit fees associated with the existence of an audit committee was due to a size effect. They also hypothesized that the existence of an audit committee would be associated with a reduction in risk (suggesting a reduction in fees) but their results did not support this hypothesis.

³ For a comprehensive overview of basic research in audit fees, including discussion of the various variables used to explain audit fees, see Hay, Knechel and Wong (2006).

- Inherent Risk (INVREC): Certain assets are perceived as being riskier to audit, resulting in higher audit fees. Prior research has noted a relationship between increased levels of receivables and inventory and audit failures (Stice 1991). Furthermore, Simunic (1980) and Newton and Ashton (1989) suggest that inventory and receivables are more difficult to audit than other accounts. We use the ratio of inventory plus receivables to total assets as a measure of inherent risk.
- Financial condition (CASCLS): Organizations that are suffering from fiscal distress and/or are unprofitable are often perceived as being riskier and more challenging to audit (Simunic 1980). We use the current ratio as a measure of potential fiscal distress.
- Big audit firm premium (BIG): The Big Six, (Five or Four) audit firms are regarded as having higher audit quality, and are expected to be able to earn higher audit fees as a result. We use a dummy variable to indicate a Big firm audit.
- Foreign assets (FOR): Foreign assets are an indicator of a more complex company, and a more complex audit, and are expected to be associated with higher fees (Simunic 1980). We use the proportion of overseas assets to total assets.
- A recent change of audit firm (SWITCH): Client companies that have changed auditor in the last three years might have lower audit fees, if lowballing takes place. We use a dummy variable to indicate whether the company switched auditors in the current year or the two previous years.

To test Hypothesis 1, we examine the relationship of the existence of an internal audit department to audit fees. We define IA as the number of internal audit professionals that the organization has listed in the *Member's Handbook* published by the Institute of Internal Auditors (IIA) in New Zealand⁴ (where available) or the existence of an internal audit department (in a later period when data about the number of audit professionals is not available). A limitation of the proposed measurement is that it may not sufficiently capture the effect of internal auditing since not all practicing internal auditors are members of IIA. However, it may overcome some

⁴ The Member's Handbook discloses the number of professionals within an organization who label themselves as internal auditors. They do not necessarily have the Certified Internal Auditor designation. The handbook is no longer published in 2005 and we use existence of an internal audit department as disclosed by the company as our proxy for internal auditing in that period.

problems encountered by previous studies such as: (1) the inclusion of clerical work; (2) different organizations may have different definitions for internal audit costs; and (3) voluntary disclosure through questionnaires generally results in low response rates.

To test Hypotheses 2, 3 and 4, we examine three variables that reflect the hypothesized relationships among forms of corporate governance and audit fees:

- Existence of an audit committee (COM): Audit committees are charged with exercising oversight regarding an organization's financial reporting and internal control and provide a conduit for both internal and external auditors to report important findings to stakeholders. We set COM equal to 1 if a company has an audit committee, 0 otherwise.
- Number of outside directors (OUT): Directors who are independent of management can exercise significant oversight of a company but require independent information about the organization's operations and controls, which is usually obtained via the external auditor. We measure OUT as the number of directors who are independent of management.
- Existence of a major outside shareholder (MAJ): A major shareholder often has the ability to directly intervene in the operations and controls of an organization and impose an audit requirement on the organization. We define MAJ to be 1 if there is a single shareholder who controls 20% or more of the company's stock, 0 otherwise.

Under either the substitution or complementary controls views, the relationship among control mechanisms may be endogenous — better controls might lead to more (or less demand for auditing), but equally, better auditing might lead the organization to increase (or reduce) other forms of control. To control for this endogeneity we use three categories of variables in our study:

- Predetermined explanatory variables to control for factors known to affect audit fees: LNASSETS, SQSUB, INVREC, CASCLS, BIG, FOR and SWITCH, as previously discussed.

- Variables for control or governance variables that are considered to be predetermined as part of the structure of the organization and are unaffected by internal controls and auditing, namely major shareholdings (MAJ) and external directors (OUT).⁵
- Variables for control or governance that are endogenous, namely internal audit (IA) and audit committee (COM). There is expected to be a two-way relationship between external auditing and control. It has been argued in many “substitution view” papers (e.g., Simunic 1980, 1984) that an organization can choose to trade off more or less internal auditing against external auditing; and it has also been argued that external auditing may have an impact on voluntarily forming an audit committee (Eichenseher and Shields, 1985, Pincus et al. 1989). Alternatively, using the complementary controls arguments presented earlier, the relationship between control and auditing is expected to be endogenous, but complementary. Increased external auditing could lead to increases in control and governance, for example if auditors identify weaknesses in internal controls or recommend formation of an audit committee.

In these circumstances, use of OLS regression could lead to biased and inconsistent results. We therefore use two-stage least squares (2SLS) to estimate the relationship between audit fees and the dependent variables. This procedure can be used when variables in the model are reciprocally related and thus not independent of the error term (Berry, 1984). In order to carry out this regression, it was necessary to employ instrumental variables which are correlated with the variables for control mechanisms. The instrumental variables were used to obtain revised estimates of the endogenous variables, that are unrelated to the residuals in the model. They do not form part of the audit fee models reported. The appropriate set of instrumental variables to use has not been explored in the previous literature. We considered that the following instrumental variables were reasonable in the circumstances:

- Debt to assets, as lenders could exert some influence over control and governance mechanisms (DEBTTOA). While debt is sometimes used in audit fee models as a measure of risk, it is often not significant (Hay et al., 2006) and appears to be more directly related to governance.

⁵ Deumes (2004) has argued that ownership and overall board structure are only really endogenous at the time of formation of initial public offering. Subsequent to those events, changes in either ownership or overall board structure requires a significant structural change in the organization.

- Regulated industry (UTILITY), a dummy variable for whether the company is in the utility industry, as the existence of regulators is expected to increase the demand for control. (Financial services companies are also considered to be regulated, but were excluded from our study as they differ from other companies in too many other ways).
- Following by share market analysts (ANFOLL), as higher profile in the market is likely to induce directors to demand more control mechanisms in order to protect their reputation.
- The number of chartered accountants employed by the company (ACCOUNT), as professional accountants are likely to influence implementation of control mechanisms.

The instrumental variables are variables that are related to the variables for control and governance but that do not have a reciprocal relationship with them. In its general form, the 2SLS model we use can be expressed as:

$$\text{LNFEET} = a_1 + a_2 (\text{ENDOGENOUS}) + a_3 (\text{PREDETERMINEDTEST}) + a_4 (\text{SIZEETC}) + e$$

Where ENDOGENOUS represents the predicted values of the endogenous variables IA and COM derived from this equation:

$$\begin{aligned} \text{ENDOGENOUS} = & b_1 + b_2 (\text{INSTRUMENTAL}) + b_3 (\text{PREDETERMINEDTEST}) \\ & + b_4 (\text{SIZEETC}) + u \end{aligned}$$

and PREDETERMINEDTEST is the set of predetermined test variables for internal control and governance (MAJ and OUT), SIZEETC is the set of predetermined control variables for other factors that affect the audit (LNASSETS, SQSUB, INVREC, CASCLS, FOR, BIG, SWITCH) and INSTRUMENTAL is the set of instrumental variables. IA and COM are treated as endogenous as there is a two-way relationship with other forms of control and auditing whereby these variables might change depending on audit fees or MAJ and OUT. On the other hand, it seems unlikely that changes in audit fees or IA and COM could change the ownership of the company (MAJ) or the number of outside directors (OUT).

We examine this issue using data from 1995, when little public attention was paid to corporate governance and companies had considerable freedom to make arrangements that suited

them, and again with data from 2005, after there was considerable attention to corporate governance and changes to listing regulations requiring outside directors and an audit committee. There were 142 companies listed on the New Zealand Stock Exchange in 1994/95, as shown in *The New Zealand Company Register 1994/95*. Thirteen companies are excluded from the final sample as two companies were delisted during 1995, five companies had missing data, one company was involved in a merger and four companies were financial institutions. The final sample consists of 130 companies. Data relating to audit fees, total assets, number of segments, accounts receivables, inventories, return on assets and the existence of an audit committee were obtained from the annual reports of the companies. The number of internal auditors employed by each company who were members of the Institute of Internal Auditors was obtained from *The Members Handbook 1994/95* published by The Institute of Internal Auditors of New Zealand. The number of outside directors and the existence of a major overseas shareholder were collected from *The New Zealand Company Register 1995*. According to the New Zealand Company Register 2004/2005, there were 130 companies listed on the New Zealand Stock Exchange in 2004/2005. We excluded 5 financial institutions and companies with missing data. We obtained 83 observations in the final sample.

RESULTS

Descriptive Results

Descriptive statistics are presented in Table 1. The descriptive statistics show that the sample covers a wide range of companies, some very small, some relatively large. The companies also range from simple, with no subsidiaries, to more complex. The mean is 10 subsidiaries in 1995 (and 10 in 2005). On average, the companies in our sample had inventory

and receivables comprising 27% of assets in 1995 (25% in 2005). Most of the companies (86%) were audited by Big 5 firms in 1995 (88% in 2005).

The number of internal auditors is small, with the average company having less than one internal auditor listed in the IIA's membership guide in 1995 (and 60% having an internal audit function in 2005). This is to be expected in New Zealand, where internal auditing has been established relatively recently and it is not as widespread as other countries such as the US. Corporate governance changed considerably between 1995 and 2005 as a result of changes to listing requirements.⁶ Audit committees were voluntary in 1995, and at that time only 45% of the companies had such committees. By 2005, audit committees were a requirement of the New Zealand Stock Exchange listing requirements, and 95% of companies now had them. There was no regulation requiring outside directors in 1995, but this too had become a listing requirement by 2005. The minimum number of outside directors increased as a result, Companies had from zero to 11 outside directors in 1995, and from two to 11 in 2005. The average stayed about the same, at approximately five outside directors in both 1995 and 2005. The proportion of companies with a major shareholder is high. Listed companies frequently (87%) have a major shareholder, and Shleifer and Vishny (1997) observe that this is the norm for countries other than the US and UK. This had declined to 47% in 2005, probably due to changes in takeover regulations which from 2001 require an acquirer of more than 20% of company's shares to make an offer for the remainder (King 2002).

⁶ Regulatory changes to corporate governance in New Zealand included changes to the Stock Exchange Listing Rules (NZX 2004a) which now require companies to have at least two independent directors and to establish an audit committee composed solely of directors, with at least three members, at least two of whom are independent directors and one of whom has an accounting or financial background. In 1995 there were no similar requirements.

<<< Insert Table 1 here >>>

Table 2 reports the correlation matrix for the variables in the regression model. Audit fee is significantly related to all of the explanatory variables with two exceptions, SWITCH and MAJSH (in both periods). Internal auditing is significantly related to the corporate governance variables COM and OUT (both periods), and to the size and complexity of the company represented by LNASSETS and SQSUB (in 1995 only). COM and OUT are also significantly correlated in 1995. In 2005, COM is no longer significantly related, presumably because almost all companies have an audit committee and so little variation occurs. The remaining corporate governance variable MAJ is not related to most of the other governance variables, (except negatively to COM in 1995 only), and not related to any other variable in the study. This result suggests that MAJ is not directly related by itself to governance, control or audit, but it could nevertheless be related in the multiple regression models when other variables are controlled for. There are some indications of multicollinearity – for example, larger companies also have more subsidiaries and are more likely to have Big 5 auditors – and we report tests of this issue later in the paper under the heading “Supplementary Analysis.”

<<< Insert Table 2 here >>>

Primary Tests of Hypotheses

Table 3 presents the first part of our regression results, using OLS models where only the predetermined control and governance variables MAJ and OUT and the other explanatory variables are included. All the OLS models are statistically significant at $p < .0001$ with adjusted R^2 s higher than 0.7. Most of the variables representing size, complexity, risk and factors we control for have significant coefficients in the predicted direction. The exceptions are CASCLS

in some models, BIG and SWITCH. Previous New Zealand research by Johnson *et al.* (1995) also found large firm premiums applied only to some categories of audits and that auditor tenure was not related to audit fee. In general, the results are consistent with prior research and support the use of our models.

<<< Insert Table 3 here >>>

Model 1 is the base model without any of the test variables but including the other explanatory variables. Model 2 presents the results for an OLS model including OUT and MAJ. In the 1995 results, the coefficient of OUT is significant and positive ($p < .01$), and MAJ is significant at the 5% level using a one-tailed test. Similar results are obtained when we run the model with either OUT or MAJ but not the other. In the 2005 results, neither OUT nor MAJ is significant.

Table 4 presents two-stage least squares models where the endogenous variables IA and COM are added one at a time and then both included. Models 3, 4 and 5 are 2SLS regressions with IA, COM, and then both IA and COM added. The coefficients on IA and COM are positive and significant in all three models in 1995 and not in 2005. OUT is significant and positive in Models 3 and 5 in 1995, and MAJ is positive and significant in Model 4 in 1995, but none of these variables are significant in 2005. These results are consistent with the hypotheses that companies with more internal auditing will also demand more external auditing; that more active corporate governance will also be associated with greater demand for external auditing; and that a major shareholder (particularly one based in a different country who finds it more difficult to carry out monitoring directly) will also increase the demand for external auditing services to reduce risk. Taken together, these results support the general conclusion that the exercise of

independent corporate governance can lead to an increase in the demand for external auditing and thus an increase in audit fees. However, when corporate governance becomes homogenous and regulations force all companies into the same mould, these differences no longer apply.

Alternative Test of Joint Hypotheses

As an alternative test, we used the base model of audit fees—Model (1)—to predict audit fees for each company, and then examined the resulting residuals (actual fee minus predicted fee) for companies stratified by their control and governance attributes. This approach allows us to consider the audit fee effect of various company scenarios, with all of the audit fee-related variables controlled for. The results are reported in Table 5. For the 1995 data, companies with “low governance”—that is, no internal audit function, no audit committee and fewer than average outside directors—had negative fee residuals, meaning they have lower audit fees than the rest of the sample, on average, before taking into account the impact of control and governance. All other categories had positive residuals, signifying that fees were higher than the model predicted when various governance and control mechanisms were present. We conducted t-tests of the differences between the residuals for the “low governance” companies and each of the other categories where there were sufficient observations. In all cases the results were significant at $p < .05$.⁷ In short, when all of the other variables apart from governance are controlled for, the base model predicts fees that are too high for the low governance companies, and too low for the “high governance” companies. These results provide additional support for our earlier multiple regression results showing complementary relationships. For 2005, no significant results are obtained, again showing that corporate governance makes no difference in this more

homogenous environment (and many of the scenarios no longer have any companies to which they apply).

<<< Insert Table 4 here >>>

Supplementary Analysis

We also conducted diagnostic and sensitivity tests. We re-estimated the OLS models using 2SLS with OUT and MAJ treated as endogenous, and each of the 2SLS models using OLS. Results were very similar. We also performed Kolmogorov-Smirnov tests (Lapin, 1990) for normality of the residuals from the regressions reported. In each case the test statistic was insignificant and we were unable to reject the null hypothesis of normality. In addition we examined Variance Inflation Factors and found no evidence that multicollinearity has a significant effect.

There is a possible concern that the results are driven by size. Larger companies may be more likely to have internal auditors or an audit committee, and small companies may be more likely to have a major shareholder. As a result additional diagnostic tests were used to examine this issue. A Goldfeld-Quandt (1972) test of heteroscedasticity was performed on each of the models, by computing separate regressions for the largest third and smallest third of observations. The test of the ratio of the residual sums of squares from the regression of smallest third and largest third of observations yielded insignificant F-statistics, and we therefore reject

⁷ The result for OUT is partially due to an extreme outlier. Removing the outlier gives a mean fee residual of 0.03, while the t-test for difference between these companies and the low governance companies is still significant ($p < .05$).

the hypothesis that the model for large observations is significantly different from that for small observations.⁸

Other studies have found a positive relationship between audit fees and non-audit fees (e.g., Simunic 1984, O’Sullivan 2002) so it is also possible that consulting services by auditors can serve as a form of control. We carried out a further sensitivity test by running the models with LNNAF, the log of non-audit fees as an independent variable. The coefficient on LNNAF is not significant, and the signs and significance levels of the other variables do not change.

CONCLUSION AND LIMITATIONS

We examined whether the relationship between controls and external auditing is one of substitution, or a complementary relationship. We found evidence that, contrary to the substitution view, improved control and corporate governance are positively associated with the demand for external audit services but only where there is sufficient variation in corporate governance arrangements. The overall pattern of results supports the underlying theory that there is a positive and complex relationship among different elements of control due to the agency relationships among stakeholders, the nature of relevant risks, and available controls. These results support the complementary controls view – that investing in some controls may influence stakeholders to demand more of other controls (e.g., external directors improve control, but will

⁸ As a further analysis, we divided the sample into groups of similar-sized companies. This analysis shows that larger companies are more likely to have outside directors and audit committees; but within each group of companies of a similar size, those with audit committees have higher fees than those without. This is consistent with the view that corporate governance is correlated with size; and in addition, after controlling for size, corporate governance is correlated with audit fees.

also request greater control to protect themselves) — and that the package of controls will all be improved together, so investing in one control is associated with investing in another

The results observed in this study are consistent with recent analytical work by Knechel et al (2007) who demonstrate that when governance and control is not heavily regulated and ownership is concentrated (e.g., continental Europe), the complex game among corporate stakeholders generally results in increased investment in all forms of control, including the external audit.⁹ This condition would be indicative of New Zealand in 1995, thus our observation of positive relationships across forms of governance and control including the external audit is consistent with our expectation. Such an increase may not be Pareto efficient however. When governance and control is heavily regulated (e.g., the US and UK), the natural demand for control and governance is compounded since regulation would rarely mandate a reduction in control, leading to uniformly high levels of investment in many forms of control which simply exacerbates the lack of Pareto efficiency. Thus, the effect of regulation is to reduce the variation in demand in control that arises in an unregulated environment, albeit while moving the investment in control to a higher level. This condition would be indicative of New Zealand in 2005 so, again, our results are not surprising.

This study has a number of potential limitations. Since we are limited to publicly available data, our proxies for various sources of control may not be effective. This could be especially true for our measure of internal audit activity. Future research can examine alternative proxies for internal auditing and may find that the explanations proposed are even clearer when

⁹ The general condition for an “overinvestment” in control and governance is that stakeholders have shared decision rights over at least one form of control. Since many parties can influence the extent of an external audit—management, shareholders, creditors, the board, the auditor—such a condition would seem to apply to the demand for external auditing.

more measures of internal auditing are used. A second limitation is that we do not have a direct measure of the quality of overall internal control. This may create an omitted variable problem that affects the overall results of our analysis, although this issue has been recognised in audit fee research ever since Simunic (1980) and may be very difficult to overcome, as companies do not usually classify internal control costs separately from other management and administration functions. Third, the audit fee variable may not be a very good surrogate for demand for external assurance because it omits other assurance services that may be purchased by the client organization in separate transactions. In spite of these potential limitations, the results reported in this study suggest a complex relationship among risks and controls due to the multiple stakeholders influencing decisions about control and auditing in a given entity. The comparison between 1995 and 2005 in the study also shows that these effects are sensitive to the regulations that apply at any particular time, and it will be very interesting if future research can examine these relationships in more regulated and less regulated environments. The effect of relatively strong regulation such as the Sarbanes-Oxley Act is a particularly interesting issue.

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TABLE 1

Descriptive Statistics

Panel A: 1995 (130 Observations)

<i>Continuous variables</i>				
Variable	Mean	Std. Deviation	Minimum	Maximum
FEE	204.63	531.51	2.5	4,000.00
INAUDIT	0.35	1.52	0	12
OUT	5.03	2.11	0	11
ASSETS	471,235	1,634,988	1,223	13,261,000
SUBS	10.19	20.84	0	193
INVREC	0.27	0.25	0	0.83
CASCLS	12.04	41.57	.07	331.63
<i>Dichotomous variables</i>				
Variable	Yes	%	No	%
COM	59	45	71	55
MAJSH	113	87	17	13
FOR	18	14	112	86
BIG	112	86	18	14
SWITCH	17	13	113	87

Panel B: 2005 (83 Observations)

<i>Continuous Variables</i>				
Variable	Mean	Std. Deviation	Minimum	Maximum
FEE	245.86	406.57	7	2751
ASSETS	535822.80	1105379.10	1075	7421000
SUBS	9.67	9.23	0	40
INVREC	0.25	0.23	0	0.74
CASCLS	3.68	8.55	0.04	73.25
OUT	5.14	1.52	2	11
<i>Dichotomous Variables</i>				
Variable	Yes	%	No	%
INAUDIT	33	40	50	60
COM	79	95	4	5
MAJSH	39	47	44	53
FOR	16	19	67	81
BIG	73	88	10	12
SWITCH	17	20	66	80

Variable definitions:

FEE	= audit fee in thousands of \$
INAUDIT	= internal audit function
COM	= existence of an audit committee
OUT	= number of external directors
MAJSH	= existence of major shareholder (>20%)
ASSETS	= total assets in thousands of \$
SUBS	= number of subsidiaries
INVREC	= inventory plus receivables divided by total assets.
CASCLS	= current ratio
FOR	= percentage of foreign assets
BIG	= Big 6 auditor (1995) or Big 4 auditor (2005)
SWITCH	= change of auditor in the current year or two preceding years

Table 2 Correlation matrix
Pearson correlations below the diagonal, Spearman correlations above the diagonal.

Panel A, 1995

	LNFE	IA	COM	OUT	MAJSH	LNASSETS	SQSUB	INVREC	CASCLS	FOR	BIG	SWITCH
LNFE		0.433**	0.436**	0.496**	0.095	0.788**	0.695**	0.360**	-0.327**	0.305**	0.296**	-0.035
IA	0.486**		0.198*	0.311**	0.102	0.432**	0.330**	-0.038	-0.171	0.143	0.176*	0.080
COM	0.424**	0.222**		0.387**	-0.171*	0.378**	0.330**	0.048	-0.266**	0.168	0.111	-0.030
OUT	0.569**	0.342**	0.412**		-0.050	0.503**	0.329**	0.141	-0.394**	-0.030	0.190*	-0.044
MAJSH	0.087	0.006	-0.171*	-0.057		0.074	0.015	0.098	-0.220*	-0.032	0.153	0.151
LNASSETS	0.801**	0.508**	0.381**	0.530**	0.018		0.551**	-0.013	-0.352**	0.143	0.386**	-0.033
SQSUB	0.634**	0.332**	0.303**	0.373**	-0.108	0.534**		0.126	-0.304**	0.376**	0.113	0.007
INVREC	0.225**	-0.116	0.014	0.043	0.092	-0.063	0.015		-0.027	0.020	0.007	-0.189*
CASCLS	-0.310**	-0.071	-0.034	-0.144	-0.122	-0.210*	-0.173*	-0.239**		-0.031	-0.136	0.085
FOR	0.179*	0.087	0.019	-0.013	-0.073	0.076	0.343**	-0.096	-0.099		-0.057	0.070
BIG	0.316**	0.149	0.111	0.170	0.153	0.329**	0.116	0.005	-0.022	-0.096		0.092
SWITCH	-0.028	0.036	-0.030	-0.027	0.151	-0.066	0.017	-0.178*	0.273**	0.042	0.092	

Panel B, 2005

	LNFE	IA	COM	OUT	MAJSH	LNASSETS	SQSUB	INVREC	CASCLS	FOR	BIG	SWITCH
LNFE		0.448**	0.358**	0.426**	0.086	0.741**	0.704**	0.269*	-0.237*	0.613**	0.211	-0.045
IA	0.457**		0.183	0.285**	0.123	0.383**	0.189	0.379**	-0.052	0.217*	0.225*	-0.107
COM	0.421**	0.183		0.157	-0.014	0.352**	0.248*	0.200	-0.326**	0.195	0.262*	-0.025
OUT	0.398**	0.298**	0.171		0.202	0.511**	0.180	0.056	-0.147	0.078	0.278*	0.029
MAJSH	0.074	0.123	-0.014	0.150		0.163	-0.007	0.041	0.043	-0.071	0.126	0.001
LNASSETS	0.768**	0.410**	0.455**	0.476**	0.165			-0.055	-0.431**	0.273*	0.224*	-0.145
SQSUB	0.711**	0.163	0.261*	0.149	-0.005	0.504**		0.077	-0.145	0.550**	-0.035	-0.053
INVREC	0.252*	0.361**	0.188	0.034	0.013	-0.004	0.085		0.056	0.320**	0.114	-0.173
CASCLS	-0.350**	-0.140	-0.531**	-0.112	-0.103	-0.320**	-0.134	-0.182		-0.020	0.042	0.037
FOR	0.534**	0.186	0.167	-0.002	-0.136	0.194	0.442**	0.343**	-0.130		-0.051	-0.073
BIG4	0.229*	0.225*	0.262*	0.281**	0.126	0.248*	-0.018	0.078	-0.235*	-0.050		0.004
SWITCH	-0.048	-0.107	-0.025	0.011	0.001	-0.126	-0.072	-0.169	0.242*	-0.029	0.004	

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).

Variables:

LNFEET	= natural log of audit fee in thousands of \$
IA	= number of professional internal auditors (1995); existence of internal audit function (2005)
COM	= existence of an audit committee
OUT	= number of external directors
MAJSH	= existence of major shareholder (>20%)
LNASSETS	= natural log of total assets in thousands of \$
SQSUB	= square root of number of subsidiaries
INVREC	= inventory plus receivables divided by total assets.
CASCLS	= current ratio
FOR	= percentage of foreign assets
BIG	= Big 4 or 5 auditor
SWITCH	= change of auditor in the current year or two preceding years

Table 3					
OLS Regressions of the Relations between Audit Fees and Exogenous External Variables					
Dependent Variable: LNFEE					
		Model (1)		Model (2)	
		OLS base model		OLS model with OUT and MAJ	
Variable	Expected Sign	1995	2005	1995	2005
Intercept	+/-	-2.476	-0.548	-2.529	-0.531
(Significance)		0.000	0.189	0.000	0.202
Exogenous Variables					
OUT	+			0.104	0.070
(Significance)				(0.001)	(0.056)
MAJ	+			0.273	-0.006
(Significance)				(0.029)	(0.479)
Control Variables					
LNASSETS	+	0.495	0.330	0.437	0.302
(Significance)		(0.000)	(0.000)	(0.000)	(0.000)
SQSUB	+	0.161	0.266	0.153	0.270
(Significance)		(0.000)	(0.000)	(0.000)	(0.000)
INVREC	+	1.489	0.754	1.397	0.717
(Significance)		(0.000)	(0.008)	(0.000)	(0.012)
CASCLS	-	-0.003	-0.012	-0.002	-0.013
(Significance)		(0.038)	(0.103)	(0.068)	(0.080)
FOR	+	0.355	1.099	0.440	1.130
(Significance)		(0.062)	(0.000)	(0.024)	(0.000)
BIG4/BIG5	+	0.289	0.322	0.260	0.271
(Significance)		(0.054)	(0.087)	(0.066)	(0.154)
SWITCH	-	0.291	0.276	0.218	0.259
(Significance)		(0.058)	(0.064)	(0.115)	(0.081)
Adjusted R²		0.775	0.824	0.792	0.825
F-statistics		65.418	55.870	56.449	44.074
N		130	83	130	83

Variable definitions:

LNFEE = natural log of audit fee in thousands of \$
 OUT = number of external directors
 MAJSH = existence of major shareholder (>20%)
 LNASSETS = natural log of total assets in thousands of \$

SQSUB	= square root of number of subsidiaries
INVREC	= inventory plus receivables divided by total assets.
CASCLS	= current ratio
FOR	= percentage of foreign assets
BIG4/BIG5	= Big 4 auditor for 2005 data/Big 5 auditor for 1995 data
SWITCH	= change of auditor in the current year or two preceding years

Table 4: Two Stage Least Squares Regressions of the Relations between Audit Fees and Exogenous and Endogenous External Variables

Dependent Variable: LNFEE							
Variable	Expected Sign	Model (3) 2 SLS model with IA		Model (4) 2SLS model with COM		Model (5) 2SLS with IA and COM	
		1995	2005	1995	2005	1995	2005
Intercept	+/-	-2.004	0.132	-2.048	-0.273	-1.622	-.908
(Significance)		(0.000)	(0.861)	(0.000)	(0.277)	(0.003)	(0.556)
Endogenous Variables							
IA	+	0.513	0.534			0.472	-0.559
(Significance)		(0.005)	(0.292)			(0.018)	(0.329)
COM¹⁰	+			1.175	-0.309	1.040	-0.421
(Significance)				(0.030)	(0.195)	(0.041)	(0.201)
Exogenous Variables							
OUT	+	0.093	0.056	0.032	0.079	0.031	0.093
(Significance)		(0.001)	(0.118)	(0.138)	(0.065)	(0.009)	(0.064)
MAJ	+	0.261	-0.029	0.530	0.029	0.489	0.051
(Significance)		(0.033)	(0.406)	(0.008)	(0.407)	(0.1351)	(0.374)
Control Variables							
LNASSETS	+	0.389	0.247	0.368	0.311	0.332	0.374
(Significance)		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)
SQSUB	+	0.146	0.286	0.127	0.270	0.124	0.259
(Significance)		(0.000)	(0.000)	(0.002)	(0.000)	(0.002)	(0.000)
INVREC	+	1.465	0.305	1.286	0.887	1.362	1.377
(Significance)		(0.000)	(0.526)	(0.000)	(0.001)	(0.000)	(0.118)
CASCLS	-	-0.002	-0.016	-0.003	-0.028	-0.003	-0.025
(Significance)		(0.060)	(0.048)	(0.050)	(0.001)	(0.042)	(0.022)
FOR	+	0.423	1.082	0.502	1.100	0.478	1.039
(Significance)		(0.029)	(0.000)	(0.030)	(0.001)	(0.030)	(0.006)
BIG4/BIG5	+	0.273	0.200	0.245	0.361	0.257	0.450
(Significance)		(0.057)	(0.325)	(0.115)	(0.032)	(0.093)	(0.073)
SWITCH	-	0.191	0.275	0.211	0.334	0.187	0.325
(Significance)		(0.145)	(0.068)	(0.162)	(0.032)	(0.179)	(0.042)
Adjusted R²		0.797	0.823	0.733	0.816	0.755	0.751
F-statistic		52.448	39.001	37.041	37.342	37.619	23.473
N		130	83	130	83	130	83

¹⁰ COM is endogenous in 1995 and exogenous (because it is determined by Stock Exchange listing requirements) in 2005.

Variable definitions:

LNFEF	= natural log of audit fee in thousands of \$
OUT	= number of external directors
MAJSH	= existence of major shareholder (>20%)
LNASSETS	= natural log of total assets in thousands of \$
SQSUB	= square root of number of subsidiaries
INVREC	= inventory plus receivables divided by total assets.
CASCLS	= current ratio
FOR	= percentage of foreign assets
BIG4/BIG5	= Big 4 auditor for 2005 data/Big 5 auditor for 1995 data
SWITCH	= change of auditor in the current year or two preceding years

TABLE 5: THE DIFFERENCE BETWEEN PREDICTED & ACTUAL AUDIT FEES FOR OBSERVATIONS DIVIDED INTO CATEGORIES OF GOVERNANCE & CONTROL

<i>Category</i>	<i>IA</i>	<i>COM</i>	<i>OUT</i>	<i>Number of cos.</i>	<i>Mean audit fee \$000</i>	<i>Mean fee residual (Audit fee minus prediction)</i>
1995 data						
Low governance	No	No	Low	50	45.88	-0.23
OUT only	No	No	High	13	78.59	0.21
IA only	Yes	No	Low	4	91.33	0.04
COM only	No	Yes	Low	24	96.33	0.09
OUT and IA	Yes	No	High	3	402.00	0.32
IA and COM	Yes	Yes	Low	3	206.67	-0.01
OUT and COM	No	Yes	High	22	426.75	0.12
High governance	Yes	Yes	High	11	897.27	0.25
Total				130		
2005 data						
Low governance	No	No	Low	4	12.91	0.18
OUT only	No	No	High	0	0	0
IA only	Yes	No	Low	0	0	0
COM only	No	Yes	Low	32	132.54	-0.12
OUT and IA	Yes	No	High	0	0	0
IA and COM	Yes	Yes	Low	15	234.86	0.04
OUT and COM	No	Yes	High	14	189.87	-0.05
High governance	Yes	Yes	High	18	551.83	0.17
Total				83		

<i>Significance levels from t-tests for the difference between:</i>	<i>1995</i>	<i>2005</i>
Low governance and OUT only	p=0.0338	NA
Low governance and IA only	NA	NA
Low governance and COM only	p=0.0010	NA
Low governance and OUT and IA	NA	NA
Low governance and IA and COM	NA	NA
Low governance and OUT and COM	p=0.0250	NA
Low governance and high governance	p=0.0011	NA

IA = existence of a professional internal audit function.

COM = existence of an audit committee.

OUT = number of external directors, where 'Low' indicates less than the mean and 'High' indicates more than the mean.

Mean fee residual = mean of residual from the base model reported in Table 3, Model (1).

Low governance = no internal audit function, no audit committee, fewer outside directors than the mean.

High governance = internal audit function, audit committee, more outside directors than the mean.

NA = t-test not significant