Choice of non-audit services' supplier:

Other consultants versus the external auditor

1. Introduction

The research problem for this study is to identify factors that influence a company's decision to purchase non-audit services (NAS) from their external auditor rather than from an alternative external NAS provider (hereafter described as an external consultant). The study examines whether a company's competitive position and its corporate governance characteristics influence its choice of NAS provider. It also explores whether receiving a qualified audit opinion is associated with its decision to source NAS from an external consultant.

Prior studies have focused on potential impairment to audit independence (Barkess and Simnett 1994) and knowledge spill-overs (Simunic 1984) as factors influencing the choice of NAS provider. Other papers have associated specific NAS services with accounting reporting quality (Kinney *et al.* 2004), investor reaction (Mishra *et al.* 2005) and issuance of going concern opinions (DeFond *et al.*2002).

This paper contributes to the existing literature in a number of ways. First, maintaining competitive position is examined as an explanation for companies purchasing NAS from their external auditor. Second, the paper extends previous analyses by arguing that strong corporate governance structures are associated with a desire to strengthen perceived audit independence. Hence, we determine whether the provision of NAS from the auditor is associated with weaker governance structures. Third, we examine whether a qualified audit opinion from the external auditor leads the company to

purchase more NAS from an external consultant. Fourth, the study provides a unique data set for a large number of listed companies that provided details of their NAS from external consultants. This information was then combined with the publicly available figures provided in the annual report to provide a figure for total NAS paid to auditors and other consultants. This data set also provides descriptive data on the types of NAS provided by external consultants and the auditor. Most previous research has relied on NAS from the external auditor due to the difficulty of obtaining data on NAS from external consultants. Finally, the time period (1999) of the data set allows researchers to examine the issues in a voluntary setting. This is because less regulatory pressure and political focus existed for companies in purchasing NAS from the auditor in 1999. In addition, corporate governance practices were more diverse than in recent times due to a lack of regulation and recommendations on corporate governance practices in 1999. Therefore, it is expected that choice of NAS supplier and corporate governance practices were more likely to be determined by choice than an attempt to meet regulations.

Results indicate that companies' competitive position measured by the Herfindahl-Hirschman Index (HHI), specific industry membership and the existence of research and development (R&D) are associated with the quantity and proportion of NAS sourced from external consultants rather than the external auditor. Indicators of stronger governance structures (board size, diligence and independence, existence of an audit committee and separation of the roles of chief executive officer (CEO) and chairperson) are mostly not significant in explaining the proportion of NAS purchased from external consultants. An exception is that corporate governance is significantly positively related to companies that purchase all their NAS from external consultants

when measured using a corporate governance score. Companies with a qualified audit report source more NAS from external consultants than from their auditor while companies with a Big Six auditor source more NAS from their auditor than from external consultants.

The remainder of this paper is structured as follows. Theory, prior research and hypotheses development are discussed in the next section. The third section explains the research method while the fourth reports and discusses the results of the study. In the final section conclusions are drawn, limitations are acknowledged and further extensions to the study are highlighted.

2. Literature review and development of hypotheses

The first explanation for the choice of NAS provider in this study is the level of competition in the firm's environment. Competitive position is likely to influence the choice between using the firm's auditor or an external consultant for outsourcing NAS. A firm derives its competitive strength from its proprietary assets and is protective about losing these to an alliance partner (Kale, P. *et al* 2000). Therefore, firms in highly competitive environments with high proprietary knowledge are expected to minimise the use of external consultants in order to reduce the number of outside personnel exposed to their private information. We predict that these firms are more likely to use their auditor to provide NAS. This leads to the following hypothesis:

H1: Companies in more competitive environments purchase less NAS from external consultants than companies in less competitive environments.

The second explanation for the choice of NAS supplier is the strength of corporate governance. It is argued that companies with stronger governance structures avoid using their external auditor to provide NAS in order to demonstrate that there is no impairment to auditor independence in the audit process.

Extensive research since the 1960s has been conducted on the issue of whether the joint supply of audit and non-audit services by the auditor reduces the auditor's independence (for example, Briloff 1966; Firth 1980; Lavin 1976; Schulte, 1965). Early literature took a behavioural approach to the issue of whether the provision of NAS is a potential threat to the auditor's independence (Schulte. 1965; Shockley 1981; Titard 1971; Hartley and Ross 1972; Pany and Reckers 1984; Knapp, 1985; Kleinman *et al..,* 1998). More recent literature has adopted an archival approach, allowing a more objective assessment of whether the provision of NAS impairs perceived and actual independence (Barkess and Simnett 1994; Craswell *et al.* 2002; Sharma and Sidhu, 2001; Frankel *et al.* 2002; DeFond et al. 2002; Ashbaugh *et al.* 2003). Extensions of the literature have associated alternative types of NAS to financial reporting quality (Kinney *et al.* 2004) and investor reaction (Mishra *et al.,* 2005). Agency theory argues that in the modern corporation, in which share ownership is widely held, managerial actions depart from those required to maximise shareholder returns (Berle and Means 1932). Agency theory suggests that the external audit is required to verify the actions of management and reduce agency costs. Auditor independence is critical and any impairment is likely to increase agency costs (Jensen and Meckling 1976). Firth (1997) found evidence that companies with higher agency costs purchase less NAS from their auditor than those with lower agency costs. Ahmed *et al.* (2006) found evidence that suggests that strong governance mechanisms are associated with auditor independence.

However, there is no consensus about whether the provision of NAS by the auditor impairs either perceived or actual auditor independence (Jenkins and Krawczyk 2002; Schroeder 2000). One view is that the provision of NAS to audit clients increases the economic bond between the auditor and the client and this could impair independence. Results from a study by Shockley (1981) provided evidence that audit firms providing NAS are perceived as having a higher risk of losing independence than those not supplying NAS. In contrast, an alternative view is that the provision of NAS by the auditor enhances independence for a number of reasons. DeAngelo (1981) argues that the increased revenues from NAS lead to the desire to maintain reputational capital which lessens the auditor's willingness to acquiesce to threats to their objectivity. Goldman and Barlev (1974) also suggest that the provision of NAS enhances the auditor's 'uniqueness' to the client and increases the auditor's ability to resist pressure from management and therefore maintain their independence.

A number of studies provide support for the argument that NAS does not pose a threat to auditor independence. Mitra (2007), in a study of the oil and gas industry, found no evidence to suggest that the provision of NAS to audit clients impairs auditors' objectivity. DeFond *et al.* (2002) found no significant association between NAS fees and impaired auditor independence proxied by the auditor's propensity to issue going concern opinions. Jenkins and Krawcyk (2000) found that the provision of NAS by the auditor has a positive influence on perceptions of auditor independence, consistent with the contention that such services enhances auditor independence. Parkash and Venable (1993) examined auditor independence and the provision of NAS and results from their study suggest that auditees recognise the potential for perceptions of

independence impairment and therefore voluntarily manage the amount of recurring NAS that are purchased from their auditor.

Other earlier studies have highlighted audit fee issues and provide some useful insight into the field of auditor independence impairment research. Simon and Francis (1988) found that external audit fees appeared to have become loss leaders as a means to obtain lucrative consulting services. Later research by Reinstein and McMillan (2004) substantiated these findings and confirmed that consulting fees had increased from 31 per cent of total accounting fees in 1991 to 51 per cent by 1999, with clients spending an average of $2.69 for NAS for each $1 of audit fees. Simunic (1984), when examining the threat to auditor independence for those who provide NAS, found that audit fees for clients who purchased NAS from their auditors are higher than those of clients who did not do so. Palmrose (1986) also provided evidence that audit fees are higher even when the company purchases NAS from other outside providers. Solomon (1990) describes this as the audit fee puzzle and questions why the joint purchase of audit services and NAS, which generate 'knowledge spill-over' (Simunic 1984) benefits, should result in greater cost for the client than if the services were purchased individually from other suppliers. This is based on the argument that the joint provision of audit and NAS has the potential to create synergies and reduce the marginal cost of the separate audit and NAS leading to lower total fees (Firth 1997).

In spite of the conflicting evidence on whether the provision of NAS to audit clients impairs auditor independence, it is generally recognised that the perception of independence can be impaired when such services are provided. As Francis (2004, p.363) comments, "even if there is…no direct evidence that non-audit services impair

actual audit quality, there will always be at least the suspicion that auditors are not completely objective if they provide significant other services that put the auditor in a commercial business relationship with the client." Hence, we argue that companies with a greater level of commitment to strong corporate governance will be more concerned to avoid the appearance of loss of audit independence. Ahmed et al. (2006), using abnormal accounting accruals as a measure of auditor independence both pre and post SOX, found evidence that suggests that strong governance mechanisms mitigate the potentially adverse effects of client importance on auditor independence. They also found that SOX has not been successful in mitigating the adverse effects of client importance on auditor independence for firms with weak governance structures.

The above discussion suggests that companies are likely to use external consultants for their NAS when they desire to demonstrate independence from their auditor. This desire is likely to be stronger for companies with strong governance structures. This leads to the next hypothesis:

H2: Companies with higher quality corporate governance mechanisms purchase more NAS from external consultants than those with weaker governance mechanisms.

Our third explanation for choice of NAS provider relates to the audit opinion provided by the auditor. Companies receiving a qualified audit report could increase their purchases of NAS in recognition of accounting problems and seek NAS to over come these problems. However, a reporting failure such as a qualified audit report suggests the likelihood of friction between the client and the auditor. Hence, this would lead

companies to purchase less NAS from their auditor and more from external consultants. This leads to the following hypothesis:

H3: Companies receiving a qualified audit report purchase more NAS from external consultants than those companies receiving an unqualified audit opinion.

Control Variables

Industry membership for each company is measured as it is assumed that the measures of competition employed in the study are associated with industry membership. Each company is classified according to industry membership of one of the 24 GICS[1] categories.

Change in CEO could influence the choice of NAS provider. Intuitively one could view this as the new CEO placing more reliance on established knowledgeable independent sources such as the company's external auditor in preference to other external providers. Alternatively, it could be argued that an incoming CEO seeks NAS from objective external parties in preference to sources that have an established relationship with incumbent management. Hence a direction is not predicted. This variable is measured as a dichotomous variable given a value of one if there has been a CEO change in the last year, and zero otherwise.

The choice of NAS provider could be related to the characteristics of the external auditor. For example, the size of the auditor has the potential to explain the choice of NAS provider. Some accounting practices are likely to perceive problems of

[1] GICS – Global Industry Classification Standard

impairment to independence more strongly than other practices and not encourage the provision of NAS and audit to the same client. Alternatively in 1999, prior to recommendation and voluntary practices[2] and, in the US, mandated prohibition of many NAS by the auditor, the large accounting firms were actively promoting themselves as preferred suppliers of NAS on the basis of their expertise (Verschoor 1992; Lowe *et al.,* 1999). This variable is measured as a dichotomous variable given a value of one if the auditor is a Big Six auditor, and zero otherwise. No direction is predicted given the conflicting propositions.

The size of the firm frequently determines activities undertaken. Recent studies involving audit fees and non-audit fees have used the log of total assets (Reynolds *et al.* 2004; Kent 2007; Larcker 2004; Carey *et al.* 2006; Mitra 2007), although no measure of size is superior to another (Hagerman and Zmijewski 1979). Other studies have used sales revenue (Moses 1987) and log of sales (Geiger *et al.* 2005). This study uses log of assets at balance date as a measurement of size. However, Palmrose (1988) notes that using a ratio of non-audit fees controls in part for company size differences.

The demand for NAS from external consultants could be due to the company's performance. Poor performance indicated by low accounting profitability could lead the company to seek help from external sources to improve their position with pressure coming from either management or the shareholders (Firth 1997). Performance is measured by return on assets for the period. An accounting performance measure has been used as opposed to a market based valuation. This

[2] Anecdotal evidence indicates that the largest auditors (big four) in Australia agreed in 2001 to not provide certain NAS services to their audit clients.

follows Gompers et al. (2003) who provide evidence that investors do not always understand implications of corporate governance for current firm valuation. Other studies that use ROA as a performance measure are Brown and Caylor (2006), Vafeas (1999), Bhagat and Bolton (2007) and Mitra (2007).

The number of geographical segments is used as a control for complexity and diversity of operations. Companies operating in more than one location are likely to have a greater number and variety of customers, suppliers and competitors. Their strategic planning is likely to require a greater quantity and more complex information and therefore may demand NAS from a variety of external sources (Kent 2006).

3. Sample selection and measurement of variables

Sample

This sample used a questionnaire survey of the population of Australian publicly listed companies on the ASX as at 30th June 1999 to collect data on NAS from external consultants. The questionnaire design explored two dimensions: the nature of NAS and the extent of NAS outsourcing from auditors and other external consultants. A dollar value for fees paid for NAS from external consultants was obtained. Data from the questionnaire was combined with information disclosed in the annual reports of these companies.[3] The questionnaire was pre-tested on academics from two universities and as a result some minor modifications were made to the questionnaire.

[3] Databases such as Connect4 and Fin Analysis were used where possible. For those companies not included in these databases, the actual annual reports were obtained either from the internet or directly from the company concerned.

Usable responses were received from 465 companies, achieving a response rate of 39 per cent. A chi-square test indicates that industry membership in this sample is representative of all listed companies. Further tests were conducted of total assets to determine the direction of non response bias. These tests indicate that our sample is similar to the population of listed companies at that time.

Measurement of the dependent variables

The dependent variable is measured in three ways. First, it is measured as NAS from external consultants to provide a measure of materiality of the NAS from these consultants. This measure is scaled by total operating revenues to control for the issue that larger companies acquire more NAS simply because of the size of their operations. Second, the variable is measured as the proportion of NAS from external consultants to total NAS services (numerator = NAS from external consultants; denominator = NAS from all external sources). Finally, the dependent variable is measured as a dichotomous variable given the value of one if the company acquired 100 per cent of their NAS from external consultants, and zero otherwise.

Measurement of independent variables

Competition

Researchers recognise the difficulty of accurately measuring competition (Koch 1980). We employ two measures to capture competitiveness of the company's environment. Our first measure for competitiveness is the Herfindahl-Hirschman Index (HHI), a statistical measure of concentration used in a variety of contexts across research

disciplines as a proxy for competition. It was developed independently by the economists A.O. Hirschman in 1945[4] and O.C Herfindahl in 1950[5].

The HHI is used by the US Federal Reserve as part of the process of analysing the likely impact on competition of mergers in the banking industry (Rhoades 1993). The HHI measures market concentration by squaring the market shares of all firms in a market sector and then summing the squares. This provides firms with larger market share a greater weight than those with a smaller market share. The HHI, if calculated on a percentage basis of market share, reaches a maximum value of one when a monopoly exists and declines towards zero with the introduction of more and more firms with small market shares in a purely competitive market. This is consistent with economic theory that suggests that the greater the concentration of output in a small number of firms the greater the likelihood that competition in the market is low. In contrast, if concentration is low (many firms), competition is stronger (Rhoades 1993).

Defond and Park (1999) used the HHI as a widely accepted measure of industry competition when examining the effect of competition on CEO turnover. Goyal and Park (2001) used the same HHI methodology to construct a HHI as a control variable when examining board leadership structure and CEO turnover. Consistent with Defond and Park (1999), they found CEO turnover is higher among firms that operate in more competitive industries as measured by lower HHI.

[4] A.O. Hirschman, National Power and the Structure of Foreign Trade, Berkeley: University of California Press 1945

[5] O.C Herfindahl "Concentration in the U.S. Steel Industry; Columbia University": Columbia University 1950

Other studies using the HHI include Aggarwal and Samwick (1999) when examining compensation contracts for managers in imperfectly competitive product markets. Berkovec *et al*. (1998) computed a HHI as a measure of market concentration and proxy for market competition in their study of discrimination, competition and loan performance in FHA mortgage lending. Comment and Jarrell (1995) used a HHI when examining the trend away from firm diversification to focus or specialisation in the period from 1978 -1989. In their study, both revenue and asset based HHIs were constructed and averaged across firms to reflect the degree to which revenues and assets were concentrated in a company's business segments. Both indexes increased significantly over the period, illustrating the trend away from diversification (many segments decreasing concentration) to focus on specialisation (less segments more concentrated).

As an alternative to the HHI, our second measure of competition is research and development (R&D). Sundaram *et al*., (1996) used R&D investment as the instrument of competition in their analysis of strategic competition and firm values. They examine the effects of R&D expenditure announcements on stock prices of announcing firms and their competitors and find a positive effect when the firm competes in strategic substitutes and a negative effect when the firm competes in strategic compliments. Research and development is an indication of trade secrets that need to be protected. Epstein and Levi (1988) suggest a rigorous trade secret audit process for firms to protect their proprietary information as it is the currency of competition. The ability to protect commercially sensitive information can have a direct and substantial impact on a company's ability to compete.

Corporate Governance

Support is provided in the literature for both composite and separate measures of corporate governance. This study focuses on separate governance attributes, allowing us to identify the significance of the individual governance measures, and on a corporate governance score. We employ five measures of corporate governance: board diligence measured by number of board meetings; board size measured by the number of directors, board independence measured by the variables proportion of independent directors, whether the role of CEO/Chairperson is shared and the presence of an audit committee.

Boards of directors need to be active to meet their corporate governance commitments, particularly in ensuring high quality, transparent reporting in annual reports. Boards that meet frequently are more likely to perform their duties diligently and effectively, thereby enhancing their level of oversight (Yatim *et al.* 2006; Lipton and Lorsch 1992; Conger *et al.* 1998; Vafeas 1999). These studies show that board activity has a positive relation with the strength and effectiveness of corporate governance. Board diligence is measured as the number of board meetings held in 1999. The above arguments lead to an expectation of a positive relation between board meeting frequency and the proportion of NAS provided by external consultants.

Board size is related to the directors' ability to monitor and control managers. Some studies find a positive relation between the number of directors and both firm performance (Haniffa and Hudaib 2006) and board monitoring (Williams *et al.* 2005; Anderson *et al*., 2004). It is argued that larger boards possess more specialised skills and are better equipped to monitor management (Williams *et al.,* 2005). In contrast,

limiting board size is believed to improve firm performance as the increased monitoring benefits of larger boards are outweighed by the poorer communication and decision making of larger groups (Jensen 1993; Lipton and Lorsch 1992). Other studies also indicate that smaller boards are more efficient in discharging their responsibilities (Jensen, 1993; Lipton and Lorsch 1992; Beasley 1996). Brown and Caylor (2004) showed that firms with board sizes of between six and fifteen have higher returns on equity and higher net profit margins than do firms with other board sizes. Given that research produces conflicting arguments the direction of the relationship between board size and the proportion of NAS provided by external consultants is not predicted.

Researchers have recognised the board of directors as the most important control mechanism available to monitor the actions of management in a company's internal governance structure (Fama and Jensen 1983a and 1983b). The ability of the board to act as an effective monitoring mechanism is dependent upon its independence from management (Beasley, 1996; Dechow *et al.* 1996). Fama and Jensen (1983) argue that effective corporate boards should be composed largely of outside independent directors. They argue that effective boards have to separate the problems of decision management and decision control and outside directors are able to separate these functions and exercise decision control, since reputational concerns provide them with incentives to do so.

Australian and international corporate governance guidelines support the literature by recognising the importance of non-executive directors (Standards Australia International, 2003; Australian Securities Exchange (ASX) Corporate Governance

Council, 2007; New York Stock Exchange (NYSE), 2002; Australian Investment Managers' Association (AIMA), 1997 and 1995). These guides suggest that best practice regarding board composition is at least a majority of non-executive or independent directors. In support, Beasley (1996) finds that the existence of independent directors on the board reduces the likelihood of financial statement fraud. Other researchers report that companies with a greater proportion of non-executive directors on the board are less likely to be subject to SEC enforcement actions for violating United States (US) GAAP (Dechow *et al.* 1996). Given the above arguments this study expects to find a positive relation between the proportion of independent directors on the board as an indicator of strong corporate governance and the proportion of NAS provided by external consultants.

Another important characteristic of the board of directors from an agency perspective is the impact of separation and control, and whether there is a separation of the roles between the board chair and the chief executive officer (CEO). Corporate governance guidelines assume a concentration of power when the CEO is also the chairperson of the board (Standards Australia International 2003; ASX, 2007). Firstenberg and Malkiel (1994), Herman (1981) and Mace (1971) identified the primary concern of the dual structure is the potential for managerial domination of the board of directors which could enable the CEO/Chair to control the agenda of board meetings, determine what information directors receive in advance of meetings, and lead board meeting discussions. As a consequence of the absence of effective oversight, management is more able to pursue interests which do not best serve the shareholders (Fama and Jensen 1983). Given these arguments it is expected that there is a negative association

with CEO duality as an indicator of weaker corporate governance and the proportion of NAS provided by external consultants.

Audit committees primarily serve as a monitoring mechanism with the board of directors generally delegating financial reporting and audit oversight responsibilities to the committee. Hence, the audit committee is the mechanism most likely to provide shareholders with the greatest protection in maintaining the quality of a company's financial statements and ensuring the entity complies with mandatory disclosures (Davidson *et al.,* 2005) and hence is associated with good governance practice. Kent and Stewart (2008) provide evidence of a link between superior governance structures and a greater level of financial reporting disclosures, particularly with respect to external audit quality and audit committee diligence. This current study relates to the time prior to the ASX Corporate Governance Council recommendation that all listed companies should have an audit committee and listing rules mandating that those companies in the S & P All Ordinaries Index (the Top 500 companies by market capitalisation) must have a committee. Therefore, for companies in this study the existence of an audit committee is likely to indicate a commitment to sound corporate governance (Kent and Monem 2008). The presence of an audit committee is measured as a dichotomous variable; given a value of one if the company has an audit committee, otherwise zero. We predict a positive association between the presence of an audit committee and the proportion of NAS provided by external consultants.

There are many examples of corporate governance rating systems which use some form of summary measure to rate a company's relative strength or weakness. One system used in Australia is contained in the Horwath Corporate Governance Report

which annually rates Australia's largest 250 and more recently mid-cap listed companies on their corporate governance structures and assigns them score on which they are ranked and awarded a star rating (1 – 5). Defond *et al*. (2004) use a dichotomous variable for strong versus weak corporate governance structures defined by six characteristics considered relevant to their research question examining whether the market values financial expertise on audit committees. Gompers (2003) uses 24 governance rules to construct a "Governance Index" to proxy for the level of shareholder rights at approximately 1500 large firms during the 1990s. As an additional measure to capture the governance environment this study uses a summary measure which combines four of five individual governance characteristics examined separately in the study (board diligence, independence, duality and presence of an audit committee) with six additional variables. These additional variables are (1) audit committee diligence is measured by the number of meetings, (2) audit committee independence by the number of independent directors, (3) audit committee expertise if the committee has one or more directors with expertise, (4) presence of a dedicated risk management committee, (5) whether the company has an internal audit function and (6) choice of NAS provider. A summary score for each firm is calculated by allocating a value of one for the presence of each variable. Thus, the possible range is from zero (firms with none of the ten attributes) to ten (firms with all ten attributes). A higher score indicates a stronger corporate governance environment, so that a positive direction is predicted. Scores in this study ranged from zero to nine with a mean of 5.54 and a median of 6.00.

Qualified Audit Report

The audit qualification variable is as measured as a dichotomous variable. If the firm has a qualified audit report a value of one is assigned, otherwise zero. A qualified report includes an except for, adverse or inability to form an opinion. We predict a positive association between receipt of a qualified audit report and the proportion of NAS provided by an external provider.

4. Results

Descriptive statistics and correlations

Table 1 presents the descriptive statistics for the variables in the regression analyses. The number of companies in our sample compared to the total number of listed companies in 1999 is presented in table 2.

Results of the survey are presented in table 3. The tables indicates that 450 (97 per cent) of the 465 companies used external NAS in 1999. The 15 companies not using NAS from either the auditor or other external consultants were excluded from the subsequent analyses. Some 83 per cent of surveyed companies in this study used their external auditor for NAS and 16 per cent used their external auditor exclusively. Taxation work (73 per cent) and audit related services (67 per cent) were the most frequently used NAS from the external auditor. The most frequently used services from consultants other than the auditor were accounting services (46 per cent) followed by due diligence work (40 per cent). Some 81 per cent of surveyed companies used external consultants for NAS, while 14 per cent used external consultants exclusively. A total of 67 per cent of companies used both their external auditor and external consultants for NAS.

Table 4 presents a Pearson correlation matrix. The highest correction is 0.649 between board size and size of firm. The next highest correlation is between firm size and return on assets (0.406). This indicates that multicollinearity is unlikely to threaten the computational accuracy of the results. This was supported by the results for the collinearity diagnostics, the Condition Index[6] and Variance Inflation Factor[7]. All industries were included in the initial analysis. Only those industries that were significant in explaining results are presented in the correlation matrix to aid presentation of the tables.

Regression Results

We use six models to test our hypotheses. In Models 1 and 2, the dependent variable is measured as NAS from external consultants scaled by total operating revenues. Models 3 and 4 measure the dependent variable as the proportion of NAS from external consultants to total NAS services (numerator = NAS from external consultants; denominator = NAS from all external sources). The dependent variable for models 5 and 6 is measured as a dichotomous variable given the value of one if the company acquired 100 per cent of their NAS from external consultants, and zero otherwise.

Models 1, 3 and 5 use individual measures of corporate governance while models 2, 4 and 6 employ a corporate governance score.

The models are expressed as follows:
Model 1
$$\text{Nasext} = \beta_0 + \beta_1\text{Dual} + \beta_2\text{Boardmeet} + \beta_3\text{Boardsize} + \beta_4\text{Boardindepend} + \beta_5\text{AC} + \beta_6\text{R\&D} + \beta_7\text{HHI} + \beta_8\text{Health\&Bio} + \beta_9\text{Other Metals} + \beta_{10}\text{ToursimLeisure} + \beta_{11}\text{Size} + \beta_{12}\text{ROA} + \beta_{13}\text{GSEG} + \beta_{14}\text{Big6} + \beta_{15}\text{Report} + \beta_{16}\text{CEO Change} + e.$$

[6] Rule - Condition Index > 30 indicates presence of multicollinearity
[7] Rule - Variance Inflation Factor > 5 indicates presence of multicollinearity

Model 2

Nasext = β_0 + β_1 CorpGovScore + β_2R&D + β_3HHI + β_4Health&Bio + β_5Other Metals + β_6ToursimLeisure + β_7Size + β_8ROA + β_9GSEG+ β_{10}Big6+ β_{11}Report + β_{12}CEO Change + e.

Model 3

Propnasext = β_0 + β_1 Dual + β_2Boardmeet + β_3Boardsize + β_4Boardindepend + β_5AC + β_6R&D + β_7HHI + β_8Health&Bio + β_9Other Metals + β_{10}ToursimLeisure + β_{11}Size + β_{12}ROA + β_{13}GSEG+ β_{14}Big6+ β_{15}Report + β_{16}CEO Change + e.

Model 4

Propnasext = β_0 + β_1 CorpGovScore + β_2R&D + β_3HHI + β_4Health&Bio + β_5Other Metals + β_6ToursimLeisure + β_7Size + β_8ROA + β_9GSEG+ β_{10}Big6+ β_{11}Report + β_{12}CEO Change + e.

Model 5

Extonly = β_0 + β_1 Dual + β_2Boardmeet + β_3Boardsize + β_4Boardindepend + β_5AC + β_6R&D + β_7HHI + β_8Health&Bio + β_9Other Metals + β_{10}ToursimLeisure + β_{11}Size + β_{12}ROA + β_{13}GSEG+ β_{14}Big6+ β_{15}Report + β_{16}CEO Change + e.

Model 6

Extonly = β_0 + β_1 CorpGovScore + β_2R&D + β_3HHI + β_4Health&Bio + β_5Other Metals + β_6ToursimLeisure + β_7Size + β_8ROA + β_9GSEG+ β_{10}Big6+ β_{11}Report + β_{12}CEO Change + e.

Where:

Nasext = NAS from externals other than the auditor scaled by total operating revenues.

Propnasext = the variable is measured as the proportion of NAS from outsiders other than the external auditor to total NAS services (numerator = NAS from outsiders, denominator = NAS from all external sources).

Extonly = dichotomous variable given the value of 1 if the company acquired 100 per cent of their NAS from externals other than the auditor.

Dual = dummy variable for dual role of CEO/Chairperson, 1 if the CEO is also the chair, and 0 otherwise.

Boardmeet = number of board meetings each year.

Boardsize = number of directors on the board.

Boardindepend = proportion of independent directors on the board.

AC = 1 if have an audit committee, and 0 otherwise.

CorpGovScore = Scale of 0 to 10, larger indicates stronger corporate governance characteristics

R&D = Existence of Research and development expenditure 1, 0 otherwise

HHI = Herfindahl-Hirschman Index, Industry Competition Index 0 to 1, competition decreases as value approaches 1

Health&Bio = 1 if the company is in the healthcare & biotechnology industry, and 0 otherwise.

Other Metals= 1 if the company is in the other metals industry, and 0 otherwise.

ToursimLeisure = 1 if the company is in the tourism & leisure industry, and 0 otherwise.

Size = log of total book value of assets at balance date.

ROA = Return on Assets
GSEG = number of geographical location
Big6 = 1 if the company has a Big 6 auditor, 0 otherwise
Report = 1 if the company has a qualified audit report, 0 if otherwise
CEO Change = 1 if the CEO has changed in the last year, 0 otherwise

Models 1 and 2 have an adjusted R^2 of 0.126 and 0.113 and are significant at $p < .001$. Hypothesis 1 is supported in that the HHI index is positively associated with NAS from externals scaled by total operating revenues in model 1 ($t = 2.799$, $p = 0.002$ and model 2 ($t = 2.813$, $p = 0.002$). Recall that a higher index indicates lower competition suggesting that less competitive companies purchase more NAS from external consultants.

Recall that hypothesis 2 predicts that firms with stronger governance mechanisms use more NAS from external consultants to mitigate the threat of impairment to auditor independence. The existence of an audit committee ($t = -3.149$, $p = 0.002$) and number of boards meetings ($t = -1.351$, $p = 0.089$) in model 1 are significant in explaining quantity of NAS from external consultants but in the opposite direction to that predicted. The corporate governance score is also negatively significant with a t value of -2.129 and $p = 0.034$ in model 2. This suggests that stronger governance structures are associated with a smaller amount of NAS from external consultants. This could indicate that NAS from external consultants is used as a substitute for stronger corporate governance, particularly with respect to the use of an audit committee.

Hypothesis 3 predicts that companies with a qualified audit report purchase more NAS from external consultants. This is not supported in Models 1 and 2 with respect to the total amount of NAS from external consultants.

Control variables that are significant in explaining NAS from external consultants in model 1 ($t = 3.080$, $p = 0.001$) and 2 ($t = 3.299$, $p = 0.001$) include the industry category of other metals. Companies using a Big 6 auditor purchase more NAS from external consultants in model 2 ($t = 1.730$, $p = 0.042$). Finally, firm size is negatively related to NAS from external consultants in model 1 ($t = -3.213$, $p = 0.001$) and 2($t = -3.126$, $p = 0.001$) indicating that smaller companies purchase a greater quantity of NAS from external consultants.

Models 3 and 4 use the proportion of NAS from external consultants as the dependent variables and both models are significant at $p < 0.001$ with an adjusted R^2 of 0.074 in model 1 and 0.081 in model 2. The competition variables are not significant in explaining the dependent variable. However, three industry variables are significant in explaining the proportion of NAS from external consultants and are likely to be estimates of competition for the industry. Health and biotechnology and tourism and leisure are significantly, negatively associated with proportion of NAS from non auditors. Both these industries have HHI at the lower end of the concentration spectrum, 0.3401 and 0.2206 respectively indicating low market concentration and thus more competitive industries. Health and Biotechnology are characterised by private information indicated by high investment in research and development and proportion of intangible assets. This industry is correlated with research and development as a proportion of assets with $r = 0.34$. Salah Wahab (1997) notes that one of the main characteristics of the tourism industry is its dynamic nature, characterised by assertive marketing as destinations aggressively compete for customers. The last decade has seen an acceleration of competition as technology

(internet) and transportation have allowed choice between an ever widening range of leisure options. Tourism and leisure is also characterised by low barriers to entry indicated by a correlation of r = -0.019 for property plant and equipment. In contrast, the industry variable, other metals, is significantly positive, indicating that firms in this industry sector receive a higher proportion form external consultants other than the auditor. The HHI for other metals is 0.614, at the upper end of the concentration spectrum, indicating high market concentration and thus a less competitive industry.

A change in CEO is negatively associated with the proportion of NAS from external consultants to total NAS in model 3 (t = -2.176, p = 0.060) and model 4(t = -2.194, p=0.029). This provides support for the proposition that a new CEO places more reliance on established knowledgeable independent sources such as the company's external auditor in preference to other external consultants.

No support for hypothesis 2 is provided in models 3 and 4. Companies with stronger governance mechanisms do not appear to use more NAS from external consultants to mitigate the threat of impairment to auditor independence. Individual measures of corporate governance and the corporate governance score are not significant in explaining the relation.

Hypothesis 3 is supported in that companies with a qualified audit report use a greater proportion of NAS from external consultants in model 3 (t = 1.786, p = 0.037) and model 4 (t = 1.798, p = 0.036). This suggests that a reporting failure such as a qualified audit report is associated with conflict arising in the external audit process, resulting in the company choosing an external consultant to provide NAS.

Control variables that are significant in explaining NAS from external consultants in models 3 (t = -1.644, p = 0.10) and 4 (t = -1.695, p = 0.091) include the return on assets. Geographical segment, indicating complexity has a negative relation to proportion of NAS from external consultants in models 3 (t = -1.869, p = 0.062) and 4 (t = -1.943, p = 0.053). This indicates that, contrary to expectations, more complex entities use more NAS from their auditor.

Models 5 and 6 use logic regression with the dependent variable set at one for those companies that source 100 per cent of NAS from external consultants and zero otherwise. Both models are significant at p <0.001 with a Cox & Snell R^2 of 0.117 and Nagelkerke R2 of 0.21 in model 5 and a Cox & Snell R2 0.116 and Nagelkerke R2 of 0.21 in model 6. The competition variable, research and development is significant (p=.05) in model 5 in explaining the dependent variable as is firm size (p=.054) and the performance variable ROA (p=.035). None of the other competition and individual corporate governance variables are significant. However, in model 6 along with the aforementioned variables significant in model 5, the industry dummy other metals and the composite corporate governance index are also both significant (p=.015 & p= .02) in explaining the exclusive use of external consultants as suppliers of NAS.

Additional analysis

Individual characteristics for the audit committee including independence and expertise of members, number of meetings and size were measured and tested. None of the variables were significant in explaining the dependent variables. The

incorporation of these variables reduced the sample size because 23 per cent of the sample did not have an audit committee. These variables were therefore not reported in the regression equations. Other corporate governance variables included that were not significant in explaining the dependent variables and not reported are the existence of a risk management committee and an internal audit function. However a number of the aforementioned variables were used to compute the corporate governance score.

Research indicates that NAS is associated with increased short run sales and profit growth (Kent 1994). Kent (2006) found that short term growth was positively significant in predicting when a company purchases NAS from external sources. Short term growth is measured by change in total assets from the previous period. Implicit in a company's decision to purchase NAS is the assumption that the company has the resources available to make this decision. High debt levels could reduce the amount of resources that companies can spend on NAS so there is no decision to be made between any sources of NAS (Kent 2006). Leverage is thus measured by the proportion of debt to assets. However we did not find these variables significant in this study and excluded it as a variable from the reported regression.

5. Conclusion

This purpose of this study is to conduct an exploration of the proposition that competitiveness and corporate governance are two factors that influence a company's choice of external NAS provider. Firstly, with regard to governance, this research was conducted on a sample of surveyed companies in 1999. At this time audit committees were voluntary and auditor independence provisions were not mandated.

This provides the opportunity to examine the voluntary behaviours of companies with respect to the choice of external provider for their purchase of NAS using a unique data set that included the amount of NAS sourced from external consultants, other than the auditor. Hypotheses were developed to test for significant relationships between the proportion of NAS sourced from external consultants and competitive position, the strength of corporate governance and receipt of a qualified audit opinion.

Results from the study indicate that in 1999, a time when corporate governance regulations and recommendations were not in place or foreshadowed, Australian firms with stronger governance structures as measured by board diligence, the presence of an audit committee and the separation of the roles of CEO and Chairperson, generally did not source a higher proportion of their external NAS from external consultants. This suggests that concern over auditor impairment was not a motivating factor in choice of external NAS supplier. The study finds some evidence that companies in more competitive environments purchase less NAS from external consultants while those companies receiving a qualified audit report purchase a greater proportion of NAS from external consultants.

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Table 1 - Descriptive statistics of variables

Panel A:

Variable	Minimum	Maximum	Mean	Standard deviation	Median
Nasext	0.00	12.29	0.21	1.03	0.01
Propnasext	0.00	1.00	0.52	0.37	0.58
Boardmeet	3.00	33.00	10.95	4.66	11.00
Boardsize	2.00	15.00	5.70	2.22	5.00
Boardindepend	0.00	1.00	0.53	0.25	0.57
CorpGovIndex	0.00	9.00	5.54	2.09	6.00
HHI	0.061	0.99	0.27	0.20	0.20
Size	10.65	25.73	17.71	2.33	17.41
ROA	-1.00	1.00	-.003	0.22	0.03
GSEG	1.00	7.00	1.62	1.07	1.00

Panel B:

Variable	Yes %	No %
Extonly	14	86
Dual	76	24
AC	77	23
R&D	19	81
Health&Bio	5	95
Other Metals	9	91
TourismLeisure	4	96
Big6	69	31
Report	2	98
CEO Change	18	82

Number =450
Where:
Nasext = NAS from externals other than the auditor scaled as a proportion of total operating revenues
Propnasext = NAS from externals other than the auditor as a proportion of total from both the auditor and externals other than the auditor
Extonly = Dummy variable 1= 100% of NAS sourced from externals other than the auditor
Dual = dummy variable for dual role of CEO/Chairperson, 1 if the CEO is also the chair, and 0 otherwise.
Boardmeet = number of board meetings each year.
Boardsize = number of directors on the board.
Boardindepend = proportion of independent directors on the board.
AC = 1 if have an audit committee, and 0 otherwise.
CorpGovIndex = Scale of 0 to 10, larger indicates stronger corporate governance characteristics
R&D = Existence of Research and development expenditure 1, 0 otherwise
HHI = Herfindahl-Hirschman Index, Industry Competition Index 0 to 1, competition decreases as value approaches 1
Health&Bio = 1 if the company is in the healthcare & biotechnology industry, and 0 otherwise.
Other Metals= 1 if the company is in the other metals industry, and 0 otherwise.
TourismLeisure = 1 if the company is in the tourism & leisure industry, and 0 otherwise.
Size = log of total book value of assets at balance date.
ROA = Return on Assets
GSEG = number of geographical location
Big6 = 1 if the company has a Big 6 auditor, 0 otherwise
Report = 1 if the company has a qualified audit report, 0 if otherwise
CEO Change = 1 if the CEO has changed in the last year, 0 otherwise

Table 2 - Sample Descriptives by Industry Classification

GICS Industry Classification	No. of firms	No. of survey respondents	No of firms in sample in industry top 4	% of firms in sample
Alcohol & Tobacco	17	8	0	47%
Banks & Finance	15	11	1	73%
Building Materials	24	11	4	46%
Chemicals	6	4	2	67%
Developers & Contractors	46	16	3	35%
Diversified Industrials	22	4	1	18%
Diversified Resources	4	2	2	50%
Energy	69	24	1	35%
Engineering	32	14	3	44%
Food & Household	32	13	3	41%
Gold	225	64	0	28%
Healthcare & Biotechnology	44	25	3	57%
Infrastructure & Utilities	17	6	3	35%
Insurance	9	2	1	22%
Investment & Financial Services	118	46	2	39%
Media	37	16	0	43%
Miscellaneous Industrials	159	72	1	45%
Other Metals	105	42	3	40%
Paper & Packaging	10	5	2	50%
Property Trusts	69	18	2	26%
Retail	41	18	3	44%
Telecommunications	36	22	1	61%
Tourism & Leisure	34	17	1	50%
Transport	13	5	2	38%
Totals	**1,184**	**465**	**44 (46%)**	**39%**

Table 3 - Survey Results:

Response to question regarding whether the firm receives any of the following services for a fee in addition to the normal audit fee from (a) The auditor (b) Consultants other the auditor n=465	External Auditor			Consultants other than the External Auditor	
	Yes	**%**		**Yes**	**%**
Audit related services (eg review)	313	67%		32	7%
Accounting services	165	35%		213	46%
Taxation work	340	73%		51	11%
Internal audit services	50	11%		51	11%
Systems and control work	106	23%		95	20%
Due diligence work	170	37%		188	40%
Risk management advice	40	9%		125	27%
Other assurance work	31	7%		36	8%
Environmental audit/advice	4	1%		83	18%
Other management advisory work	46	10%		68	15%
Descriptive Statistics from survey respondents n=465	**Yes**	**%**			
Companies that use their external auditor for NAS	386	83%			
Companies that use other consultants for NAS	375	81%			
Companies that use both their external auditor & others for NAS	311	67%			
Companies that only use their external auditor for MAS	75	16%			
Companies that only use others for MAS	64	14%			
Companies that do not obtain MAS from either their external auditor or others	15	3%			
Companies that have an internal audit function	119	26%			
If IAF then number of staff range from min-max	0.25	60			
Companies that have a risk management committee	327	70%			
RMC made up of DIRECTORS	79	24.2%			
RMC made up of MANAGEMENT	27	8.3%			
RMC made up of BOTH	221	67.6%			
Response to Survey - scale of 0 (n/a) 1(very little) -10 (great extent) n=465:	**Min**	**Max**		**Mean**	**Std Dev**
Extent of role played in risk management by internal audit function on a	1	10		6.5	2.6
Extent of role played in risk management by external auditor	1	10		4.8	2.2
Extent of role played in risk management by board of directors	1	10		7.7	2.0
Extent of role played in risk management by CEO	1	10		7.9	2.0
Extent of role played in risk management by senior management	1	10		8.0	1.7
Extent of role played in risk management by designated risk manager	1	10		7.8	2.6
Extent of role played in risk management by outside consultants	1	10		5.1	2.2

Table 4 - Correlation Matrix for Variables in regressions

	Dual	Boardmeet	Boardsize	Boardindepend	AC	R&D	HHI	Ind12 - H/care & Bio	Ind18 - Other Metals	Ind23 - Tourism & Leisure	Size	ROA	GSEG	BIG6	REPORT
Dual															
Boardmeet	.091														
Boardsize	.237(**)	.011													
Boardindepend	.040	.071	.179(**)												
AC	.143(**)	.166(**)	.324(**)	.115(*)											
R&D	.040	.044	.048	.013	.128(**)										
HHI	.068	.084	.203(**)	.024	.095(*)	.037									
H/care & Bio	.065	-.010	.018	.038	.057	.310(**)	.084								
Other Metals	-.037	-.086	-.118(*)	-.084	-.200(**)	-.077	.224(**)	-.075							
Tourism & Leisure	.025	-.086	.042	-.018	-.012	-.064	-.064	-.046	-.061						
Size	.150(**)	-.008	.649(**)	.080	.334(**)	.082	.194(**)	-.069	-.116(*)	.021					
ROA	.050	.061	.240(**)	.049	.189(**)	-.011	.061	-.105(*)	-.138(**)	.112(*)	.406(**)				
GSEG	.090	-.048	.261(**)	.105(*)	.187(**)	.158(**)	.101(*)	-.008	-.075	-.033	.344(**)	.061			
BIG6	.060	.002	.255(**)	.093(*)	.148(**)	.108(*)	.070	.009	-.022	-.027	.345(**)	.170(**)	.109(*)		
REPORT	.010	.071	-.134(**)	.001	-.085	-.044	-.100(*)	-.065	.097(*)	-.005	-.245(**)	-.151(**)	-.076	-.084	
CEO Change	-.029	.126(**)	-.100(*)	.000	-.077	.046	.070	-.010	.091	.034	-.198(**)	-.264(**)	-.048	-.083	.076

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Number =450

Table 5 - Regression Results
(Dependent variable: NAS from externals other than the auditor scaled as a proportion of total operating revenues) n=450

Variable	Predicted Direction	Model 1 Coefficient	Model 1 T Statistic	Model 1 p*	Model 2 Coefficient	Model 2 T Statistic	Model 2 p*
Constant		1.925	3.780	0.000	-10.895	-1.852	.064
Dual	-	-0.043	-0.355	0.361			
Boardmeet	+	-0.069	-1.351	0.089			
Boardsize	?	0.036	0.534	0.594			
Boardindepend	+	0.037	0.740	0.230			
AC	+	-0.173	-3.149	**0.002**			
CorpGovScore	+				-0.121	-2.129	**.034**
R&D	-	-0.013	-0.252	0.400	-0.031	-0.598	.275
HHI	+	**0.147**	**2.799**	**0.002**	**0.148**	**2.813**	**.002**
Health&Bio	-	-0.053	-1.027	0.152	-0.042	-0.814	.208
Other Metals	+	0.162	3.080	**0.001**	0.174	3.299	**.001**
TourismLeisure	-	-0.013	-0.268	0.394	-0.009	-0.175	.430
Size	-	-0.239	-3.213	**0.001**	-0.205	-3.126	**.001**
ROA	?	-0.020	-0.361	0.719	-0.038	-0.675	.500
GSEG	?	0.049	0.938	0.349	0.052	0.996	.320
Big6	?	0.083	1.585	0.114	0.091	1.730	**.084**
Report	+	0.027	0.520	0.301	0.021	0.408	.342
CEO Change	?	-0.067	-1.264	0.206	-0.069	-1.314	.170

* one-tail test where direction predicted, otherwise two-tail.

Model 1: Number = 450; Adjusted R^2 = 0.126; F = 4.955; p = .000.
Model 2: Number = 450; Adjusted R^2 = 0.113; F = 4.371; p = .000.

Where:
Dual = dummy variable for dual role of CEO/Chairperson, 1 if the CEO is also the chair, and 0 otherwise.
Boardmeet = number of board meetings each year.
Boardsize = number of directors on the board.
Boardindepend = proportion of independent directors on the board.
AC = 1 if have an audit committee, and 0 otherwise.
CorpGovScore = Scale of 0 to 10, larger indicates stronger corporate governance characteristics
R&D = Existence of Research and development expenditure 1, 0 otherwise
HHI = Herfindahl-Hirschman Index, Industry Competition Index 0 to 1, competition decreases as value approaches 1
Health&Bio = 1 if the company is in the healthcare & biotechnology industry, and 0 otherwise.
Other Metals= 1 if the company is in the other metals industry, and 0 otherwise.
TourismLeisure = 1 if the company is in the tourism & leisure industry, and 0 otherwise.
Size = log of total book value of assets at balance date.
ROA = Return on Assets
GSEG = number of geographical location
Big6 = 1 if the company has a Big 6 auditor, 0 otherwise
Report = 1 if the company has a qualified audit report, 0 if otherwise
CEO Change = 1 if the CEO has changed in the last year, 0 otherwise

Table 6 - Regression Results
(Dependent variable: NAS from externals other than the auditor as a proportion of total from both the auditor and externals other than the auditor) n=450

Variable	Predicted Direction	Model 3 Coefficient	Model 3 T Statistic	Model 3 p*	Model 4 Coefficient	Model 4 T Statistic	Model 4 p*
Constant		0.795	4.609	.000	-10.895	-1.852	.064
Dual	-	-0.003	-0.071	.472			
Boardmeet	+	0.005	0.103	.459			
Boardsize	?	-0.004	-0.064	.949			
Boardindepend	+	0.007	0.153	.439			
AC	+	-0.039	-0.776	.219			
CorpGovIndex	+				0.003	0.064	.474
R&D	-	0.031	0.629	0.265	0.028	0.580	.281
HHIl	+	-0.009	-0.182	0.426	-0.012	-0.236	.407
Health&Bio	-	-0.115	-2.343	**0.010**	-0.117	-2.397	**.008**
Other Metals	+	0.132	2.686	**0.004**	0.138	2.844	**.002**
TourismLeisure	-	-0.100	-2.144	**0.015**	-0.099	-2.161	**.015**
Size	-	-0.059	-0.840	0.201	-0.072	-1.168	.121
ROA	?	-0.086	-1.644	**0.100**	-0.088	-1.695	**.091**
GSEG	?	-0.093	-1.869	**0.062**	-0.095	-1.943	**.053**
Big6	?	-0.054	-1.110	0.268	-0.055	-1.136	.256
Report	+	0.085	1.786	**0.037**	0.085	1.798	**.036**
CEO Change	?	-0.106	-2.176	**0.060**	-0.105	-2.194	**.029**

* one-tail test where direction predicted, otherwise two-tail.

Model 3: Number = 450; Adjusted R^2 = 0.074; F = 3.227; p = .000.
Model 4: Number = 450; Adjusted R^2 = 0.081; F = 4.283; p = .000.

Where:
Dual = dummy variable for dual role of CEO/Chairperson, 1 if the CEO is also the chair, and 0 otherwise.
Boardmeet = number of board meetings each year.
Boardsize = number of directors on the board.
Boardindepend = proportion of independent directors on the board.
AC = 1 if have an audit committee, and 0 otherwise.
CorpGovIndex = Scale of 0 to 10, larger indicates stronger corporate governance characteristics
R&D = Existence of Research and development expenditure 1, 0 otherwise
HHI = Herfindahl-Hirschman Index, Industry Competition Index 0 to 1, competition decreases as value approaches 1
Health&Bio = 1 if the company is in the healthcare & biotechnology industry, and 0 otherwise.
Other Metals= 1 if the company is in the other metals industry, and 0 otherwise.
TourismLeisure = 1 if the company is in the tourism & leisure industry, and 0 otherwise.
Size = log of total book value of assets at balance date.
ROA = Return on Assets
GSEG = number of geographical location
Big6 = 1 if the company has a Big 6 auditor, 0 otherwise
Report = 1 if the company has a qualified audit report, 0 if otherwise
CEO Change = 1 if the CEO has changed in the last year, 0 otherwise

Table 7
Regression Results
(Dependent variable: Dummy variable 1= 100% of NAS sourced from externals other than the auditor) n=450

Variable	Predicted Direction	Model 5 Coefficient	Model 5 Wald	Model 5 p*	Model 6 Coefficient	Model 6 Wald	Model 6 p*
Constant		3.073	3.498	0.061	3.509	11.099	.001
Dual	-	-0.453	1.651	0.099			
Boardmeet	+	-0.030	0.946	0.161			
Boardsize	?	-0.148	1.930	0.165			
Boardindepend	+	-0.323	0.300	0.292			
AC	+	-0.089	0.070	0.395			
CorpGovScore	+				0.164	4.235	**.020**
R&D	-	-0.871	2.655	**0.051**	-0.904	2.923	**.044**
HHI	+	-0.035	0.002	0.483	-0.557	0.423	.257
Health&Bio	-	-0.338	0.154	0.350	-0.516	-0.339	.280
Other Metals	+	0.627	1.865	0.086	0.991	4.689	**.015**
TourismLeisure	-	-0.805	0.563	0.226	-0.578	-0.294	.294
Size	?	-0.198	3.715	**0.054**	-0.320	11.099	**.001**
ROA	?	-1.349	4.438	**0.035**	-1.390	4.796	**.029**
GSEG	?	-0.293	2.033	0.077	0.321	2.445	.059
Big6	?	-0.170	0.310	0.578	-0.232	0.569	.450
Report	+	0.253	0.283	0.297	0.165	0.123	.363
CEO Change	?	-0.178	0.217	0.642	-0.307	0.642	.211

* one-tail test where direction predicted, otherwise two-tail.

Model 5: Number = 450; Cox & Snell R^2 = 0.117; Nagelkerke R^2 = .210; % correctly classified 85.8
Model 6: Number = 450; Cox & Snell R^2 = 0.116; Nagelkerke R^2 = .208; % correctly classified 86.7

Where:
Dual = dummy variable for dual role of CEO/Chairperson, 1 if the CEO is also the chair, and 0 otherwise.
Boardmeet = number of board meetings each year.
Boardsize = number of directors on the board.
Boardindepend = proportion of independent directors on the board.
AC = 1 if have an audit committee, and 0 otherwise.
CorpGovIndex = Scale of 0 to 10, larger indicates stronger corporate governance characteristics
R&D = Existence of Research and development expenditure 1, 0 otherwise
HHI = Herfindahl-Hirschman Index, Industry Competition Index 0 to 1, competition decreases as value approaches 1
Health&Bio = 1 if the company is in the healthcare & biotechnology industry, and 0 otherwise.
Other Metals= 1 if the company is in the other metals industry, and 0 otherwise.
ToursimLeisure = 1 if the company is in the tourism & leisure industry, and 0 otherwise.
Size = log of total book value of assets at balance date.
ROA = Return on Assets
GSEG = number of geographical location
Big6 = 1 if the company has a Big 6 auditor, 0 otherwise
Report = 1 if the company has a qualified audit report, 0 if otherwise
CEO Change = 1 if the CEO has changed in the last year, 0 otherwise