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Corporate Governance and Misappropriation

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Prior studies measuring the impact of corporate governance mechanisms have focussed on global-type issues such as the impact of governance on firm performance and firm value (see Denis and McConnell, 2003). However, governance mechanisms can also be used to examine the quality of the firm's financial reporting, for example, the propensity of the firm to manage earnings (Xie, Davidson, Dadalt, 2003) or the occurrence of financial statement fraud (Dunn, 2004; Rezaee, 2005; Farber 2005). At the transactional level, within-firm fraud, that is, the misappropriation of assets, funds or property, perpetrated by employees and managers is of concern. Given the magnitude of economic loss associated with fraud (Apostolou and Crumbley, 2005), evidence of the effectiveness of mechanisms to reduce its occurrence is likely to provide firms with the ability to improve their financial performance through the reduction in this fraudulent behaviour.

Is the occurrence of fraud within an organization related to the strength of the organization's governance mechanisms? Prior literature identifies many constructs of corporate governance strength, however we use a model that relies on three proxies for corporate governance: board composition, CEO duality (i.e., where the chief executive officer is also the chair of the board of directors), and audit committee composition.[1] Using Australian data on fraud collected in the 2004 KPMG Fraud Survey, we examine the relation between fraud and these corporate governance structures, while controlling for firm size, industry, and information technology intensity. In particular, recognising that the increasing prevalence of information technology in organizations provides new opportunities for fraud to be perpetrated, we also examine two information technology governance (IT governance) variables and their effect on fraud. In

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[1] In Australia the increasing emphasis on corporate governance is evidenced by the Australian Securities Exchange Corporate Governance Council's *Principles of Good Corporate Governance and Best Practice Recommendations.* As at January 2003 (ASX, 2003), the listing rules relevant to the sample period, ASX Listing Rule 4.10 required listed companies to disclose in their annual report the extent to which they have followed the best practice recommendations. Where recommendations are not followed, organizations must provide reasons for not following them. Accordingly, the guidelines relating to board composition, CEO duality and audit committees are not mandatory. The exception is for listed companies in the All Ordinaries Index, which must have an audit committee.

summary, the purpose of this paper is to examine the relation between corporate governance structures and misappropriation of assets. The notion that such an interaction exists stems from the premise that corporate governance strength addresses the agency problem that exists in firms.

A key finding of the study is that where the chief executive officer (CEO) also holds the position of chairperson of the board of directors, the likelihood of fraud increases. When subjected to a number of robustness tests, this result consistently holds. The results also indicate that the proportion of independent directors on the audit committee is inversely related to fraud. Taken together, these results are particularly encouraging as they provide support for regulatory bodies, such as the Australian Securities Exchange (ASX) and the Australian Securities and Investment Commission (ASIC), that place considerable emphasis on the importance of establishing good corporate governance practices. The study is the first of its kind to provide empirical evidence that employing good corporate governance reduces the risk of fraud and more specifically, the misappropriation of assets, in an Australian context. We believe these results are generalizable to similar institutional settings.

The remainder of this paper is structured as follows. Section 2 develops the theoretical model. Section 3 describes the research method. Section 4 reports the results of our analysis, and finally, Section 5 concludes the paper by noting the contributions made by the research and by identifying future research opportunities.

THEORETICAL BACKGROUND AND PROPOSITIONS

In developing the theoretical model, we argue that fraud is related to an organization's governance environment. Accordingly, below we discuss why we believe this relationship exists and propose relations between fraud and a number of specific governance mechanisms. In using a model that relies on three proxies for corporate governance (board composition, CEO duality and audit committee composition), we note that these measures are all matters of voluntary adoption by firms[2]. Firms essentially choose to comply with ASX recommendations as to best practice, based on a regime of disclosure (ASX, 2003). In this sense, the level of compliance with these constructs of governance within the firm suggests an organizational culture of compliance.

[2] Although firms in the Australian S&P/ASX All Ordinaries Index are required by ASX Listing Rule 12.7 to comply with the best practice recommendations regarding audit committee.

The agency problem and fraud

Agency problems arise due to the difficultly of perfectly contracting for every possible action of an agent (management and employees) whose decisions affect both his or her own welfare and the welfare of the principal (shareholders). Given that the agent's objectives are not necessarily aligned with those of the principal, the agent is likely to act in self-interest to maximise his own utility through the consumption of perquisites or the selection of suboptimal investments (Jensen & Meckling, 1976). Fraud is an artefact of this agency problem and is defined by ISA 240/AUS 210 as:

> "…an intentional act by one or more individuals among management, those charged with governance, employees or third parties, involving the use of deception to obtain an unjust or illegal advantage." [3]

According to the Standard, there are two types of fraud that are relevant to the auditor: (1) misstatements resulting from fraudulent financial statement reporting and (2) misstatements resulting from misappropriations of assets. More specifically, the misappropriation of assets is described as involving the theft of an entity's assets, often perpetrated by employees in relatively small and immaterial amounts; and by management who are usually more able to conceal misappropriations in ways that are difficult to detect.

Criminological theory advocates that employees who commit fraud are generally able to do so because there is opportunity, incentive, and rationalisation (Cressey, 1973). Perceived opportunity is likely to be the result of nonexistent or ineffective internal controls that provide access to the perpetrator. The internal control system seeks to ensure that employees contribute towards achieving the established objectives of the organization and effectively prevent individuals from pursuing conflicting goals of their own, such as engaging in fraud. Moreover, failure to enforce internal controls, including the ability of management to override controls makes fraud easier to conceal and more difficult to detect. The presence of corporate governance mechanisms in organizations is likely to ensure that sound internal controls are effectively deployed. This is important, as a comprehensive, fully implemented and regularly monitored system of internal controls is essential in the prevention and detection of fraud.

This study is inspired by prior research examining the occurrence of financial statement fraud. For example, early literature in the US such as Beasley (1996) and Dechow *et al.* (1996) constructed a fraud sample of publicly traded firms from Accounting and Auditing

[3] During the sample period, AUS 210 *The Auditor's Responsibility to Consider Fraud in an Audit of a Financial Report* was the applicable standard in Australia. Since 1 July 2006, it has been replaced by ISA/ASA 240.

Enforcement Releases (AAERs) issued by the SEC. These studies were followed in later samples by Farber (2005) and Dunn (2004). In Australia, Sharma (2004) identified a sample of firms experiencing fraud committed by management from ASIC Annual Report publications, ASIC media releases, press releases and databases containing company announcements.

This research is different from these studies in a number of ways. First, these prior studies focus on financial statement fraud alone (Dechow *et al.*, 1996), or the combined effect of financial statement fraud and misappropriations of assets (Beasley, 1996; Sharma, 2004). The Beasley (1996) study used a sample of 67 fraud firms that experienced financial statement fraud and 8 firms that experienced misappropriations of assets. The Sharma (2004) study used a sample of 31 firms (19 with misappropriations-of-assets fraud and 12 with financial statement fraud).

Second, the measure of fraud in this study is taken from the 2004 KPMG Fraud Survey[4]. The survey questionnaire sought information relating to fraud incidents within the respondents' business operations involving both management and employees during the period April 2002 to March 2004. Four hundred and ninety-one of Australia's and New Zealand's largest organizations across different industries (including government agencies, listed and unlisted firms) responded to the survey, representing a response rate of 23 percent.[5] The 206 organizations that reported at least one incident of fraud in the Survey lost a total of $456.7 million during the survey period. This is most likely a conservative estimate, given that it is inherently difficult to determine the true economic impact of fraud, since not all occurrences of fraud are subsequently detected and reported. Moreover, given the sensitive nature of fraud, it is likely that firms have underreported the number of fraud occurrences and the economic loss associated with fraud. Although the true total amount of fraud is unknown, the measure of fraud used in this study is a much more precise estimate of fraud occurring within organizations than any prior study. Finally, prior studies use a dichotomous variable to measure fraud. To provide further insight, we include actual dollar amount of fraud reported by respondents to the 2004 KPMG Fraud Survey.

[4] The authors and KPMG collaborated on the design, administration, and analysis of the survey as part of an Australian Research Council Linkage Project.
[5] New Zealand firms are included in the sample only if their securities are listed on the Australian Securities Exchange.

Corporate governance and fraud

Spurred by a series of corporate collapses (for example, Enron and WorldCom in the USA and HIH and One.Tel in Australia) and the perceived need to restore the confidence of the market, corporate governance is growing in importance. Corporate governance mechanisms are deployed by firms to control agency problems and to ensure that managers act in the interests of shareholders. More specifically, corporate governance has been described by the ASX as the system by which companies are directed and managed, influencing how the objectives of the company are set and achieved, risks are monitored and assessed, and how performance is optimised (ASX, 2003).

As noted earlier, prior research has mainly focused on corporate governance structures and the effect on financial statement fraud. Beasley (1996) examined the relation between fraud and board of director composition and found that a higher proportion of outside directors on the board reduced the likelihood of fraud. Similarly, Dechow, Sloan, and Sweeney (1996) show that firms with more executive directors on the board are more likely to manipulate earnings. These results are consistent with later studies, such as Dunn (2004), who shows that financial statement fraud is more likely to occur where the board is not independent, that is, where some directors are also part of senior management. Similarly, Farber (2005) reports that financial statement fraud firms have 'poor' governance relative to the control group, such as fewer independent directors, a CEO who chairs the board, and fewer audit committee meetings.

Sharma (2004), however examined the incidence of fraud in an Australian context. She found that as the proportion of independent directors and institutional investors increases, the likelihood of fraud decreases. In the same study, Sharma (2004) found a positive relation between CEO duality and the likelihood of fraud. These results are consistent with agency theory which advocates that corporate governance mechanisms are likely to ensure that managers do not digress from their responsibilities and engage in opportunistic behaviour.

Prior to the emphasis on corporate governance, the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in 1992 established the link between fraud and inadequate internal controls. This link has been found in more recent studies (e.g., Ziegenfuss, 2001). Internal control is now largely formalized through auditing standards and legislative imperative. The internal control environment can be viewed in the context of the firm's governance culture. Our research considers three further aspects of this governance culture: board composition, CEO duality, and audit committee composition.

Board composition and the quality of corporate governance

To adequately discharge fiduciary duties, the board of directors needs to be structured to ensure informed, independent decisions affecting the firm are reached. Prior studies have found that the inclusion of non-executive members on the board of directors increases the board's effectiveness at monitoring management and thus, aids in the prevention of financial statement fraud (Beasley, 1996; Dechow *et al.*, 1996; Sharma, 2004).

The ASX argues that board independence is an essential condition for effective corporate governance (ASX, 2003). It defines an independent director as someone who is "independent of management and free of any business or other relationship that could materially interfere with – or could reasonably perceived to materially interfere with – the exercise of their unfettered and independent judgment." Independent board members are therefore likely to actively monitor and evaluate managerial activity for the benefit of the shareholder, thereby reducing agency costs (Karake, 1995). Consequently, we propose that *the greater the proportion of independent directors on the board of directors, the less likely the organization will experience misappropriations of assets*.

CEO duality and the quality of corporate governance

CEO duality occurs where the CEO also chairs the board of directors. Separating the chair of the board from the CEO position is likely to be important if the board is to be an effective monitoring device (Jensen, 1993). Since the chair has the ability to exercise significant control over the board through his or her power to set the board's agenda, Jensen (1993) argues that the CEO cannot perform the chair's monitoring function separate to his or her personal interest. Given that such interests may differ substantially from shareholder goals, the agency model suggests, at best, a tension between CEO duality and firm performance. Recent studies provide support for the proposition that there is a higher likelihood of financial statement fraud where the chairperson of the board is also the CEO (Albrecht, Albrecht, & Albrecht, 2004; Dechow *et al., 1996*; Farber, 2005; and Sharma, 2004). Following this, we propose that *in firms where CEO duality exists, there is a greater likelihood of misappropriation of assets than in firms where the CEO is not also the chair of the board*.

Audit committee composition and the quality of corporate governance

Board committees continue to assume an increasingly important role in the monitoring and governance of corporations (Uzun, Szewczyk, & Varma, 2004). Oversight committees in particular, are intended to protect shareholder interests by providing an objective, independent

view of corporate affairs (Harrison, 1987). Upon examining the committee structure of boards and the role of directors, Klein (1998) found that committee structures with specialised roles enhance the efficiency and productivity of the board. Committees provide the means and structure for directors to govern effectively by allowing specialised responsibility for important corporate concerns, where each subgroup of directors is chartered with specific authorisation, strategic and oversight duties contributing to the board's overall governance task (Bilimoria & Piderit, 1994).

Audit committees, in particular, are responsible for overseeing the financial reporting process, reviewing the adequacy of company's financial control systems and ensuring the objectivity of the external audit (Bedard, Chtourou, & Courteau, 2004). In separate studies, Uzun *et al.*, (2004) and Bedard *et al.* (2004) examine how various board characteristics and the structure of oversight committees affect the occurrence of corporate fraud (where corporate fraud is defined as financial statement fraud). Their findings indicate that a higher degree of independence on the audit committee is associated with a lower likelihood of corporate fraud. This finding is consistent with agency theory which predicts the establishment of audit committees as a means of attenuating agency costs, where independent directors are perceived as better monitors. Accordingly, particularly, because of the audit committee's oversight of a firm's internal control structures, we argue that *the greater the proportion of non-executive directors on the audit committee, the less likely the organization will experience misappropriations of assets*.

IT governance and fraud

In essence, information technology has made information more easily accessible to more people for more purposes. Together with the instantaneous availability of information across geographically dispersed locations due to increased connectivity, perpetration of fraud is made easier (Lynch & Gomaa, 2003). IT governance is concerned with specifying the decision rights and accountability framework for encouraging desirable behaviour in the use of IT (Weill, 2004) and ensuring that IT goals and objectives are realised in an efficient and effective manner (ITGI, 2003). As IT escalates in terms of importance and pervasiveness, firms are increasingly challenged to manage and control IT to ensure value is created (Weill & Woodham, 2002). Although the ASX recommendations do not prescribe guidelines specifically directed at IT governance, we recognise the role of the board in the context of IT governance by arguing that the presence of an IT strategy committee and an IT steering committee improve the overall governance structure of a firm. The presence of these

committees communicates that the organization is likely to consider IT risks as important and therefore, are likely to have sound internal controls in place and, consequently, reduce the risk of fraud.

IT committees and the quality of IT governance

Given that information is regarded as a critical and valuable corporate asset, IT governance is ultimately the responsibility of the board of directors (Solms, 2001; Trites, 2004). The board exercises this responsibility by providing leadership and by ensuring IT sustains and extends the organization's strategies and objectives. Where there has been relatively low concern for IT governance, perhaps resulting from modest IT budgets or low IT intensity, IT risk management is typically delegated to either the risk management or audit committees (Huff, Maher, & Munro, 2004). In contrast, organizations that are more actively involved in IT governance are more likely to have established specialised IT committees such as an IT strategy committee and/or an IT steering committee. Significant investments in IT have increased the need for effective IT strategic planning. At the board level, the IT strategy committee provides insights and advice to the board on various issues including: the alignment of IT with the business direction, the achievement of strategic IT objectives, IT risk management, and issues associated with IT investments (ITGI, 2003).

Moreover, because it is likely to include board members and specialist non-board members, the IT strategy committee provides the board and management with direction on IT strategy (ITGI, 2003; Rau, 2004). IT strategic planning has been identified as an essential factor in integrating IT into an organization and providing significant competitive advantage. Furthermore, the IT strategy committee provides an additional monitoring mechanism to address agency problems that may arise. Where there is an IT strategy committee in place, firms are more likely to consider IT-related knowledge and IT-related initiatives as critical organizational resources. Hence, firms with IT strategy committees are more likely to have control systems in place to ensure the appropriate use of organizational resources.

On the other hand, with a focus on implementation, the IT steering committee operates at the executive level and primarily oversees the day-to-day management of IT service delivery and IT projects (ITGI, 2003). Comprising executives and key advisors (where necessary), the IT steering committee is mainly responsible for deciding the overall level of IT expenditure, approving and monitoring project plans and budgets to ensure business requirements are met, and communicating strategic goals to project teams (ITGI, 2003). Consequently, the presence

of an IT steering committee is likely to increase the visibility and importance of IT in the organization and thus, communicate that IT is a valuable corporate asset. Access and transaction integrity controls overseeing the use of information technology are therefore likely to be present.

As a result, we suggest that IT governance is a separate, measurable quality of firm governance. IT governance can be captured as either a specialised IT strategy committee, or a specialised IT steering committee. We propose that *organizations that have either an IT strategy committee or an IT steering committee are more likely to have effective internal controls in place and therefore, are less likely to experience misappropriations of assets than organizations without specialised IT committees.*

RESEARCH METHOD

To examine the relations between the incidence of fraud and the governance mechanisms we have outlined above, we consider various forms of an empirical model. Below we provide definitions for the key variables in the model and how they are measured.

Measurement of variables

Fraud

As discussed earlier, for the purposes of our study we define fraud as misappropriation of assets, i.e., the theft of an entity's assets. In different forms of the model, fraud is measured as either (a) a simple dichotomous variable (taking the value of 1 if the firm experiences fraud, or 0 otherwise); or (b) the total economic loss from fraud reported (logged); or (c) the total economic loss from fraud (logged) divided by total assets (logged).

Board Independence

Consistent with prior studies (see, for example, Beasley, 1996) board independence is measured by the proportion of non-executive directors on the board. According to the ASX, an independent director is independent of management and free of any business that could materially interfere with or reasonably be perceived to materially interfere with their exercise of independent judgment (ASX, 2003). Recognising that not all non-executive directors strictly meet the ASX definition of independence, data was also collected on the proportion of independent directors on the board. Under the Listing Rules, 2004 is the first year that listed trusts and companies are required to provide disclosure against the ASX Corporate Governance Council's *Principles of Good Corporate Governance and Best Practice Recommendations* in their annual report (ASX, 2003).

CEO duality

CEO duality, where the CEO also chairs the board of directors, is measured using a dichotomous variable that takes the value of 1 if the CEO is also the chair, 0 otherwise.

Audit committee quality

Audit committee quality is measured by the proportion of non-executive audit committee members[6]. Using the definition of independence employed by the ASX, we also use an alternative measure, the proportion of independent audit committee members to estimate audit committee quality.

IT Governance

As argued earlier, we see IT Governance as a separate, measurable quality of firm governance and this quality, we believe, can be captured through the existence of either a specialised IT strategy committee (assigning a value of 1 for its existence, or 0 otherwise) or a specialised IT steering committee (assigning a value of 1 for its existence, or 0 otherwise).

Controls

Based on prior literature, the following control variables were included: firm size, industry, and IT intensity. A discussion of each control variable is provided in this section.

Firm size

Firm size is potentially an important predictor of within-firm fraud. Large firms have higher agency costs (Jensen & Meckling, 1976). A possible explanation for this is that size can be inferred as a proxy for complexity, which inherently creates problems of communication and coordination within a firm (Daboub, Rasheed, Priem, & Gray, 1995). Consequently, the importance of sound internal controls and structural mechanisms becomes increasingly important. However Finney and Lesieur (1982) assert that structural controls are likely to decrease as a firm grows larger. Therefore, more employees are provided with the opportunity to perpetrate fraud, given the lack of a corresponding increase in the control of their behaviour (Baucus & Near, 1991). Furthermore, decentralised decision making and the empowerment of specialised units, both of which are common to larger firms are likely to increase the opportunities for fraudulent activities (Baucus & Near, 1991). In addition, larger firms are likely to process a greater number of transactions, which in turn, is likely to provide more

[6] The twelve companies that did not have an audit committee were assigned zero percent as the proportion of non-executive audit committee members.

opportunities for fraud to arise and to be concealed. We used market capitalization as at the balance sheet date, collected from FinAnalysis to proxy for firm size.

Industry

The industry in which a firm operates can also be an important variable in explaining the occurrence of within-firm fraud. Some industries are likely to provide greater incentives and opportunities to commit fraud than others (Cohen & Alexander, 1996), coupled with low risk that perhaps encourages and facilitates fraud. For example, the financial sector is likely to present potential fraudsters with higher incentives to perpetrate fraud than another sector.

The Global Industry Classification Standard (GICS) employed by the ASX was used to classify firms according to industry sector. Each firm's classification was acquired from DatAnalysis. To examine the relation between industry and fraud, we created a set of dichotomous variables for the consumer discretionary, financial, industrial and materials sectors. Table 2 indicates that these four industry sectors dominate the sample.

IT intensity

IT intensity refers to the level of pervasiveness of IT in an organization. It is also the level of intensity in which information is used in the organization (Sohal & Fitzpatrick, 2002). We anticipate that firms with higher degrees of IT intensity are more susceptible to within-firm fraud than firms with lower degrees of IT intensity. The rationale behind this argument is that firms which are considered to have high degrees of IT intensity are faced with increased complexities associated with internal controls, given that firms become less dependent on human intervention as systems become increasingly integrated and sophisticated (Leung, Coram, Cooper, Cosserat, & Gill, 2004). Consequently, monitoring the behaviour of individuals within the organization becomes difficult (Leung *et al.*, 2004). Thus, greater opportunities are likely to exist for those within the firm to commit fraud, particular those who are proficient in information technology or have the necessary access rights required for perpetration. Moreover, those fraudsters who are proficient in IT are more likely to commit frauds of greater magnitudes given they are likely to be able to use greater concealment methods.

Sohal and Fitzpatrick (2002) found differences in the types of IT governance mechanisms employed between industries based on the three levels of IT intensity: high tier, medium tier and low tier. They found that high tier organizations were more likely to use board level

management in IT governance decisions including the development of IT strategy than low and medium tier organizations. Furthermore, high tier organizations were more likely to incorporate its IT strategy as part of its corporate strategy than medium and low tier organizations.

IT intensity was measured based on the study conducted by Sohal and Fitzpatrick (2002). Recognising that the IT intensity of industries is likely to change over time, the measures were validated by eight information systems experts. Overall, the results of the experts' rankings support the measure of IT intensity used by Sohal and Fitzpatrick (2002). Predictably, industries such as IT Services, Banking, and Communication are ranked at the top of the IT intensity scale, while industries such as Building & Construction, Natural Resources, and Transport are ranked at the bottom of the IT intensity scale. A dichotomous variable was subsequently used to indicate if an industry was perceived to be highly IT intensive.

Empirical model

Using fraud as represented by misappropriation as the dependent variable, we model it as a function of corporate governance and IT governance strength:

$$FRAUD_j = \beta_0 + \beta_1 NONEXE\_BRD\_\% + \beta_2 CEO\_DUAL + \beta_3 NONEXE\_AUDIT\_\% + \beta_4 ITCOM\_STRAT + \beta_5 ITCOM\_STEER + \beta_6 CONTROLS_j + e_j$$

Where:

<u>for dependent variables</u>

FRAUD	=	A variable that is operationalized as either FRAUD_DICHOT (a dichotomous variable taking the value of 1 if $firm_j$ experienced fraud, 0 otherwise), FRAUD_DOLLAR (the total economic loss associated with fraud, transformed $Log_{10)}$ or FRAUD_RATIO (the total economic loss associated with fraud, transformed Log_{10} divided by total assets, transformed $Log_{10.}$) for the period from April 1 2002 to March 31 2004.

<u>for independent governance variables*</u>

NONEXE_BRD_%	=	The proportion of non-executive directors on the board of directors.
CEO_DUAL	=	A dichotomous variable taking the value of 1 if the CEO is also the chairperson of the board, 0 otherwise.
NONEXE_AUDIT_%	=	The proportion of non-executive directors on the audit committee.
ITCOM_STRAT	=	A dichotomous variable taking the value of 1 if $firm_j$ has an IT strategy committee in place, 0 otherwise.
ITCOM_STEER	=	A dichotomous variable taking the value of 1 if $firm_j$ has an IT steering committee in place, 0 otherwise.

<u>for control variables*</u>

MKTCAP	=	The market capitalization as at the balance sheet date,

		transformed Log_{10}.
ITINT_HIGH	=	A dichotomous variable taking the value of 1 if the organization belongs to an IT intensive industry, 0 otherwise.
CONSUMER_DIS	=	A dichotomous variable taking the value of 1 if the organization belongs to the Consumer Discretionary industry sector, 0 otherwise.
INDUSTRIAL	=	A dichotomous variable taking the value of 1 if the organization belongs to the Industrial industry sector, 0 otherwise.
FINANCIAL	=	A dichotomous variable taking the value of 1 if the organization belongs to the Financial industry sector, 0 otherwise.
MATERIALS	=	A dichotomous variable taking the value of 1 if the organization belongs to the Materials industry sector, 0 otherwise.
e	=	Error term.

* Measures for the independent governance variables and the control variables are taken from company annual reports for the period July 1 2003 to June 30 2004.

Sample and data collection

As mentioned earlier, we use fraud data collected from the 2004 KPMG Fraud Survey to measure the dependent variable, FRAUD. Four hundred and ninety-one organizations responded to the Survey (a response rate of 23 percent) and two hundred and three reported at least one incident of fraud. One hundred and fifteen of the responding organizations were publicly-listed companies and form the study sample[7]. We collected data to measure the IT governance variables from the 2004 company annual reports.

RESULTS

Descriptive statistics

The sample of 115 firms consists of 52 firms that reported at least one incident of fraud during the survey period (April 1, 2002 to March 31, 2004) and 63 firms that reported no incident of fraud during the survey period. Consistent with results reported in Apostolou and Crumbley (2005), results reported in Table 1 of the 2004 KPMG Fraud Survey of Australia and New Zealand identify expense account fraud, cheque forgery, credit card fraud, and theft of assets as among the most prevalent types of fraud. The average economic loss suffered by a fraud firm is $1,587,242. The variation is considerable, ranging from a minimum of $700.00 to a maximum of $42,438,000.

Table 2 shows that companies from the materials, financial, consumer discretionary, and industrial sectors, account for 85 percent of fraud firms. Furthermore, the percentage of fraud

[7] Only these firms could be used because only publicly available firm-specific data can used to measure the other variables in the model, consequently, government agencies and unlisted companies are excluded from our sample.

firms within each industry suggests that these industries appear to be the most susceptible to fraud[8] (See Appendix A, Tables 1 and 2).

Multivariate analysis[9]

The results of the multiple regression are presented in Table 3. Model 1 is the base model. To be able to observe the incremental effect of the IT governance variables, Model 2 is similar to Model 3 but excludes the two IT governance variables. Model 2 is similar to Model 1 but replaces the percentage of non-executive directors on the audit committee and the board of directors with the percentage of independent directors on the audit committee and the board of directors. The purpose of this was to recognise that not all non-executive directors meet the strict definition of independence that is defined by the ASX Corporate Governance Council's *Principles of Good Corporate Governance and Best Practice Recommendations.* For example, a non-executive director may not be a member of management but may have substantial shareholdings, which are likely to interfere with the director's ability to act in the best interests of the organization (See Appendix A, Table 3).

Board composition and occurrence of fraud

Table 3 shows that while the results overall confirm the research model across all three variations of the measurement of the dependent variable for fraud, they do not support our proposition that as the proportion of non-executive members of the board increases, the less likely the occurrence of fraud.

CEO duality and occurrence of fraud

Where the role of the chairperson of the board is separated from the role of CEO, we propose that within-firm fraud is less likely to occur. CEO duality is not significantly different when the dependent variable is dichotomous (see Table 3, Panel A). A possible explanation for the lack of significance for the dichotomous models is that all organizations are likely to experience some amount of fraud whether material or not. Thus, firms who experience small amounts of fraud are unlikely to be different from those who reported no fraud in their organization.

However, CEO duality is positive and significant, where the dependent variable is FRAUD_DOLLAR or FRAUD_RATIO (Table 3, Panels B & C respectively). These results

[8] The information technology and telecommunications sectors also have quite large percentages. However, only two firms in the sample represent the information technology sector. Similarly, only one firm represents the telecommunications sector.

[9] We have not reported univariate statistics because the results from these tests are consistent with the results of the multivariate analysis.

suggest that where the firm's CEO also serves as the chairperson of the board of directors, the magnitude of economic loss associated with fraud is likely to be substantially higher. Similarly, the ratio of economic loss to total assets is also likely to be higher where CEO duality exists. These results suggest that separating the role of the CEO from the chairperson would be effective in reducing the magnitude of fraud present in organizations.

Audit committee and occurrence of fraud

Like the separation of the board chair role and the CEO role, the composition of the audit committee is a useful measure of the corporate governance strength. We propose that as the proportion of non-executive directors on the audit committee increases, the less likely the occurrence of within-firm fraud. Where the dependent variable is dichotomous, the NONEXE_AUDIT_% variable is found to be negative and significant but not significant in those models where the dependent variable is measured with continuous data.

Recognising that not all non-executive directors meet the strict definition of independence, we also test the role of the audit committee by replacing the percentage of non-executive directors with the percentage of independent directors for Models 2 and 3. The IND_AUDIT_% variable is found to be negative and significant (Table 3, Panels A, B, and C) across all models. These results strongly suggest that having a high proportion of independent directors on the audit committee decreases the probability of fraud occurring in the organization. These results also suggest that directors who meet the strict definition of independence have a greater impact on mitigating fraud than directors who are deemed as non-executive.

IT governance and occurrence of fraud

Finally, we propose that organizations that have an IT strategy committee and/or IT steering committee are more likely to have effective internal controls in place and thus, are less likely to experience within-firm fraud. Our analysis of the data yields non-significant results for these IT governance effects. This is potentially due to the fact that so few organizations in the sample have IT committees in place[10].

Control variables

As expected the proxy for firm size, MKTCAP is positive and significant for all models (Table 3, Panels A,B, and C). This implies that larger firms are more susceptible to fraud and more likely to experience economic loss associated with fraud of a larger magnitude, all else

[10] Univariate results show that the three dichotomous variables for IT committees were not found to be statistically different when comparing fraud firms with non-fraud firms

constant. It also suggests that larger firms are more likely to experience economic loss associated with fraud of a larger proportion to the firm's total assets.

The consumer discretionary and industrial sectors are both positive and significant at the 1 percent level for all models, which suggests that fraud is more likely to occur in these industries relative to the six industry sectors not controlled for in the models and holding all other explanatory variables fixed. The materials sector also appears to be positively significant. Interestingly, the financial sector dummy variable is not significant. Perhaps this result suggests that organizations in the financial industry have sound internal controls in place that are well enforced, suggesting these types of firms are better able to mitigate the opportunities and incentives that their industry offers to potential perpetrators of fraud.

Our results are equivocal on whether or not IT intensive firms are more susceptible to fraud. While the IT intensity variable is significant at the 10 percent level when fraud is measured using a dichotomous variable (Table 3, Panel A), it is not significant when fraud is measured using continuous data (Table 3, Panels B and C).

Robustness tests

We tested for non-response bias by partitioning our sample into those companies that responded to the initial mail survey (54 firms) and those companies that responded to the follow-up mail survey (61 firms) (i.e., late responders) and tested for significant differences between the means of the dependent and independent variables across these two groups. Our tests show there are no significant differences. Late responders are regarded as proxies for non-responders[11]. Consequently, we believe our results are not affected by non-response bias.

Skewness tests for the FRAUD_DOLLAR dependent variable reveal that it is positively skewed with extreme values. Therefore, all models using this particular dependent variable were replicated after winsorizing at the top one percent level. The general idea behind winsorizing is to avoid 'throwing away' the extreme observations, by reducing their influence on the estimate to that of a more moderate level. The process involved resetting the dollar amount of fraud with the next extreme value at the 99th percentile. The results obtained after winsorizing the sample are equivalent to the results reported. This outcome suggests that the results of the study are not driven by outliers.

[11] Extrapolation methods assume "that subjects who respond less readily are more like respondents" (Pace, 1939; Armstrong & Scott, 1977).

In addition to winsorizing, the dollar amount of fraud was ranked based on magnitude. The median value of economic loss associated with fraud was computed and a value of 1 was assigned to those observations above the median and 0 otherwise. The objective behind this procedure was to observe whether consistent results would be yielded when small amounts of fraud are regarded as being analogous to organizations that are unaware of any fraud taking place. The reasoning stems from the notion that frauds of small magnitudes are likely to occur in every organization, whether the organization is aware of fraud occurring or not. The models were rerun and interestingly, CEO duality which was found to be non-significant in the dichotomous models, is positive and significant at the 1 percent level. This suggests that the dichotomous model is confounded by the possibility that firms with small amounts of fraud are indifferent to firms who reported no fraud occurring in their organization. Additionally, the IND_AUDIT_% variable is no longer significant.

CONCLUSIONS AND FUTURE RESEARCH

The study results support our general assertion that well-accepted measures of corporate governance dilution appear to be associated with fraud. In particular, CEO duality is positively associated with fraud. This finding suggests that where the CEO holds the position of chairperson of the board of directors, economic loss associated with fraud is likely to be substantially higher. Similarly, the ratio of economic loss to total assets is also likely to be higher where CEO duality exists. Thus, separating the role of the CEO from the chairperson appears to be effective in reducing the magnitude of fraud in organizations. In addition, the findings suggest that the proportion of independent directors on the audit committee is inversely related to fraud, holding all else constant. Moreover, the results indicate that directors who meet the strict definition of independence, as defined by the ASX, have a greater effect on mitigating fraud than directors who are classified as non-executive.

Our findings have practical implications for both regulators and organizations who are interested in deterring and controlling fraudulent behaviour. The recent corporate governance regulatory reforms both internationally and domestically (such as Sarbanes-Oxley Act in the United States, and the 2004 Corporate Law Economic Reform Program legislative intervention in reporting disclosure and audit independence and the ASX *Principles of Good Corporate Governance and Best Practice Recommendations* in Australia) are driven by the perceived need to restore confidence in the market. Our study provides evidence that regulators promoting quality corporate governance is warranted, if fraud prevention/control is a regulatory outcome. In particular, the results inform the ASX Corporate Governance Council's

Principles of Good Corporate Governance and Best Practice Principles, which requires listed companies to comply with recommendations relating to board composition and CEO control.

Future research should consider incorporating additional measures of corporate governance into the way we have operationalized the fraud models. Some suggestions include examining audit committee members' financial expertise, experience and the number of meetings held, in addition to the proportion of independent directors that comprise the audit committee. Also, an issue demanding further attention is whether certain organizational cultures increase the likelihood of fraud. It is possible that our CEO duality variable and our audit committee independence variable are really proxying for, in part, organizational cultures that cause firms to be more susceptible to fraudulent behaviour.

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Appendix A

Table 1: Common types of fraud[a]

Type of Fraud	Number of firms experiencing fraud type[b]	Percentage of firms experiencing fraud type[c]	Number of fraud occurrences[d]	Percentage of fraud occurrences[e]
Misappropriation of funds	19	16.52	998	16.40
Cheque forgery	17	14.78	161	2.65
Theft of inventory/ plant	16	13.91	170	2.79
Credit card fraud	15	13.04	1,529	25.13
Expense account	14	12.17	34	0.55
False invoicing	10	8.70	37	0.61
Purchase for personal use	9	7.83	2,121	34.85
Petty cash fraud	8	6.96	31	0.51
Services obtained by false documentation	5	4.35	24	0.39
Diversion of sales	5	4.35	21	0.35
Theft of intellectual property	5	4.35	421	6.92
ATM fraud	4	3.48	342	5.62
Kickbacks/ bribery	4	3.48	12	0.20
False financial documents	3	2.61	53	0.87
Computer fraud	2	1.74	3	0.05
Information theft	1	0.87	2	0.03
Conflict of interest	1	0.87	1	0.02
Telecommunications	1	0.87	125	2.05

[a] Reported by the 52 firms in the sample who experienced fraud.
[b] The number of firms that experienced at least one incidence of the particular type of fraud.
[c] The percentage of sample firms that experienced at least one incidence of the particular type of fraud.
[d] The number of fraud occurrences in total for each particular type of fraud.
[e] The particular type of fraud as a percentage of total fraud.

Table 2: Sample distribution based on industry

Industry sector	Firms reporting fraud			Firms reporting no fraud		Percentage of fraud firms in the industry	Total sample	
	n	%	Cum. %	n	%	%	n	%
Materials	14	26.92	26.92	18	28.57	43.75	32	27.83
Consumer discretionary	10	19.23	46.15	7	11.11	58.82	17	14.78
Financial	10	19.23	65.38	12	19.05	45.45	22	19.13
Industrial	10	19.23	84.61	3	4.76	76.92	13	11.3
Consumer staples	2	3.85	88.46	5	7.94	28.57	7	6.09
Energy	2	3.85	92.31	7	11.11	22.22	9	7.83
Information technology	2	3.85	96.16	1	1.59	66.66	3	2.61
Health Care	1	1.92	98.08	8	12.7	11.11	9	7.83
Telecommunications	1	1.92	100	0	0	100.00	1	0.87
Utilities	0	0	100	2	3.17	0.00	2	1.74
Total	52	100.00		63	100.00		115	100.00

Table 3: Coefficient estimates for the fraud logistic regression model

PANEL A: Dependent variable - FRAUD_DICHOT

Independent Variables	Expected sign	Model 1 Estimate	Model 1 p-value	Model 2 Estimate	Model 2 p-value	Model 3 Estimate	Model 3 p-value
NONEXE_BRD_%	-	1.582	0.367				
CEO_DUAL	+	1.703	0.133	1.461	0.185	1.468	0.185
NONEXE_AUDIT_%	-	-1.956	0.084 *				
ITCOM_STRAT	-	1.400	0.311			1.646	0.247
ITCOM_STEER	-	-0.288	0.880			0.017	0.993
MKTCAP	+	0.796	0.000 ***	0.905	0.000 ***	0.904	0.000 ***
ITINT_HIGH	+	2.457	0.079 *	2.393	0.087 *	2.663	0.063 *
CONSUMER_DIS	+	3.064	0.001 ***	3.174	0.001 ***	3.452	0.001 ***
INDUSTRIAL	+	4.273	0.000 ***	4.124	0.000 ***	4.312	0.000 ***
FINANCIAL	+	-0.632	0.644	-0.488	0.725	-0.543	0.696
MATERIALS	?	2.104	0.011 **	1.951	0.014 **	2.209	0.010 ***
intercept		-17.284	0.000 ***	-18.623	0.000 ***	-18.816	0.000 ***
IND_AUDIT_%	-			-3.303	0.015 **	-3.410	0.013 **
IND_BOARD_%	-			2.184	0.184	2.213	0.186
McFadden R Squared (%)		35.18		36.73		37.68	
Obs with Dep=0		63		63		63	
Obs with Dep=1		52		52		52	
Total Observations		115		115		115	

*** p< 0.01, ** p< 0.05, * p< 0.10

Dependent variable

FRAUD_DICHOT = A dichotomous variable assigning 1 if the organisation experienced fraud, 0 otherwise.

Corporate governance variables

NONEXE_BRD_% = The proportion of non-executive directors on the board of directors.
CEO_DUAL = A dichotomous variable assigning 1 if the CEO is also the Chairperson of the board, 0 otherwise.
NONEXE_AUDIT_% = The proportion of non-executive directors on the audit committee.
IND_AUDIT_% = The proportion of independent directors on the audit committee.
IND_BOARD_% = The proportion of independent directors on the board of directors.

IT governance variables

ITCOM_STRAT = A dichotomous variable assigning 1 if an IT strategy committee was in place, 0 otherwise.
ITCOM_STEER = A dichotomous variable assigning 1 if an IT steering committee was in place, 0 otherwise.

Other control variables

MKTCAP = The market capitalisation as at the balance sheet date, transformed Log10.
ITINT_HIGH = A dichotomous variable assigning 1 if the firm belongs to an IT intensive industry, 0 otherwise.
CONSUMER_DIS = A dichotomous variable assigning 1 if the firm belongs to the Consumer Discretionary industry sector, 0 otherwise.
INDUSTRIAL = A dichotomous variable assigning 1 if the firm belongs to the Industrial industry sector, 0 otherwise.
FINANCIAL = A dichotomous variable assigning 1 if the firm belongs to the Financial industry sector, 0 otherwise.
MATERIALS = A dichotomous variable assigning 1 if the firm belongs to the Materials industry sector, 0 otherwise.

Table 3: Coefficient estimates for the fraud regression model

PANEL B: Dependent variable - FRAUD_DOLLAR

		Model 1		Model 2		Model 3	
Independent Variables	Expected sign	Estimate	p-value	Estimate	p-value	Estimate	p-value
NONEXE_BRD_%	-	1.161	0.415				
CEO_DUAL	+	1.783	0.028 **	1.684	0.032 **	1.689	0.032 **
NONEXE_AUDIT_%	-	-1.381	0.108				
ITCOM_STRAT	-	1.430	0.213			1.491	0.191
ITCOM_STEER	-	-0.656	0.684			-0.489	0.758
MKTCAP	+	0.716	0.000 ***	0.749	0.000 ***	0.738	0.000 ***
ITINT_HIGH	+	1.781	0.139	1.676	0.157	1.781	0.135
CONSUMER_DIS	+	2.201	0.002 ***	2.127	0.002 ***	2.250	0.002 ***
INDUSTRIAL	+	3.015	0.000 ***	2.948	0.000 ***	2.927	0.000 ***
FINANCIAL	+	-0.376	0.758	-0.254	0.833	-0.328	0.786
MATERIALS	?	1.486	0.014 **	1.348	0.020 **	1.435	0.015 **
intercept		-12.662	0.000 ***	-12.873	0.000 ***	-12.748	0.000 ***
IND_AUDIT_%	-			-2.054	0.042 **	-2.077	0.040 **
IND_BOARD_%	-			1.536	0.251	1.554	0.247
Adjusted R squared (%)		32.91		34.12		34.04	
F-Statistic		6.085		7.560		6.347	
Total Observations		115		115		115	

*** p< 0.01, ** p< 0.05, * p< 0.10

Dependent variable

FRAUD_DOLLAR = The total economic loss associated with fraud, transformed Log10.

Corporate governance variables

NONEXE_BRD_% = The proportion of non-executive directors on the board of directors.
CEO_DUAL = A dichotomous variable assigning 1 if the CEO is also the Chairperson of the board, 0 otherwise.
NONEXE_AUDIT_% = The proportion of non-executive directors on the audit committee.
IND_AUDIT_% = The proportion of independent directors on the audit committee.
IND_BOARD_% = The proportion of independent directors on the board of directors.

IT governance variables

ITCOM_STRAT = A dichotomous variable assigning 1 if an IT strategy committee was in place, 0 otherwise.
ITCOM_STEER = A dichotomous variable assigning 1 if an IT steering committee was in place, 0 otherwise.

Other control variables

MKTCAP = The market capitalisation as at the balance sheet date, transformed Log10.
ITINT_HIGH = A dichotomous variable assigning 1 if the firm belongs to an IT intensive industry, 0 otherwise.
CONSUMER_DIS = A dichotomous variable assigning 1 if the firm belongs to the Consumer Discretionary industry sector, 0 otherwise.
INDUSTRIAL = A dichotomous variable assigning 1 if the firm belongs to the Industrial industry sector, 0 otherwise.
FINANCIAL = A dichotomous variable assigning 1 if the firm belongs to the Financial industry sector, 0 otherwise.
MATERIALS = A dichotomous variable assigning 1 if the firm belongs to the Materials industry sector, 0 otherwise.

Table 3: Coefficient estimates for the fraud regression model

PANEL C: Dependent variable - FRAUD_RATIO

		Model 1		Model 2		Model 3	
Independent Variables	Expected sign	Estimate	p-value	Estimate	p-value	Estimate	p-value
NONEXE_BRD_%	-	0.094	0.566				
CEO_DUAL	+	0.210	0.025 **	0.202	0.025 **	0.203	0.025 **
NONEXE_AUDIT_%	-	-0.156	0.113				
ITCOM_STRAT	-	0.159	0.228			0.167	0.201
ITCOM_STEER	-	-0.036	0.847			-0.019	0.917
MKTCAP	+	0.073	0.000 ***	0.077	0.000 ***	0.075	0.000 ***
ITINT_HIGH	+	0.223	0.108	0.208	0.127	0.221	0.107
CONSUMER_DIS	+	0.271	0.001 ***	0.265	0.001 ***	0.278	0.001 ***
INDUSTRIAL	+	0.366	0.000 ***	0.357	0.000 ***	0.356	0.000 ***
FINANCIAL	+	-0.067	0.631	-0.052	0.709	-0.060	0.665
MATERIALS	?	0.167	0.015 **	0.154	0.020 **	0.165	0.014 **
intercept		-1.255	0.000 ***	-1.300	0.000 ***	-1.284	0.000 ***
IND_AUDIT_%	-			-0.222	0.056 *	-0.224	0.054 *
IND_BOARD_%	-			0.141	0.357	0.142	0.357
Adjusted R squared (%)		29.13		30.41		30.20	
F-Statistic		5.261		6.535		5.483	
Total Observations		115		115		115	

*** p< 0.01, ** p< 0.05, * p< 0.10

Dependent variable

FRAUD_RATIO = The total economic loss associated with fraud, transformed Log10 divided by total assets, transformed Log10.

Corporate governance variables

NONEXE_BRD_% = The proportion of non-executive directors on the board of directors.
CEO_DUAL = A dichotomous variable assigning 1 if the CEO is also the Chairperson of the board, 0 otherwise.
NONEXE_AUDIT_% = The proportion of non-executive directors on the audit committee.
IND_AUDIT_% = The proportion of independent directors on the audit committee.
IND_BOARD_% = The proportion of independent directors on the board of directors.

IT governance variables

ITCOM_STRAT = A dichotomous variable assigning 1 if an IT strategy committee was in place, 0 otherwise.
ITCOM_STEER = A dichotomous variable assigning 1 if an IT steering committee was in place, 0 otherwise.

Other control variables

MKTCAP = The market capitalisation as at the balance sheet date, transformed Log10.
ITINT_HIGH = A dichotomous variable assigning 1 if the firm belongs to an IT intensive industry, 0 otherwise.
CONSUMER_DIS = A dichotomous variable assigning 1 if the firm belongs to the Consumer discretionary industry sector, 0 otherwise.
INDUSTRIAL = A dichotomous variable assigning 1 if the firm belongs to the Industrial industry sector, 0 otherwise.
FINANCIAL = A dichotomous variable assigning 1 if the firm belongs to the Financial industry sector, 0 otherwise.
MATERIALS = A dichotomous variable assigning 1 if the firm belongs to the Materials industry sector, 0 otherwise.