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Nava Subramaniam Lisa McManus Jiani Zhang

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Nava Subramaniam
Department of Accounting, Economics and Finance, Deakin University, Burwood, Australia
Lisa McManus
Department of Accounting, Finance and Economics, Griffith Business School, Griffith University, Gold Coast, Australia, and
Jiani Zhang
Griffith University, Gold Coast, Australia

Abstract

Purpose – The purpose of this paper is to examine how a risk management committee (RMC), as a newly evolving sub-committee of the board of directors, functions as a key governance support mechanism in the oversight an organisation's risk management strategies, policies and processes. However, empirical evidence on the factors associated with the existence and the type of RMCs remains scant.

Design/methodology/approach – Using an agency theory perspective, this study investigates the association between board factors such as proportion of non-executive directors, Chief Executive Officer duality, and board size; as well as, other firm-related factors (e.g. auditor type, industry, leverage, and complexity), and the existence of a RMC, and the type of RMC (namely, a separate RMC versus one that is combined with the audit committee). Data was collected from the annual reports of the top 300 Australian Stock Exchange (ASX)-listed companies.

Findings – The results, based on logistic regression analyses, indicate that RMCs tend to exist in companies with an independent board chairman and larger boards. Further, the results also indicate that in comparison to companies with a combined RMC and audit committee, those with a separate RMC are more likely to have larger boards, higher financial reporting risk and lower organisational complexity.

Research limitations/implications – Data limited to top 200 top ASX-listed companies, thus restricting generalisability of the results.

Originality/value – The findings of this study provide additional information on the use and design of RMCs in a voluntary setting.

Keywords Risk management, Corporate governance, Australia

Paper type Research paper

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Introduction

In the aftermath of the recent corporate collapses, numerous governance initiatives have been proposed for improving corporate governance with significant emphasis placed on the role of risk management. An effective risk management system is seen to help the organisation achieve its business objectives, enhance its financial reporting as well as safeguard its reputation. In Australia, the Corporate Governance Council of the Australian Stock Exchange (ASX) has set guidelines for risk management within Australian public listed organisations and the board of directors are seen to hold the primary responsibility over the establishment and implementation of a proper risk management system. In 2007, the ASX released its revised Corporate Governance guidelines with specific amendments broadening its recommendations on risk management and its disclosure. For example, the best practice guideline 7.1 requires not only the board (or an appropriate board committee) to establish policies on risk oversight and management, but also to disclose a summary of the policies. Further, best practice guideline 7.2 specifically advises that, it is the board's responsibility to ensure management designs and implements the firm's risk management and internal control system in order to manage the firm's material business risks (ASX, 2007, p. 33). In addition, the board is required to disclose whether it has received assurance from the Chief Executive Officer (CEO) and the Chief Financial Officer that the financial statements as reported by the company are founded on a sound system of risk management and internal compliance and control. It is also specifically noted that "a board committee is an efficient mechanism for focusing the company on appropriate risk oversight, risk management and internal control" (ASX, 2007, p. 33), and that an appropriate board committee may be the audit committee, the risk management committee (RMC) or other relevant committee, although ultimate responsibility for risk management would still rest with the full board.

Organisations however tend to differ in their approaches, the structures and processes adopted towards managing risks. While traditionally significant attention has fallen on the audit committee for achieving proper risk management (Harrison, 1987; Korosec and Horvat, 2005), in more recent times there has been significant growth in RMCs which are specialised risk-focused board committees. A RMC is defined as a sub-committee of the board of directors that provides enterprise risk management education at board level, establishes buy-in at board level for risk appetite and risk strategy, develops "ownership" of risk management oversight by the board, and reviews risk reports of the enterprise (KPMG, 2001). Such a committee is potentially a critical resource for boards in meeting their risk management responsibilities. Yet, empirical evidence on the formation and nature of RMCs remain scant and limited.

Objectives of the study

The objectives of the present study are twofold:

(1) To examine the factors associated with the establishment of a RMC in Australian companies. More specifically, the study examines whether selected board factors and firm characteristics are significantly associated with the existence of a RMC as a sub-committee of the board. Namely, the study examines whether the existence of a RMC is associated with board factors, such as the proportion of non-executive directors, CEO duality, and board size, as well as, related firm characteristics, such as the type of auditor, organisational complexity and risk variables including financial reporting risk and leverage.

(2) The objective of the study is to investigate the association between the prior mentioned board and related firm characteristics, and the type of RMC; namely, a separate and distinct RMC versus a RMC combined with the audit committee.

Motivation for the study

A key motivation for this study is that while the establishment of RMCs have significantly grown in recent years, presently there is little empirical evidence on factors associated with the existence of RMCs. For example, a recent survey of 80 directors and senior executives from the top 200 ASX/NZSX companies, various government and private organisations by KPMG (2005) revealed that over half (54 per cent) the respondent organisations had established a RMC. Of these, 70 per cent were integrated with the board audit committee. However, the findings of the study remain largely descriptive; with little information on factors determining an organisation's decision to set-up a RMC and to disclose its existence in the annual report. Such information is important given that having a well-designed board structure including the existence of appropriate sub-committees have implications for organisational accountability and performance (Roberts *et al.*, 2005; Ruigrok *et al.*, 2006; Harrison, 1987).

Another key motivation for this study is that there is increasing concern over board structures, particularly the establishment board sub-committees and the inter-relationships among such committees. For example, a number of prior studies have focused on the formation of audit committees (Chau and Leung, 2006; Piot, 2004; Carson, 2002; Adams, 1997; Bradbury, 1990), nomination committees (Ruigrok *et al.*, 2006; Carson, 2002), and remuneration committees (Carson, 2002). The results in general suggest that the formation of such sub-committees is systematically associated with selected organisational and corporate governance factors such as board composition and leadership, ownership and organisational size. For example, Chau and Leung (2006) based on data from 397 publicly traded firms in Hong Kong found a positive association between the proportion of independent non-executive directors on the corporate board and audit committee existence. Carson (2002) found that remuneration committees were associated with Big Six auditors, intercorporate relationships and institutional investment. However, no study to date has undertaken a systematic analysis of the association between the existence of a RMC and factors such as board and other company characteristics.

The third motivation for this study is that RMCs are found to be generally integrated or combined with audit committees (KPMG, 2005). However, the expanding roles and responsibilities of audit committees raise various criticisms and doubts as to their ability to function effectively (Alles *et al.*, 2005; Harrison, 1987). Given that boards have commonly relegated both the financial reporting and risk management oversight responsibilities to audit committees, it can be argued that increasing workload pressure on such committees would raise the potential for inefficiencies. For example, Alles *et al.* (2005, p. 22) contend that audit committee members "however well qualified, often have full-time, high-level responsibilities elsewhere which inhibit their desire and ability to get more involved with the firm". Furthermore, since risk management oversight generally requires significant understanding of evolving organisation wide structures and processes and the related risks, it is arguable that a separate RMC is likely to be more efficient than one that is combined with an audit committee (Collier, 1993;

Ruigrok *et al.*, 2006; Turpin and DeZoort, 1998). Yet, there is little empirical evidence on both corporate governance and firm-related factors associated with an organisation's decision to establish a separate RMC as opposed to a combined RMC committee. No doubt, such an understanding of the determinants of RMCs is important as the ASX requires listed companies to disclose corporate governance practices in their annual reports in a clear and transparent manner.

The remainder of this paper is organised as follows. In the next section, a brief overview is provided on risk management in business organisations, followed by a literature review of board committees and the theoretical explanations for their formation. This is followed by hypotheses development, a delineation of the research method and the results of the data analysis. The final section of the paper covers discussion of the results and conclusions of the study.

Background – risk management

Business risks are defined by the Institute of Internal Auditors Research Foundation (IIARF) as "threats to achieving the entity's objectives" (IIARF, 2003). They are uncertainties about events and/or their outcomes that could have a material effect on the goals of the organisation (Selim and McNamee, 1999). The management of risks is an integral part of good business practice. It has been carried out on an ongoing and informal basis by many organisations. Traditionally, risk management has developed as a professional and technical discipline in a number of key areas, namely finance, health and safety, clinical and environmental areas. However, organisations are increasingly facing a variety of risks including financial, operational, reputation, regulatory and information risk (Burlando, 1990; KPMG, 2001). Information about an organisation's risk is not only important to management and shareholders, but also to suppliers, creditors, employees and other stakeholders. The information is useful to management and shareholders as it indicates the stability of the organisation's processes and expected results. Further, such information is also useful for creditors for assessing a company's ability to settle its financial liabilities, for suppliers in relation to their decisions about future credit terms, and for employees assessing their future prospects in the organisation (Korosec and Horvat, 2005). Therefore, proper risk management support structures are likely to help in managing business risks more effectively and in disclosing the risk management outcomes to the organisation's stakeholders.

Board committees

Committees of the board of directors exist to assist the board perform its role more effectively. In particular, with the expanding role of the board, such committees are increasing viewed to be essential rather than preferable. According to Harrison (1987), there are two types of board committees. One type of committee undertakes a more strategic role in terms of advising management and the board on major business decisions, e.g. a strategic planning committee. The other type of committee relates to the monitoring or oversight function of the board such as audit, remuneration, and nomination committees. These committees are seen to specifically enhance the accountability of the board as they provide independent oversight of various board activities (Harrison, 1987). The Cadbury Committee (1992) has strongly advocated the appointment of oversight committees by the board, noting that the effectiveness of a board is buttressed by such structures and procedures.

In more recent years, RMCs have gained popularity as an important oversight board committee (Fields and Keys, 2003). Commonly, the broad areas of responsibilities of a RMC include:

- determining the organisational risk management strategies;
- evaluating the organisational risk management operations;
- assessing the organisational financial reporting; and
- ensuring the organisation is in compliance with the laws and regulations (COSO, 2004; Sallivan, 2001; Soltani, 2005).

The committee members are expected to discuss with senior management the state of the organisation's risk management, review the adequacy and management of the risk procedures, and report to the board on its findings. For example, the annual report of Adelaide Bank Limited states that its RMC "shall review and approve the risk strategy of the company, establish and maintain policies which reflect the risk strategy and monitor the management of credit risk, liquidity risk, market risk and operational risk" (ADB, 2005). Principle 7.2 of the revised Corporate Governance guidelines as released by the ASX (ASX, 2007) likewise notes that a board committee specifically focusing on risk matters (such as a RMC) can be an effective mechanism in supporting the full board meet its responsibilities of risk oversight, risk and internal control management. A RMC entailing members who are specialists in risk management would be better able to support corporate governance through undertaking an in-depth and detailed analysis and review of risks and internal controls. Further, specialist boards such as a RMC will be able to devote more time and effort towards integrating the various risks organisation-wide and evaluating the related controls as a whole. As such, the role of RMCs in supporting corporate governance is potentially a critical one.

Theoretical perspectives on board committee formation

A literature review of research on the formation and structure of governance mechanisms such as board committees reveals agency theory as the dominant paradigm used by prior studies. However, it is increasingly argued that there is a need for a more multi-theoretic approach towards understanding board composition, roles, and their outcomes (Daily *et al.*, 2003; Ruigrok *et al.*, 2006). As such, the development of the research hypotheses pertinent to this study is largely guided by three key theoretical perspectives, namely:

(1) agency theory;
(2) corporate legitimacy; and
(3) signalling theory[1].

Agency theory

Agency theory provides a rich theoretical premise for understanding organisational processes and designs from a principal-agent perspective (Subramaniam, 2006). An agency relationship may be defined as a contract under which one party (the principal) engages another party (the agent) to perform some service on their behalf.

The agent is generally assumed to act based on his/her self-interest (Jensen and Meckling, 1976; Lambert, 2001), and the principal has two major avenues for mitigating such costs:

(1) monitoring the agent's behaviour by adopting auditing and other governance mechanisms that aligns the agent's interest with that of the principal's; and/or

(2) providing attractive employment incentives to the agent and setting up reward structures that encourage the agent to act in the principal's best interests.

The common internal monitoring device is the board of directors and the external monitoring mechanism is the external auditors (Adams, 1994; Baiman, 1990; Jensen and Meckling, 1976; Lambert, 2001; Subramaniam, 2006).

The use of agency theory has been predominant in prior studies on board committees such as the audit, nomination and remuneration committees (Ruigrok *et al.*, 2006; Benz and Frey, 2007). In general, monitoring board committees are seen to provide better quality monitoring, leading to lower opportunistic behaviour by managers. Such board committees are thus predicted to exist in situations where agency costs are high, e.g. high leverage and greater firm complexity and size. Furthermore, agency theory suggests that board characteristics such as its independence and the existence of an independent chairman are potential factors affecting board committee structures (Chau and Leung, 2006; Carson, 2002; Bradbury, 1990). However, agency theory tends to predominantly focus on the motives of human behaviour, particularly from self-interest and ignore other reasons that may guide organisational decisions. For instance, organisational decisions may also be undertaken to conform to institutional norms or to meet selected stakeholder pressures, thus enhancing organisational legitimacy.

Corporate legitimacy

Legitimation has been defined as "the process whereby an organisation justifies to a peer or super-ordinate system its right to exist, that is, to continue to import, transform, and export energy, material, or information" (Maurer, 1971, p. 361). Legitimacy theory is another common perspective that has been adopted to understand organisational forms and structures based on the assumption that a corporation has to maintain its legitimacy for its survival (Meyer and Rowan, 1977). In recent years, there has been increasing focus on the structure and strategies adopted by a board in meeting various stakeholder needs, and the adoption of monitoring sub-committees may be viewed as one such strategy for maintaining corporate legitimacy. A monitoring board committee such as a RMC is likely to enhance corporate accountability by providing a mechanism for independent oversight of corporate activities, thus promoting corporate legitimacy (Harrison, 1987). Furthermore, with increasing scrutiny from regulatory agencies and industry watchdogs, the use of more visible forms of legitimisation such as a board committee has become more attractive and prevalent. Key stakeholders such as the external auditors may also play an important role in encouraging the adoption of such governance mechanisms.

Signalling theory

Signalling theory is widely used to address problems of information asymmetry in the market (Morris, 1987; Certo, 2003). When applied to organisational disclosure practices, signalling theory proposes that it would be generally beneficial for organisations to disclose good or improved corporate governance initiatives and practices so as to create a favourable image in the market. For example, currently there is no mandatory regulatory requirement for companies to establish RMCs. However, according to signalling theory, a firm may set-up a RMC so as to flag its commitment to good corporate governance. In turn, such a disclosure is expected to minimise any potential for investors' devaluation of the company (or alternatively, to maximise the potential for firm value enhancement. In particular, according to signalling theory, firms with high complexity or in highly dynamic or uncertain industries are more likely to employ such strategies so as to flag their commitment to good governance.

In the following sections, we provide an overview of the nature of RMC adoption, followed by the development of several hypotheses based on selected board and firm-related characteristics.

Hypotheses development

Nature of RMC adoption

In this study, the conceptualisation of the existence and nature of RMC is classified under three headings:

(1) *Nil or non-existent* – where a company has not set up nor reported the existence of a RMC.

(2) *A combined committee* – where the annual report discloses the existence of a board committee under the heading of audit and RMC.

(3) *A separate RMC* – where the annual report discloses the existence a distinct board committee that specifically oversees risk management and is titled as a "RMC".

It is argued that both the actual and perceived quality of internal monitoring with respect to risk management is likely to be higher when a RMC exists compared to a situation when there is no RMC. Likewise, it is expected that the actual and perceived quality of internal monitoring in relation to risk management will be higher when a separate and distinct RMC exists compared to when a combined committee is present.

This rationalisation is based on two key reasons:

(1) Risk management is a complex process of identifying, managing, monitoring and minimising business risks. Thus, having a RMC will enable a board of directors to more effectively deal with assessing the various threats and opportunities faced by an entity. Thus, the actual internal monitoring of risk management will be of a higher standard when a RMC exists. Furthermore, it can be argued that having a separate and distinct RMC will allow committee members to fully focus on the various risk processes and reports, and as such provide better quality internal monitoring than when having a combined committee. For instance, a combined RMC and audit committee would not only have to oversee the risk management function but would need to be actively involved with the financial reporting and related audit oversight function as well (Alles *et al.*, 2005). As such, time constraints and fatigue are more likely to occur in combined committees, which consequently may inhibit the committee members' desire and ability to undertake a more rigorous review of the various reports and processes.

(2) The establishment and disclosure of a RMC may flag the board's commitment to high quality corporate governance. In other words, a board committee may exist merely as a signal to the outside world. As argued by Harrison (1987, p. 113), given that it is very difficult to observe what work these committees actually do, "there is the possibility that monitoring committees will be established to create a favourable appearance". Furthermore, the disclosure of a separate RMC will more strongly reflect and flag the presence of better quality internal risk monitoring mechanism than a combined committee. As such, the perceived quality of risk management monitoring would be highest for firms with a separate RMC and lowest when there is no RMC.

Board characteristics

Proportion of non-executive directors. The board of directors is an important mechanism for monitoring management behaviour, resulting in better corporate accountability and disclosure. The proportion of non-executive directors on the board is seen as a key indicator of the independence of the board from management. Pincus *et al.* (1989, p. 246) argue that the presence of non-executive directors on the board "should increase the quality of monitoring because they are not affiliated with the company as officers or employees, and thus are independent representatives of the shareholders' interests". Furthermore, it is argued that non-executive directors tend to be more concerned about their reputation, and as such will more actively question and seek higher quality governance than executive directors. Prior research has also shown that firms with a higher proportion of non-executive directors have better governance in terms of having fewer fraud allegations (Uzun *et al.*, 2004); lower earnings management (Klein, 2002) and quality and extent of financial disclosure (Chen and Jaggi, 2000).

Based on the above discussion, we argue that the board with a large proportion of non-executive directors is likely to more actively enquire about risks, and view that the establishment of a RMC to be an important source of support to help them meet their risk management oversight responsibilities than one with a small proportion of non-executive directors. Furthermore, boards with larger non-executive members are also predicted to prefer a separate RMC over a combined committee as the former will have greater focus and capacity to more fully review the organisation's risk management policies and procedures. Thus, the first set of hypotheses is as follows:

H1(a). The existence of a RMC is significantly and positively associated with the percentage of non-executive directors on the board.

H1(b). The existence of a separate RMC is significantly and positively associated with the percentage of non-executive directors on the board.

Independent chairman. CEO duality refers to the same person being the CEO and the chairman of the board. A firm with an independent chairman (i.e. when the CEO and the board chairman are different) is generally viewed to have lower agency costs (Uzun *et al.*, 2004; Roberts *et al.*, 2005). For instance, an independent chairman is seen to provide better board monitoring by undertaking an independent check on the CEO. Furthermore, an independent chairman can be seen to have strong motivations to maintain his/her own reputation (Jensen and Meckling, 1976). As such, an independent chairman is more likely to seek high quality monitoring, where possible so that there is less chance of organisational failure (Matolcsy *et al.*, 2004). Empirical evidence likewise suggests that an independent chairman is associated with audit committee diligence and lower earnings management (Fields and Keys, 2003; Raghunandan *et al.*, 2001). However, Chau and Leung (2006) found a negative correlation between audit committee existence and the presence of an independent chairman.

In this study, we predict that the independent chairman is more likely to promote the establishment of a RMC as it would enable better monitoring of the risks of the organisation. Furthermore, since a separate RMC is likely to be specifically focused on risk management matters when compared to a combines RMC, it is expected that a separate RMC would be significantly and positively associated with an independent chairman. Thus, second set of hypotheses for the study are as follows:

H2(a). The existence of a RMC is significantly and positively associated with the use of an independent chairman on the board.

H2(b). The existence of a separate RMC is significantly and positively associated with the use of an independent chairman on the board.

Board size. The existence of a RMC may also be associated with the size of the board. Prior research suggests a positive association between the number of directors and the existence of an audit committee (Bradbury, 1990; Piot, 2004). It can be argued that a larger board is likely to entail more resources for the board to allocate. For example, the larger the number of members on the board, the greater the opportunity to find directors with the necessary skills to coordinate and be involved in a sub-committee devoted to risk management. Subsequently, it becomes easier to establish a separate RMC as well. With the greater levels of resources offered by larger boards, there would be less pressure to establish a combined risk management and audit committees.

As discussed above, the following hypotheses are thus proposed:

H3(a). The existence of a RMC is significantly and positively associated with board size.

H3(b). The existence of a separate RMC is significantly and positively associated with board size.

Other predictors

Auditor reputation. Auditors are a key external monitoring mechanism of an organisation, and in recent years have come to pay significant attention to risk management. Audit firms are generally able to influence their client's internal control systems by making post-audit recommendations on improving the design of such systems. Big Four audit firms have been found to encourage higher quality internal monitoring mechanisms among their clients than non-Big Four firms (Cohen *et al.*, 2004)[2]. This push is seen to be motivated by the need to maintain audit quality and to protect their brand name. For example, prior research has found a positive link between the Big Four audit firms and higher quality financial reporting (Cohen *et al.*, 2004).

It is thus expected that there will be greater pressure among organisations with a Big Four firm organisations to establish a RMC than in firms with a non-Big Four. Having an RMC is likely to be viewed as an additional support when an audit firm is in the process of assessing the internal risk monitoring systems, which in turn is likely to minimise the loss of reputation through audit failure. Likewise, it can be argued that rather than a combined committee, a separate RMC would be preferred by the Big Four firms it is more likely to enhance the quality of risk monitoring and assessment. Thus, the fourth hypotheses-set is as follows:

H4(a). The existence of a RMC is significantly and positively associated with the use of a big four external auditor.

H4(b). The existence of a separate RMC is significantly and positively associated with the use of a big four external auditor.

Industry type. The type of industry may affect the level of business and related risks of a company (Beasley *et al.*, 1999). Wallace and Kreutzfeldt (1991) identify that financial companies are more likely to have an internal control function as they are more risky than other industries. Both Goodwin and Kent (2006) and Carcello *et al.* (2005) identify a positive relationship between the existence an internal audit function and finance companies. Both studies argued some industries are considered more risky than other industries as they face substantial regulatory and related requirement. In particular, financial industry is highly regulated and has compliance risks that exceed those in many other industries. In this study, it is predicted that financial companies are more likely to establish RMCs, and also that such RMCs will be separate committees rather than combined with their audit committees. This is because a separate RMC is expected to provide a higher level of oversight over financial reporting than a combined committee. Thus, the following set of hypotheses is proposed:

H5(a). The existence of a RMC is significantly and positively associated with the organisation in a financial industry.

H5(b). The existence of a separate RMC is significantly and positively associated with the organisation in a financial industry.

Organisational complexity. In general, organisational complexity can be seen to increase with the number of business segments (Carcello *et al.*, 2005). Organisations with a large number of business segments usually have more production lines, departments or marketing strategies. As a result, greater complexity increases risks at different levels including operational and technological risks, leading to a greater demand for monitoring such risks. It is thus expected that an organisation is more likely to have a RMC in order to dilute the risks presented by organisational complexity. Furthermore, a separate RMC will be preferred over a combined committee in organisations with greater complexity as separate committees facilitate better quality oversight of risks, both in time and effort of the members. Therefore, based on the above discussion the following hypotheses are suggested:

H6(a). The existence of a RMC is significantly and positively associated with larger number of business segments.

H6(b). The existence of a separate RMC is significantly and positively associated with larger number of business segments.

Financial reporting risk. Companies with large proportion of assets that are in the form of accounts receivable and inventory are seen to entail higher financial reporting risks due to the high levels of uncertainty in the accounting data (Korosec and Horvat, 2005). For instance, the larger the proportion of accounts receivable, the higher the risk of bad and doubtful debts being not properly recognised. Likewise, the valuation of inventory obsolescence is higher in larger inventory balances and thus there is higher financial reporting risks. The establishment of a RMC, and particularly a separate RMC, will facilitate better oversight of such risks. These arguments lead to the following set of hypotheses:

H7(a). The existence of RMC is significantly and positively associated with the portion of accounts receivable and inventory.

H7(b). The existence of a separate RMC is significantly and positively associated with the portion of accounts receivable and inventory.

Leverage. Companies that have a large proportion of long-term liabilities entail greater financial risk (Goodwin and Kent, 2006). Highly leveraged firms are more likely to have debt covenants and higher going concern risks. Lenders are more likely to demand better internal controls and related monitoring mechanisms. Consequently, it can be argued that there will be a greater demand for such companies to have a RMC to oversight such risks. Further, a separate RMC may function more effectively in risk oversight. Thus, the following hypotheses are proposed:

H8(a). The existence of a RMC is significantly and positively associated with the portion of long-term debts.

H8(b). The existence of a separate RMC is significantly and positively associated with the portion of long-term debts.

Research method

The data was collected from the annual reports of companies listed in the top 300 companies in the S&P all ordinaries index on the ASX for the 2005 financial year. The sample of companies comprised a number of industries such as materials, transportation, food and beverage, financial and other service industries. The annual reports were sourced from each company's official web site.

Sample

From the top 300 publicly listed companies, all trusts, funds and groups and foreign companies, ASX delisted companies, and companies with missing information were eliminated. This left a final sample of 200 companies. The details of the elimination process are outlined in Table I. The industry breakdown of the final sample of

	Count	Percentage
Companies listed in the top 300 companies at year start	272	90.6
Less: trust, funds and groups	(47)	15.7
Foreign companies	(7)	2.3
ASX delisted companies	(5)	1.7
Sub-total	213	70.9
Less: companies with missing data	(13)	4.3
Final sample	200	66.6

Table I.
Sample selection process

200 companies is presented in Table II. A wide cross-section of industries is represented in the sample.

Data analysis

Data analysis was conducted using logistic regression analysis. Logistic regression is suited to models where the dependent variable is dichotomous. In the present study, the two dependent variables, RMC existence and separate and distinct risk management committee (SRMC) existence, are dichotomous. Two models were tested regressing nine independent variables against each dependant variable. The following logistic regression equation was tested:

$$\begin{aligned}\text{logit}(\rho 1) = {} & \alpha + B_1(\text{INDEPCHAIR}) + B_2(\text{NONEXECDIR}) + B_3(\text{BOARDSIZE}) \\ & + B_4(\text{BIGFOUR}) + B_5(\text{TYPE}) + B_6(\text{BUSSEGMENT}) \\ & + B_7(\text{REC\&INV/ASSET}) + B_8(\text{DEBT/ASSET}) + B_9(\text{SIZE}).\end{aligned}$$

The two dependent variables were measured by:

RMC existence: a dichotomous variable where 1 = the existence of a RMC (either a separate committee or a committee combined with the audit committee) and 0 = no RMC.

SRMC existence: a dichotomous variable where 1 = the existence of a separate RMC and 0 = no separate RMC (i.e. a combined RMC with the audit committee).

The nine independent variables were measured by:

INDEPCHAIR: a dichotomous variable coded as 1 = company has an independent chairman and 0 = no independent chairman.

Industry segment	Count	Percentage
Automobile and components	3	1.5
Bank and diversified financials	30	15.0
Capital goods and materials	49	24.5
Commercial, telecommunications and consumer services	23	11.5
Energy	21	10.5
Food, beverage and tobacco	10	5.0
Health care equipment and services	11	5.5
Insurance	6	3.0
Media	10	5.0
Pharmaceuticals, biotechnology and life sciences	5	2.5
Real estate	5	2.5
Retailing	11	5.5
Technology software, equipment and services	7	3.5
Transportation	5	2.5
Utilities	4	2.0
Total	200	100

Table II. Sample companies industry segment

NONEXECDIR: the percentage of non-executive directors on the board calculated by the number of non-executive directors divided by the total number of directors on the board.

BOARDSIZE: the total number of directors on the board.

BIGFOUR: a dichotomous variable where 1 = external auditor was a member of the "Big Four" accounting firms and 0 = otherwise.

TYPE: a dichotomous variable coded as 1 = company is a financial company and 0 = company is a non-financial company. This measure follows the approach adopted by Goodwin and Kent (2006) and Carcello *et al.* (2005). In the present study, companies in both the banking and diversified financial industries are considered financial industry firms.

BUSSEGMENT: the number of business units in a company.

REC&INV/ASSET: the proportion of assets that are in the form of accounts receivable and inventory. The variable was calculated as the sum of the accounts receivable and inventory balances divided by total assets.

DEBT/ASSET: the proportion of total long-term debt to total assets. The variable was calculated as the total long-term liabilities divided by total assets.

SIZE: the total assets of the company. Size was included as a control variable in the study.

Since agency costs are expected to be higher in larger organisations, it is suggested that increased agency costs is likely to lead to greater monitoring and thus the need for risk management (Carcello *et al.*, 2005; Goodwin and Kent, 2006). Therefore, company size is included as a control variable in this study.

Results

Descriptive statistics

Of the sample of 200 companies, 44 per cent have a RMC ($n = 88$) and 56 per cent do not have a RMC ($n = 112$). Of the 88 companies that have a RMC, 25 per cent have a separate RMC ($n = 22$) and 75 per cent have a combined RMC ($n = 66$).

For the 22 firms with a separate RMC:

- Average number of members is 4.6, with three being the smallest, ten being the largest.
- Average number of meetings, 5.8 meetings a year, range being 1-13.
- On average there were 0.8 independent directors, with ten firms comprising fully independent members.
- Overlap between AC and RMC was minimal, however, in most cases at least one member from the AC was present on the RMC.
- There were also executive directors on the RMC in 50 per cent of the firms.

The charter of the separate RMC generally appear to cover a whole of organisation approach to risk management. Three examples of a RMC charter as reported in the annual report are as follows:

(1) The risk committee is responsible for ensuring that risks, and also opportunities, are identified on a timely basis and that the group's objectives and activities are aligned with the risks and opportunities identified by the board. Areas of risk which are considered by the RMC include:
   - safety;
   - the environment;
   - the community in which the company operates; and
   - minimization of business risk.

(2) The responsibilities of the Risk Committee include:
   - reviewing the group's risk profile within the context of the risk – return profile determined by the board;
   - implementing and reviewing risk management and internal compliance and control systems throughout the group;
   - reviewing the adequacy and effectiveness of the group's compliance management framework;
   - reviewing the balance sheet risk management framework and strategies;
   - overseeing the group's credit policies;
   - assessing operational risks;
   - reviewing business risk management;
   - reviewing country lines of credit; and
   - reviewing the liquidity policies of the group.

(3) The RMC is responsible for the review of risk in all aspects of the business. It is responsible for overseeing, monitoring and reviewing the group's risk management principles and policies, strategies, processes and controls including credit, market, balance sheet, operational risk and compliance. It may approve credit transactions and other matters beyond the approval discretion of executive management.

The descriptive statistics of the independent variables are presented in Panel A, Table III. The average percentage of non-executive directors on the board is 75.4 per cent with a minimum and maximum percentage of 33.3 and 100 per cent, respectively. The minimum number of directors on the board is 3 and the maximum board size is 13. Among the 200 sample companies, the number of business segment ranges from 1 to 9. The average proportion of assets that are in the form of accounts receivable and inventory and long-term debt are 0.372 and 0.186, respectively. The average total assets figure for the sample is \$8.026 billion, with a minimum and maximum asset value of \$0.016 and \$302.327 billion, respectively. Fifteen per cent of the sample are financial companies ($n = 30$) and 85 per cent are from other industries ($n = 170$). Seventy-five per cent of the companies have an independent chairman ($n = 150$) and 89 per cent of the companies are audited by one of the Big Four audit firms ($n = 178$).

Table III. Descriptive statistics

Panel A: dependent variables					
		Yes = 1	*Percentage*	*No = 0*	*Percentage*
RMC existence		88	44	112	56
		Separate = 1	*Percentage*	*Combined = 0*	*Percentage*
SRMC existence		22	25	66	75
Panel B: independent variables					
	Mean	*SD*	*Minimum*	*Maximum*	*Skewness*
NONEXECDIR	0.754	0.136	0.333	1.000	−0.771
BOARDSIZE	7.24	1.934	3	13	0.628
BUSSEGMENT	2.81	1.792	1	9	0.831
REC&INV/ASSET	0.372	0.296	0	0.989	0.484
DEBT/ASSET	0.186	0.193	0	0.838	1.225
SIZE ($ billion)	$8.026	$37.674	$0.016	$302.327	6.586
		Yes = 1	*Percentage*	*No = 0*	*Percentage*
INDEPCHAIR		150	75	50	25
BIGFOUR		178	89	22	11
TYPE (financial/non-financial)		30	15	170	85

The descriptive statistics of the independent variables are presented in Panel B of Table III.

Table IV provides the Spearman's ρ correlations between the two independent variables and the dependent variables. The variables are not too highly correlated suggesting that multicollinearity is not a problem.

Logistic regression

The Hosmer-Lemeshow goodness-of-fit statistic was interpreted to determine whether the logistic regression models reasonably approximate the behaviour of the data (Cox, 1970; Hosmer and Lemeshow, 1989; Kleinbaum *et al.*, 1982). If the statistic is >0.05, the null hypothesis of no difference between the observed and model predicted values is accepted, signifying that the model's estimates fit the data at an acceptable level.

Panel A of Table V provides the results of the RMC existence logistic regression model. The Hosmer-Lemeshow goodness-of-fit statistic is non-significant ($\chi^2 = 9.393$, df $= 8$, $p > 0.05$) suggesting that the overall model fit is acceptable. In addition, the model yielded a Nagelkerke R^2 of 13.3 per cent indicating that the independent variables make a contribution to the variance in the existence of a RMC. According to the Wald statistic, an independent chairman and a larger board size significantly predict the existence of a RMC ($z = 2.938$, $p < 0.05$; $z = 2.706$, $p = 0.050$, respectively). Therefore, *H2(a)* and *H3(a)* are supported. In addition, the existence of a RMC is marginally associated with company size ($z = 1.620$, $p = 0.10$). However, the remainder of the set of (a) hypotheses are not supported.

The results of the SRMC existence logistic regression model are also shown in Panel B of Table V. The overall model fits the data ($\chi^2 = 4.034$, df $= 8$, $p = 0.854$). The Nagelkerke R^2 is 38.6 per cent which indicates that the independent variables in the model make a significant contribution to the existence of a separate RMC. The existence of a separate RMC is significantly associated with size of the board ($z = 7.756$, $p < 0.050$) and moderately associated with an independent chairman ($z = 1.919$, $p < 0.10$), the business segment ($z = 3.018$, $p < 0.10$) company risk factors ($z = 2.388$, $p < 0.10$) and company size ($z = 2.242$, $p < 0.10$), showing support for *H2(b)*, *H3(b)* and *H7(b)*. However, contrary to the predicted sign,

Table IV. Correlation matrices

	Independent chairman	Non-executive directors	Board size	Big Four	Type	Business segment	Rec & inv/assets	Debt/asset	Size
Model one									
Independent chairman	1.000								
Non-executive directors	0.120	1.000							
Board size	0.016	0.321**	1.000						
Big Four	0.055	0.119	0.250**	1.000					
Type	−0.049	0.105	0.039	−0.076	1.000				
Business segment	0.074	0.184**	0.325**	0.204**	−0.025	1.000			
Rec&inv/assets	−0.118	−0.065	−0.111	0.080	−0.315**	0.059	1.000		
Debt/assets	−0.038	0.055	0.041	−0.019	−0.169*	0.087	0.052	1.000	
Size	0.104	0.384**	0.566**	0.236*	0.100	0.425**	−0.134	0.143*	1.000
RMC existence	0.140*	0.141*	0.224**	0.151*	0.023	0.164*	0.018	0.036	0.139
Model two									
Independent chairman	1.000								
Non-executive directors	0.173	1.000							
Board size	−0.127	0.379**	1.000						
Big Four	0.139	0.160	0.208	1.000					
Type	0.044	0.163	0.343**	0.107	1.000				
Business segment	0.164	0.277**	0.311**	0.122	0.168	1.000			
Rec&inv/assets	−0.158	−0.064	−0.397**	−0.023	−0.377**	−0.104	1.000		
Debt/assets	0.085	−0.172	−0.120	−0.133	−0.209	−0.030	−0.007	1.000	
Size	0.113	0.323**	0.527**	0.244**	0.317**	0.480**	−0.305**	−0.068	1.000
Separate RMC existence	0.068	0.196	0.302**	0.028	0.323**	0.045	−0.176	−0.038	0.348**

Notes: $^{*}p < 0.05$; $^{**}p < 0.01$

Table V. Logistic regression analysis of RMC existence ($n = 200$) and SRMC existence ($n = 88$)

	Predicted sign	B	Standard error	Wald statistic (*z-ratio*)
Panel A: RMC existence logistic regression analysis				
INDEPCHAIR	+	0.624	0.364	2.938**
NONEXECDIR	+	0.490	1.169	0.176
BOARDSIZE	+	0.146	0.089	2.706*
BIGFOUR	+	0.658	0.557	1.399
TYPE	+	0.049	0.486	0.010
BUSSEGMENT	+	0.058	0.090	0.416
REC&INV/ASSET	+	0.501	0.538	0.867
DEBT/ASSET	+	0.553	0.790	0.490
SIZE	?	0.001	0.001	1.620
Constant		−3.284	1.103	8.868**
Model summary	−2 Log likelihood ratio = 253.477			
Model χ^2	$\chi^2 = 9.393$, df = 8, $p = 0.310$			
Nagelkerke R^2	$R^2 = 0.133$			
Panel B: separate RMC existence logistic regression analysis				
INDEPCHAIR	+	1.262	0.911	1.919*
NONEXECDIR	+	−1.127	2.529	0.198
BOARDSIZE	+	0.632	0.227	7.756**
BIGFOUR	+	−1.166	1.314	0.787
TYPE	+	0.487	0.890	0.299
BUSSEGMENT	+	−0.389	0.224	3.018**
REC&INV/ASSET	+	1.736	1.123	2.388*
DEBT/ASSET	+	−0.041	1.645	0.001
SIZE	?	0.001	0.001	2.242*
Constant		−5.194	2.448	4.357**
Model summary	−2 Log likelihood ratio = 70.401			
Model χ^2	$\chi^2 = 4.034$, df = 8, $p = 0.854$			
Nagelkerke R^2	$R^2 = 0.386$			

Notes: $^{*}p < 0.10$; $^{**}p < 0.05$ (one-tailed test of significance)

the coefficient for the number of business segments signifies a negative association with the existence of a separate RMC.

Discussion of results

The two main objectives of the study are to:

(1) identify factors associated with the establishment RMCs; and

(2) those related with the set-up of a separate RMC as opposed to one combined with the audit committee.

Guided by an agency theory perspective, the study namely investigated the role played by agency-cost related factors such as board independence, CEO duality and board size, as well as company-related factors such as type of industry, organisational complexity and leverage on the establishment and nature of RMCs. The results, based on logistic regression analyses, indicate that several board factors and organisational characteristics are associated with the existence of a RMC and the type of RMC.

Of the first three sets of hypotheses of this study, two of the sets were supported (i.e. *H2* and *H3*). The results reveal a significant and positive association between two types of board characteristics (an independent chairman on the board and board size), and the existence of a RMC. Both board characteristics were also found to be positively associated with the establishment of a SRMC. The support of *H2(a)* and *H2(b)* suggest that an independent chairman is likely to reduce agency costs by establishing control mechanisms, such as a RMC. The results also indicate that having an independent chairman promotes not only having a RMC but also a separate and distinct RMC.

H3(a) and *H3(b)* are both supported suggesting larger boards are able to offer the resources needed to maintain and operate board committees. This finding is in line with the ASX's (2003) *Principles of Good Corporate Governance and the Best Practice Recommendations*, where larger boards are advised to set-up support mechanisms such as an RMC. The results also indicate that organisations would be willing to not only set up RMCs, but also separate RMCs when they have sufficient board resources. Further, this result is consistent with Piot's (2004) study where a study of 285 listed companies in France revealed the presence of an audit committee to be positively correlated with board size. It is likely that having a large sized board provides greater resources through higher probability of members with requisite risk expertise being on the board so as to form sub-committees. The result also somewhat supports the notion based on signalling theory that when agency costs (e.g. board size) is high, separate RMCs are established and disclosed so as to flag to the stakeholders the intentions of the board to install high quality monitory mechanisms.

However, *H1(a)* and *H1(b)* are not supported, thus indicating that there is no significant association between the existence of a RMC and the proportion of non-executive directors. This finding is also similar to Piot's (2004) study where there was no significant found between the proportion of non-executive directors and the existence of an audit committee. A possible explanation for this finding may relate to the level of non-executive directors membership and the concept of board independence, in that although a board may have a high level of non-executive directors, it may not directly relate to the board being independent. In this study, non-executive directors are identified as being not involved in day-to-day decisions, but their independence is not fully clear in terms of their financial link with the organisation. It is possible some directors may be termed non-executives, but may not meet the criteria of financial independent, e.g. a non-executive director may still hold more than 5 per cent of the voting shares of the company[3].

The results of the present study provide very little support for the effect of the type of external auditor on RMC establishment and its nature. *H4(a)* and *H4(b)* are not supported, indicating that the existence of a RMC is not significantly correlated with the type of external auditors (Big Four firms versus non-Big Four firms). One explanation for this finding is that only a small number of firms have a non-Big Four auditor, i.e. 22 (11 per cent) of the cases, and of these many are medium tiered and thus may have similar preferences towards RMCs.

The results for the next four sets of hypotheses (*H5*, *H6*, *H7* and *H8*) which propose significant relationships between the four company characteristics:

(1) industry type;

(2) organisational complexity;

(3) financial reporting risk and leverage; and

(4) the establishment and type of RMC appear mixed.

More specifically, none of the four company characteristics are found to have a significant association with the existence of an RMC, thus *H5(a)*, *H6(a)*, *H7(a)* and *H8(a)* are not supported. On the other hand, in relation to the type of RMC, two of the four hypotheses are supported. First, there is marginal support for *H7(b)* ($p < 0.10$), indicating an association between the existence of a separate RMC and financial reporting risks. It appears that the probability of the establishment of a separate RMC increases with the proportion of accounts receivable and inventory to total assets. The findings thus support the argument that as the risk of financial reporting increases, organisations may view greater value in establishing board committees such as a RMC that is solely dedicated to risk oversight. Second, *H6(b)* is supported but the direction of the relationship is not as proposed. The findings suggest that as complexity of an organisation based on the number of business segments increases, the probability of a firm establishing a combined committee increases, rather than a separate committee. A possible reason for this finding is that a combined committee may offer certain advantages over a separate RMC. In particular, with increasing complexity arising from coordinating a larger number of business segments, the involvement of audit committees jointly in overseeing risk management may be more advantageous. Further study in this regard however is needed to better understand the specific advantages and disadvantages of separate and combined RMCs in such situations.

The size of the organisation is also found to be significantly associated with the existence of RMCs, but not with the nature of the RMC. The results indicate that the probability of an organisation establishing a RMC increases with its size but size has no significant impact on whether a separate or combined committee is set-up. The findings thus support prior studies that have argued larger companies are expected to have higher agency costs, and thus will be pressured to adopt better internal risk monitoring (Carcello *et al.*, 2005; Goodwin and Kent, 2006). Interestingly, industry type in terms of finance versus non-finance firms was not found to be a significant predictor of the existence of RMCs nor the type of RMC. A possible reason for this result is that with the escalating levels of complexity and volatility in business environments and increasing expectations for higher quality governance mechanisms within organisations, both non-finance and finance firms may be equally pressured to set up RMCs. For instance, the push for enterprise-wide risk management systems such as that advocated by COSO (2004) have gained much popularity as a means to align risks from an organisation-wide perspective, internal controls and the goals of the organisation.

Conclusions, limitations of the study and suggestions for future research

With the increasing growth in RMC establishment and the disclosure of such board committees in the annual reports of companies, the need to better understand the factors that motivate their existence is clearly important. The present study provides some illumination towards the factors that affect RMC establishment and structure, thus contributing to the literature in several ways. First, the findings of this study provide systematic empirical evidence on RMCs in Australian companies where the adoption of RMCs is still voluntary. The study clearly identifies that board leadership and board size are key elements in the establishment of RMCs. Secondly, the present findings clearly highlight the significant roles played by board leadership and board size, as well as financial reporting risks and organisational complexity in the decision to set up and disclose separate RMCs. As such, the findings of this study should be of interest to institutional policymakers as the quality of risk management support mechanisms are likely to be related to other governance factors such as board leadership and size.

There are however several limitations of the study. First, the sample of the study is only 200, and only a small number of the companies (22 out of 200 companies) were found to have a separate RMC. Furthermore, the study involved only the top 300 Australian firms listed on ASX. There are presently around 2,000 public listed companies in Australia. Thus, the generalisability of the results is limited. Future studies may extend their investigation to a larger sample.

The second limitation of the study is that the data were collected from companies' annual reports. Thus, only firms that have reported having a RMC in the annual reports have been included in the study. It is possible that companies may use other structures for managing their risks and not call themselves a RMC. Unfortunately, there is limited information about companies' risk management structures in annual reports. Therefore, future studies may review the existence of alternate structures, and other research methods such as a questionnaire survey or interviews of board representatives may help to better understand the use of such alternate risk management structures in an organisation.

The third limitation of the study is that the variables such as business segment and proportion of non-executive directors in regression models may not be good proxies for board independence level and company complexity factors that are measured in the study, respectively. For example, as Goodwin and Kent (2006, p. 96) argued in their study that "the number of business segments may not reflect the true complexity of the firm, while the proportion of non-executive directors on the board may not be a sound measure of independence".

The fourth limitation is the assumption that a combined RMC is less efficient than a separate committee. Future research needs more empirical evidence to substantiate this assumption. As an added suggestion for future studies, alternative research methods such as interviews may help to further explain the reasons why companies choose to use RMCs. In-depth interviews may also help better assess the motivation for establishing RMC in an organisation. In particular, signalling theory suggests that organisations may undertake such committees to merely flag management's commitment to corporate governance. Finally, exploration of the complex interactions between the various governance mechanisms of RMCs, audit committees, external audit and internal audit is also needed. The role of RMC in risk management function is relatively unexplored and thus presents a fruitful avenue for future research.

In conclusion, this study indicates board resources and leadership are key factors in the set-up and disclosure of RMCs. Given the growing demands on risk management, further studies on such governance support mechanisms are vital. No doubt, there is mounting pressure on boards of directors to ensure that effective corporate governance in an increasingly dynamic and challenging business environment.

Notes

1. Another explanation for the establishment of a board committee is that it may provide liability advantages to some of the directors (Harrison, 1987). For example, the American Bar

Association has emphasised the liability advantages of using monitoring subcommittees whereby the liabilities of directors who are not members of a given committee can be construed to be more limited in comparison to those on the committee.

2. Big Four audit firms in this study are KPMG, PWC, Ernst and Young, and Deloitte and Touche.
3. According to ASX (2003) listing rules, an independent director may be construed as one who:
   - holds less than 5 per cent of the voting shares of the company;
   - has not within the last three years been employed in an executive capacity by the company; and
   - is free from any interest and any business or other relationship which could, or could reasonably be perceived to, materially interfere with the director's ability to act in the best interests of the company.

References

Adams, M.B. (1994), "Agency theory and the internal audit", *Managerial Auditing Journal*, Vol. 9 No. 8, pp. 8-12.

Adams, M. (1997), "Determinants of audit committee formation in the life insurance industry: New Zealand evidence", *Journal of Business Research*, Vol. 38, pp. 123-9.

Adelaide Bank Limited (2005), *Adelaide Bank Limited Annual Report 2005*.

Alles, M.G., Datar, S.M. and Friedland, J.H. (2005), "Governance-linked D&O coverage: leveraging the audit committee to manage governance risk", *International Journal of Disclose and Governance*, Vol. 2 No. 2, pp. 114-29.

Australian Stock Exchange (2003), *Principles of Good Corporate Governance and Best Practice Recommendations*, ASX Corporate Governance Council, Sydney.

Australian Stock Exchange (2007), *Corporate Governance Principles and Recommendations*, 2nd ed., ASX Corporate Governance Council, Sydney.

Baiman, S. (1990), "Agency research in managerial accounting: a second look", *Accounting, Organizations and Society*, Vol. 15 No. 4, pp. 341-71.

Beasley, M.S., Carcello, J.V. and Hermanson, D.R. (1999), *Fraudulent Financial Reporting: 1987-1997, An Analysis of US Public Companies*, COSO, New York, NY.

Benz, M. and Frey, B.S. (2007), "Corporate governance: what can we learn from public governance?", *Academy of Management Review*, Vol. 32 No. 1, pp. 92-104.

Bradbury, M.E. (1990), "The incentives for voluntary audit committee formation", *Journal of Accounting and Public Policy*, Vol. 9 No. 1, p. 19.

Burlando, A.J. (1990), "The 1990s: the decade of risk management", *Risk Management*, Vol. 37 No. 3, p. 50.

Cadbury Committee (1992), *Report of the Committee on the Financial Aspects of Corporate Governance*, Gee & Co., London.

Carcello, J.V., Hermanson, D.R. and Raghunandan, K. (2005), "Factors associated with US public companies' investment in internal auditing", *Accounting Horizons*, Vol. 19 No. 2, pp. 69-84.

Carson, E. (2002), "Factors associated with the development of board sub-committees", *Corporate Governance: An International Review*, Vol. 10 No. 1, pp. 4-18.

Certo, S.T. (2003), "Influencing initial public offering investors with prestige: signaling with board structures", *Academy of Management Review*, Vol. 29 No. 3, pp. 432-46.

Chau, G. and Leung, P. (2006), "The impact of board composition and family ownership on audit committee formation: evidence from Hong Kong", *Journal of International Accounting, Auditing and Taxation*, Vol. 15, p. 1.

Chen, J.P.C. and Jaggi, B. (2000), "Association between independent non-executive directors, family control and financial disclosures in Hong Kong", *Journal of Accounting and Public Policy*, Vol. 19 Nos 4-5, pp. 285-310.

Cohen, J., Krishnamoorthy, G. and Wright, A. (2004), "The corporate governance mosaic and financial reporting quality", *Journal of Accounting Literature*, Vol. 23, pp. 87-152.

Collier, P.A. (1993), "Audit committees in major UK companies", *Managerial Auditing Journal*, Vol. 8 No. 3, pp. 25-30.

(The) Committee of Sponsoring Organisations of the Treadway Commission (2004), *Enterprise Risk Management-Integrated Framework*, The Committee of Sponsoring Organisations of the Treadway Commission, New York, NY.

Cox, D.R. (1970), *Analysis of Binary Data*, Methuen, London.

Daily, C., Dalton, D. and Rajagopalan, N. (2003), "Governance through ownership: centuries of practice, decades of research", *Academy of Management Journal*, Vol. 46, pp. 151-9.

Fields, M.A. and Keys, P.Y. (2003), "The emergence of corporate governance from Wall St. to Main St.: Outside Directors", *Board Diversity, Earnings Management, and Managerial Incentives to Bear Risk. The Financial Review*, Vol. 38, pp. 1-24.

Goodwin, J. and Kent, P. (2006), "The use of internal audit by Australian companies", *Managerial Auditing Journal*, Vol. 21 No. 1, pp. 81-101.

Harrison, J.R. (1987), "The strategic use of corporate board committees", *California Management Review*, Vol. 30 No. 1, p. 109.

Hosmer, D.W. and Lemeshow, S. (1989), *Applied Logistic Regression*, Wiley, New York, NY.

(The) Institute of Internal Auditors Research Foundation (2003), *Research Opportunities in Internal Auditing*, The Institute of Internal Auditors Research Foundation, Altamonte Springs, FL.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the firm: managerial behavior, agency costs and ownership structure", *Journal of Financial Economics*, Vol. 3 No. 4, pp. 305-60.

Klein, A. (2002), "Audit committee, board of director characteristics, and earnings management", *Journal of Accounting and Economics*, Vol. 33 No. 3, pp. 375-400.

Kleinbaum, D.G., Kupper, L.L. and Morgenstern, H. (1982), *Epidemiologic Research: Principles and Quantitative Methods*, Van Nostrand Reinhold, New York, NY.

Korosec, B. and Horvat, R. (2005), "Risk reporting in corporate annual reports", *Economic and Business Review for Central and South-Eastern Europe*, Vol. 7 No. 3, p. 217.

KPMG (2001), *Enterprise Risk Management: An Emerging Model for Building Shareholder Value*, KPMG.

KPMG (2005), *Strategic Risk Management Survey: A Survey of Contemporary Strategic Risk Management Practices in Australia and New Zealand*, KPMG.

Lambert, R.A. (2001), "Contracting theory and accounting", *Journal of Accounting Economics*, Vol. 32, pp. 3-87.

Matolcsy, Z., Stocks, D. and Wright, A. (2004), "Do independent directors add value?", *Australian Accounting Review*, Vol. 14 No. 1, p. 33.

Maurer, J.G. (1971), *Readings in Organization Theory: Open-System Approaches*, Random House, New York, NY.

Meyer, J.W. and Rowan, B. (1977), "Institutionalized organizations: formal structure as myth and ceremony", *American Journal of Sociology*, Vol. 83, pp. 340-63.

Morris, R.D. (1987), "Signalling, agency theory and accounting policy choice", *Accounting and Business Research*, Vol. 18 No. 69, pp. 47-56.

Pincus, K., Rusbarsky, M. and Wong, J. (1989), "Voluntary formation of corporate audit committee among NAS-DAQ firms", *Journal of Accounting and Public Policy*, Vol. 8 No. 4, p. 239.

Piot, C. (2004), "The existence and independence of audit committee in France", *Accounting and Business Research*, Vol. 34 No. 3, p. 223.

Raghunandan, K., Read, W.J. and Rama, D.V. (2001), "Audit committee composition 'gray directors', and interaction with internal auditing", *Accounting Horizons*, Vol. 15 No. 2, pp. 105-18.

Roberts, J., McNulty, T. and Stiles, P. (2005), "Beyond agency conceptions of the work of the non-executive directors: creating accountability in the boardroom", *British Journal of Management*, Vol. 16, p. 5.

Ruigrok, W., Peck, S., Tacheva, S., Greve, P. and Hu, Y. (2006), "The determinants and effects of board nomination committees", *Journal of Management Governance*, Vol. 10, pp. 119-48.

Sallivan, L. (2001), "Enterprise wide: building a risk management program from the ground up", *Risk Management*, Vol. 48 No. 12, p. 24.

Selim, G. and McNamee, D. (1999), "Risk management and internal auditing: what are the essential building blocks for a successful paradigm change?", *Internal Journal of Audinting*, Vol. 3, p. 147.

Soltani, B. (2005), *Factors Affecting Corporate Governance and Audit Committees in Selected Countries (France, Germany, the Netherlands, the United Kingdom, and the United States)*, The Institute of Internal Auditors Research Foundation, Altamonte Springs, FL, p. 192.

Subramaniam, N. (2006), "Agency theory and accounting research: an overview of some conceptual and empirical issues", in Hoque, Z. (Ed.), *Methodological Issues in Accounting Research: Theories and Methods*, Spiramus, London, pp. 55-82.

Turpin, R.A. and DeZoort, F.T. (1998), "Characteristics of firms that include an audit committee report in their annual report", *International Journal of Auditing*, Vol. 2, pp. 35-48.

Uzun, H., Szewczky, S.H. and Varma, R. (2004), "Board composition and corporate Fraud", *Financial Analysts Journal*, Vol. 60, pp. 33-43.

Wallace, W. and Kreutzfeldt, R. (1991), "Distinctive characteristics of entities with and internal audit department and the association of the quality of such departments with errors", *Contemporary Accounting Research*, Vol. 7 No. 2, pp. 485-512.

Further reading

Berenson, M.L., Levine, D.M. and Krehbiel, T.C. (2006), *Basic Business Statistics: Concepts and Applications*, 10th ed., Pearson Education, Upper Saddle River, NJ.

Bies, S.S. (2004), "Current issues in corporate governance", *Vital Speeches of the Day*, Vol. 70 No. 14, p. 424.

Crawford, M. and Stein, W. (2004), "Risk management in UK local authorities: the effectiveness of current guidance and practice", *The International Journal of Public Sector Management*, Vol. 17 Nos 6/7, p. 498.

DeZoort, F.T., Hermanson, D.R., Archambeault, D.S. and Reed, S.A. (2002), "Audit committee effectiveness: a synthesis of the empirical audit committee literature", *Journal of Accounting Literature*, Vol. 21, pp. 38-75.

Duggan, O. (2006), "Enterprise risk management the challenge for the public sector", *Accountancy Ireland*, Vol. 38 No. 4, p. 25.

Francis, G. (2004), *Introduction to SPSS for Windows: Versions 12.0 and 11.0 – With Notes for Studentware*, Pearson Education, Frenchs Forest.

PricewaterhouseCooper (2004), *Strengthening the Business: Optimizing the Benefits of Enterprise-wide Risk Management for Audit Committee*, PricewaterhouseCooper.

Spira, L.F. and Bender, R. (2004), "Compare and contrast: perspectives on board committees", paper presented at the 6th International Conference on Corporate Governance and Direction, The Henley Management College, October.

Spira, L.F. and Page, M. (2003), "Risk management: the reinvention of internal control and the changing role of internal audit", *Accounting, Auditing and Accountability Journal*, Vol. 16 No. 4, pp. 640-61.

Tabachnick, B.G. and Fidell, L.S. (2001), *Using Multivariate Statistics*, Allyn and Bacon, Boston, MA.

The Institute of Chartered Accountants in England & Wales (1999), *Internal Control: Guidance for Directors on the Combined Code*, The Institute of Chartered Accountants in England & Wales, London.

Corresponding author
Nava Subramaniam can be contacted at: nava.subramaniam@deakin.edu.au

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1. SaidJamaliah Jamaliah Said AlamMd. Mahmudul Md. Mahmudul Alam KhalidMaizatul Akmar Maizatul Akmar Khalid Accounting Research Institute, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia School of Economics, Finance and Banking, College of Business, Universiti Utara Malaysia, Sintok, Malaysia Faculty of Accountancy, Universiti Teknologi MARA, Shah Alam, Selangor, Malaysia . 2016. Relationship between good governance and integrity system. *Humanomics* **32**:2, 151-171. [Abstract] [Full Text] [PDF]
2. Jimi Siekkinen. 2016. Board characteristics and the value relevance of fair values. *Journal of Management & Governance* . [CrossRef]
3. Shamsun Nahar Faculty of Business and Law, Swinburne University of Technology, Victoria, Australia Christine Jubb Faculty of Business and Law, Swinburne University of Technology, Victoria, Australia Mohammad I Azim Faculty of Business and Law, Swinburne University of Technology, Victoria, Australia . 2016. Risk governance and performance: a developing country perspective. *Managerial Auditing Journal* **31**:3, 250-268. [Abstract] [Full Text] [PDF]
4. Ahmed Al-Hadi, Mostafa Monzur Hasan, Ahsan Habib. 2016. Risk Committee, Firm Life Cycle, and Market Risk Disclosures. *Corporate Governance: An International Review* **24**:2, 145-170. [CrossRef]
5. Sherrena Buckby School of Accountancy, Queensland University of Technology, Brisbane, Australia Gerry Gallery School of Accountancy, Queensland University of Technology, Brisbane, Australia Jiacheng Ma School of Accountancy, Queensland University of Technology, Brisbane, Australia . 2015. An analysis of risk management disclosures: Australian evidence. *Managerial Auditing Journal* **30**:8/9, 812-869. [Abstract] [Full Text] [PDF]
6. Jacqueline Christensen, Pamela Kent. 2015. The decision to outsource risk management services. *Accounting & Finance* n/a-n/a. [CrossRef]
7. Mariam Setapa, Norhayati Zakuan, Muhamad Zameri Mat Saman, Mohd Shoki Md Ariff, Norzaidahwati Zaidin, Zuraidah SulaimanThe impact of Enterprise Risk Management practices on Malaysian Public Higher Educational Institution performance: A literature review 1-7. [CrossRef]
8. Marion Hutchinson, Michael Seamer, Larelle (Ellie) Chapple. 2015. Institutional Investors, Risk/Performance and Corporate Governance. *The International Journal of Accounting* **50**:1, 31-52. [CrossRef]
9. Nurul Badriyah, Ria Nelly Sari, Yesi Mutia Basri. 2015. The Effect of Corporate Governance and Firm Characteristics on Firm Performance and Risk Management as an Intervening Variable. *Procedia Economics and Finance* **31**, 868-875. [CrossRef]
10. Dessalegn Getie Mihret. 2014. How can we explain internal auditing? The inadequacy of agency theory and a labor process alternative. *Critical Perspectives on Accounting* **25**:8, 771-782. [CrossRef]
11. Saudah Ahmad, Chew Ng, Lisa Ann McManus. 2014. Enterprise Risk Management (ERM) Implementation: Some Empirical Evidence from Large Australian Companies. *Procedia - Social and Behavioral Sciences* **164**, 541-547. [CrossRef]
12. Nkoko Blessy Sekome School of Accountancy, University of Limpopo, Polokwane, South Africa Tesfaye Taddesse Lemma School of Accountancy, University of Limpopo, Polokwane, South Africa . 2014. Determinants of voluntary formation of risk management committees. *Managerial Auditing Journal* **29**:7, 649-671. [Abstract] [Full Text] [PDF]
13. Lorenzo Neri. 2014. Risk Disclosures in the Annual Reports of Italian Listed Companies. *FINANCIAL REPORTING* :3, 141-168. [CrossRef]

14. Ahmed Abdel-Meguid Assistant Professor of Accounting in the Department of Accounting, School of Business, American University in Cairo (AUC), Cairo, Egypt Khaled Samaha Assistant Professor of Accounting in the Department of Accounting, School of Business, American University in Cairo (AUC), Cairo, Egypt Khaled Dahawy based in the Department of Accounting, School of Business, American University in Cairo (AUC), Cairo, Egypt . 2014. Preliminary evidence on the relationship between corporate governance attributes and audit committee functionality in Egypt: beyond checking the box. *Corporate Governance: The international journal of business in society* **14**:2, 197-210. [Abstract] [Full Text] [PDF]
15. Ngoc Bich Tao, Marion Hutchinson. 2013. Corporate governance and risk management: The role of risk management and compensation committees. *Journal of Contemporary Accounting & Economics* **9**:1, 83-99. [CrossRef]
16. Mostafa Kamal HassanDepartment of Accounting, Finance and Economics, University of Sharjah, Sharjah, United Arab Emirates and Department of Accounting, Alexandria University, Alexandria, Egypt Sawsan Saadi HalbouniDepartment of Accounting, Finance and Economics, University of Sharjah, Sharjah, United Arab Emirates. 2013. Corporate governance, economic turbulence and financial performance of UAE listed firms. *Studies in Economics and Finance* **30**:2, 118-138. [Abstract] [Full Text] [PDF]
17. Tuan-Hock NgFaculty of Business and Law, Multimedia University, Melaka, Malaysia Lee-Lee ChongFaculty of Management, Multimedia University, Cyberjaya, Malaysia Hishamuddin IsmailFaculty of Business and Law, Multimedia University, Melaka, Malaysia. 2012. Is the risk management committee only a procedural compliance?. *The Journal of Risk Finance* **14**:1, 71-86. [Abstract] [Full Text] [PDF]