CORPORATE RISK DISCLOSURES: INFLUENCE OF INSTITUTIONAL SHAREHOLDERS AND AUDIT COMMITTEE

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Abstract

This study investigates the association between corporate risk disclosures and institutional shareholders and audit committees. Using a sample of 66 Australian listed companies, risk disclosures made in 2009 annual reports are analysed. Findings reveal that there is no significant relationship between dedicated-type institutional block shareholders and risk disclosure, which it is argued is consistent with a proprietary information perspective. A positive relationship however is found between transient-type institutional block shareholders and risk disclosures. This result is consistent with a principal that wields limited monitoring resources while achieving high resource dependency over management. Significant positive relationships are found between audit committee independence and risk disclosures.

Keywords: Risk Disclosures, Audit Committee, Institutional Shareholders

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1 Introduction

Information on risk can help to determine the risk profile of a company, the accuracy of security price forecasts, the estimation of market value and the probability of corporate failure (Lang and Lundholm, 1996; Healy and Palepu, 2001; Linsley and Shrives, 2006; Beretta and Bozzolan, 2004). This justifies why risk disclosure and risk management practices have attracted increased attention following the major accounting scandals and corporate collapses of the early 2000's (Power, 2004) and the global financial crisis of 2008-9 (Kirkpatrick, 2009). However, despite the perceived importance of risk information to investors in making equity and debt investment decisions, empirical studies continue to find that risk information disclosed in corporate annual reports remains inadequate (Beretta and Bozzolan, 2004, 2008; Perignon and Smith, 2010). In Australia, risk disclosure in annual reports is regulated by the corporate governance guidelines of the Australian Stock Exchange (ASX), and the accounting standard AASB 7 *Financial Instruments: Presentation and Disclosure*. The former recommends "timely and balanced disclosure with commentary information" on financial results to enhance the "clarity and balance of reporting", while the latter requires disclosure in financial statements of information about the nature of underlying financial instruments and associated risks. Inadequacies in corporate risk disclosure practices under these regulations have been identified in prior Australian studies. Chalmers and Godfrey (2000) found a high degree of non-compliance in respect to derivative financial instrument disclosures mandated under AASB 1033 (the standard preceding AASB 7). Those companies complying with disclosure requirements of AASB 1033 tended to be "too brief, vague or general in nature (Chalmers and Godfrey, 2000, p.98). More recently Taylor *et al.* (2010, p.60) found "a great diversity of disclosure of financial risk information" by Australian listed companies in the mining industry. While mandatory financial risk management information included a description of the extent of currency, price, credit and interest rate risk, far less information was given about the financial assets exposed to these risks. Taylor *et al.* (2010) further identified a low sample mean for the extent of information relating to matters such as internal controls used to mitigate financial instrument risk, financial risk sensitivity analysis and liquidity risk and its management.

The aims of this study are first, to extend risk disclosure research by identifying the pattern of risk disclosures in annual reports of Australian listed companies in the sub-categories of operational risk, financial risk and environmental risk information, distinguishing between risk performance and risk management, and between past/future and positive/negative orientations in the information. As the corporate reporting of a complex topic like risk management and performance is inherently problematic, especially for narrative disclosures,

research into the factors that drive risk disclosure decisions by corporate managements can provide a way forward in seeking to better understand how to enhance the corporate practice of risk reporting (Forker, 1992; McMullen, 1996; Ho and Wong, 2001; Barako *et al.*, 2006). Some studies have addressed the possible drivers of risk disclosure. Solomon *et al.* (2000) and Taylor *et al.* (2008) test various corporate governance characteristics as drivers of risk disclosures. Bushee and Noe (2000) and Abraham and Cox (2007) consider the influence of institutional investors as drivers of risk disclosures. However, evidence remains limited on how different types of institutional investors, as pressure groups, might drive disclosure decisions by management about different dimensions and attributes of risk management and performance. The second aim of this study, therefore, is to model and test the relationships between different forms of institutional investors and different dimensions of risk disclosure by listed companies. Corporate governance mechanisms concerned with the board that have been investigated as drivers of risk disclosure. The two key roles of audit committees of boards are to ensure that risks are managed and internal controls exist to guard against risks, and corporate reports to shareholders are vetted for the integrity of financial and other shareholder-relevant disclosures. Taylor *et al.* (2008) is the only study to assess the relationship between the structure of the audit committee and corporate risk disclosure. They model audit committee membership within a composite corporate governance score, rather than a separate independent variable. Thus, no study has tested the association between the composition of an audit committee and risk disclosures. The third aim of this study is to model and test the relationship between the extent of independence and the level of financial expertise of audit committee members and different dimensions of risk disclosure of listed companies.

Using a sample of 66 Australian listed companies, risk disclosures made in 2009 annual reports are analysed. Findings reveal that there no significant relationships between dedicated-type institutional block shareholders and risk disclosure, which it is argued is consistent with a proprietary information perspective. A positive relationship however is found between transient-type institutional block shareholders and risk disclosures. This result is consistent with a principal that wields limited monitoring resources while achieving high resource dependency over management. Significant positive relationships are found between audit committee independence and risk disclosures.

This study makes several contributions to risk disclosure literature. First, this study describes patterns of risk disclosure practices, distinguishing those information items with attributes deemed to be less relevant to investors' decision making from those deemed more relevant. Second, this study sheds light on the effects of pressures on management from institutional investors on the various patterns of risk disclosure practices. With institutional investors are further categorized into transient investors, quasi-indexer investors and dedicated investors, measuring by portfolio diversification, portfolio turnover and trading sensitivity, the findings of this study show a clearer picture of the financial characteristics of the institutional investor group which has the most significant impact on corporate risk disclosures. Third, this study explores the association between one of the most important corporate governance mechanism - audit committee and risk disclosures, demonstrating the important role could be played by corporate governance mechanism in improving risk management and preventing corporate collapses. In addition, the findings of this study have regulatory and practical implications. For regulators, our finding show the effectiveness of corporate governance mechanism in improving corporate risk management in Australia. For domestic investors and financial analysts, our findings inform them the risk disclosure pattern in Australia and influential corporate factors of risk disclosures. This will assist investors and financial analysts to assess companies' business risks and companies' abilities of risk management.

The remainder of the study proceeds as follows. Section 2 provides the literature reviews and hypothesis development. Section 3 describes the research design and methodology used. Sections 4 comprises of the main results and interpretation of those results. Section 5 summarizes findings and makes conclusion remarks.

2 Literature background and hypotheses

There is a growing body of corporate disclosure literature concerned with information on risk. One strand has concentrated on the specific aspect of disclosure of financial risk in relation to financial instruments (e.g., Beretta and Bozzolan, 2004; Linsley and Shrives, 2006). Another strand involves examining risk disclosure from a broad perspective and disaggregating the construct into several categories (e.g., Collins *et al*., 1993; Solomon, 2000). In this literature, the determinants of risk disclosure have been considered on a non-theoretical basis of firm size and industry. More recently, Abraham and Cox (2007) invoke agency theory to draw together ownership structure and governance mechanisms as determinants of the extent of risk disclosure. As explained by Abraham and Cox (2007, p. 231), "ownership and governance factors may play a vital role in firms' risk reporting because … (first) large investors (as principals) can be expected to demand a broad range of potentially relevant risk information that management might otherwise choose to withhold (and second) … directors (as agents) are expected to improve accountability and disclosure". As further argued by Abraham and Cox (2007, p. 231), "the relationship between risk disclosure and corporate

ownership and governance is of interest to regulators because (large) institutional owners and independent directors are expected to reduce agency problems, and thus lessen the need for regulatory intervention in corporate reporting."

This study extends the application of Abraham and Cox's (2007) perspective. The behavior of the principal is addressed in terms of the influence of large institutional shareholders on risk disclosure with particular focus on the different motives of dedicated institutional investors compared to transient institutional investors. The behavior of the agent is addressed as the influence of the Audit Committee on risk disclosure with focus on the independence and expertise of members of this committee.

2.1 Institutional investors and risk disclosure

Prior studies assert that institutional investors are expected to mitigate information asymmetry by performing a monitoring role through close relations with the management of corporations (Fama and Jensen, 1983; Healy *et al.*, 1999; Healy and Palepu, 2001; Koh, 2003; Gray *et al.*, 2009). As one of the key corporate mechanisms, institutional investors are expected to curb management from withdrawing risk information. Studies by Chalmers and Godfrey (2004) and Taylor *et al.* (2008) suggest that enhanced financial risk information could be a result of institutional investors' pressure which performs as a substitute for effective corporate governance. In contrast, other studies have not found evidence to support this agency perspective on the role of institutional shareholders. Bushee and Noe (2000) do not find a relationship between institutional investors with a long-term investment horizon and the extent of investee companies' risk disclosure in annual reports. Solomon *et al.*'s (2000) finding is consistent with this phenomenon in showing that institutional investors hold a moderate view toward the need of risk disclosure. It can be reasoned that institutions with long-term investment horizon are concerned with the fact that the release of proprietary information may affect long term competitiveness, therefore preferring private risk communication (Solomon *et al.*, 2000). Empirical implications from Abraham and Cox's (2007) study substantiate the conjecture that long-term institutional investors prefer risk information to be disclosed privately.

Meanwhile, Healy *et al.* (1999) and Bushee and Noe (2000) indicate that closer monitoring by transient institutional investors' reduces information asymmetry and enhances the level of corporate transparency. Bushee and Noe (2000) categorize institutional investors into transient institutional investors (TransInst), quasi-indexer institutions (QuasiInst), and dedicated institutions (DedicInst), yielding the result that TransInst is positively related to the level of corporate disclosure, but DedicInst ownership is not associated with the degree of corporate disclosure.

Low portfolio turnover and large stable holdings in a select number of firms are the characteristics of DedicInsts. This indicates long term investors (Bushee and Noe, 2000), who have ample resources and distinguished capabilities to access private risk information, hence whose interest would be in line with managers but not other shareholders. This would satisfy the assumption under the proprietary cost hypothesis (Verrecchia, 1983) where conflict of interest hardly exists between corporate managers and DedicInst investment managers. Fama and Jensen (1983) support the notion that in firms with more concentrated ownership, the possibility of conflicts between principal and agent is smaller. This association has also been examined by a large body of research (McKinnon and Dalimunthe, 1993; Healy *et al.*, 1999; Healy and Palepu, 2001; Ho and Wong, 2001). The alignment of interests means that DedicInst is less likely to impose additional pressure on the firms to disclose risk information. To maintain their investment competitiveness, it can be postulated that DedicInsts do not hold a positive view toward risk information disclosed via public vehicles. Hence the alternate hypothesis is:

H_{1A}: There is negative relationship between the proportion of DedicInst ownership in a company and the extent of negative information, future information and total information about risk reported in the annual report of that company.

Compared to a DedicInst, a QuasiInst has a low level of portfolio turnover, indicating that a QuasiInst is still capable of obtaining private risk information. However, Bushee and Noe (2000) suggest that since a QuasiInst has diversified investment portfolios, it is costly to acquire private risk information from each investee company. Therefore, a QuasiInst would prefer risk information publicly disclosed in annual reports.

Highly frequent trading activities and diversified portfolios are the characteristics of a TransInst, indicating short-term investors (Bushee and Noe, 2000). The implication is that TransInsts do not have a steady long-term relationship with investee companies. Consequently, a TransInst has limited resources and capabilities to access private risk information. Thus, a TransInst has to highly rely on public risk reporting. As a large shareholder, TransInsts are in a position to extract management appeasement in good corporate governance, including relevant transparency. Therefore, it can be hypothesized by*:*

H_{1B}: The proportion of both TransInst and QuasiInst ownership is positively related to the extent of negative information, future information and total information about risk reported in the annual report.

2.2 Audit committees and risk disclosure

The audit committee of board usually has a role of overseeing the quality of reported information in financial statements. The ASX principles are based on the view that quality corporate governance influences the extent of company risk disclosure (ASX, 2006). An audit committee is considered the pre-eminent corporate governance mechanism in the financial reporting process (Blue Ribbon Committee, 1999; Smith Committee, 2003; COSO ERM framework, 2004). This has been supported by literature suggesting that audit committees have the most direct responsibility in overseeing financial reporting (Xie *et al.*, 2003; Hoitash *et al.*, 2009). Collier (1993) contends that an audit committee serves the purpose of ensuring the quality of financial accounting and control system. McMullen (1996), and Peasnell *et al.* (2001) further find that an audit committee can effectively improve the reliability of financial reporting. In line with these studies, Ho and Wong (2001) and Barako *et al.* (2006) find the presence of an audit committee positively associated with the level of corporate disclosure. In Australia, the ASX top 500 companies are required to have an audit committee (CLERP 9).

The existence of an audit committee, however, does not guarantee effective monitoring. Therefore the presence of a competent audit committee has been emphasized as the vital corporate governance mechanism in watching over financial reporting (BRC, 1999; Smith Committee, 2003; COSO ERM framework, 2004). This view is supported by findings that a competent audit committee (in terms of having the characteristics of financial expertise and independence) is associated with better corporate disclosure (Xie *et al.*, 2003; Karamanou and Vafeas, 2005; Hoitash et al., 2009). Independence ratio of audit committee members, financial expertise, committee size and the frequency of the committee meetings have been highlighted in the BRC (1999) as the key characteristics of a competent audit committee. To enhance financial reporting in Australia, 'Best Practice' (2006) subsequently requires ASX top 500 companies to have independent audit committees with only non-executive directors, and also indicates the importance of financially expert and diligent members in audit committees. Therefore, the current study tests the relationship between the presence of a competent audit committee and the extent of risk information disclosed in annual reports.

Existing literature highlights the positive relationship between financial reporting and audit committee members' financial expertise (Beasley and Salterio, 2001; Mangena and Pike, 2005; Magena and Tauringana, 2007; Hoitash *et al.*, 2009), and the positive relationship between the extent of corporate disclosure and audit committee members independence ratio (McMullen and Raghunandan, 1996; Beasley, 1996; Abbott and Parker, 2000; Magena and Tauringana, 2007). It can be seen that an audit committee's oversight role can be strengthened by having independent directors with financial expertise. Therefore the current study measures audit committee competency by looking at audit committee members' independence ratio and their financial expertise. As a result, it can be hypothesized that:

H_{2A}: The independence of an audit committee is positively related to the extent of negative information, future information and total information about risk reported in the annual report.

H_{2B}: The financial expertise of an audit committee is positively related to the extent of negative information, future information and total information about risk reported in the annual report.

3 Research methodology

3.1 Selection of Sample

The hypotheses are tested using a sample from Australian Stock Exchange (ASX) Top 201 to Top 350 companies as at financial year ended in 2009. This range is viewed as the mid-size bracket of listed companies. Companies are excluded from the sample for the following reasons: 1). financial industry companies (such as banks, financial institutions, insurance and superannuation) and mining industry companies as these companies have different reporting requirements and balance sheet structures. 2). foreign firms listed on the ASX that follow much of the risk reporting approach of their parent company which faces more stringent requirements in its home jurisdiction than ASX requirements. 3). Companies that had no institutional investors in the top 20 shareholders. 66 companies were selected as the sample. The selection of companies below the ASX Top 200 is justified on the basis of obtaining a sufficient variation in the data for audit committees. The ASX corporate governance code makes it mandatory for the Top 200 listed companies to have an audit committee with 100% non-executive directors (i.e., all are to be independent directors), whereas the ASX highly recommends, but does not mandate, this for listed companies in the Top 201 to 500.

Despite rapid technological innovation paving the way for alternate vehicles to be employed as a means of delivering information to users for decision making (Healy and Palepu, 2001), annual reports are still considered to be the most influential means for companies to communicate risk information to their users (Beattie et al., 2002; Linsley and Shrives, 2005). Risk disclosures are hand-collected from 2009 annual reports. Other financial and governance data for explanatory variables are obtained through *Compustat - SandP Research insight*, and *DatAnalytics* databases. As a result of lack of quarterly data for the independent variable, institutional investors, yearly institutional data is employed in this study.

3.2 Content Analysis

The dependent variable is a quantity measure of risk information disclosed in annual reports. For the purpose of this study, content analysis is performed to identify the extent of risk disclosures. It is a method widely used in empirical studies on corporate risk disclosure (Linsley and Shrive, 2005; Abraham and Cox, 2007). Content analysis is a rich source of data as it can establish relationships that are otherwise difficult to be revealed and replicate (Linsley and Shrives, 2006) and it can be utilized when large amounts of qualitative data (in the form of text items) needs to be quantified (Holsti, 1969).

3.3 Definitions of Variables

The definition of risk helps in aggregating the amount of risk performance information and the amount of risk management information disclosed in annual reports for the subsequent analyses. For this study, the definition of *risk performance* is referred to Linsley and Shrives' (2006) definition: "*If the reader is informed of any opportunity or prospect, or of any hazard, danger, harm, threat or exposure, that has already impacted upon the company or may impact upon the company in the future or of the management of any such opportunity, prospect, hazard, harm, threat or exposure*". The definition of *risk management* for this study is adopted from the publication by COSO ERM – Integrated Framework (2004), which states: "*…a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risks to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives*".

This study further classifies risk into functional types. Collier (2009) classifies risk into operational risk, financial risk, environmental risk, and reputation risk. As reputation risk refers to risk caused by failing to address some other risk, it is less viable to show it in the annual report. Therefore, only three functional types of risk will be analyzed in this study: environmental risk, financial risk and operational risk. First, the meaning of environmental risk is derived from Doff's (2008) definition of business risk as "*the risk of financial loss due to changes in the competitive environment or the extent to which the organization could timely adapt to these changes*". This definition of business risk is quite close to the meaning of environmental risk put forward by Collier (2009). Second, operating risk is defined by the Basel Committee as "*the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events*". The approach taken in this study is to separate risk that occurred inside and outside of an organization. Risk resulting from external events has been included in environmental risk. Therefore, operational risk in this study only refers to the first half in the Basel definition. This is also consistent with the meaning in Collier's (2009) operational risk. Third, financial risk relates to the financial operation of a business, such as credit risk, liquidity risk, currency risk, interest risk and cash flow risk (AASB, 1999, 2004a). Thus, for the purpose of this study, operational risk relates to processes, people and systems; financial risk relates to credit, liquidity, currency, interest and cash flow; environmental risk relates to competition, industry, economic, political, legal and regulatory change.

Bushee's (1998) study is replicated to classify institutional investors into three types, based on data about institutional shareholders that identifies the level of their portfolio diversification, the degree of portfolio turnover, and institutions' trading sensitivity. After conducting factor analysis, three common factors were produced in Bushee's (1998) study to distinguish between types of institutional shareholders. These are referred to as the BLOCK factor (measuring the average size of an institution's company shareholding in its portfolio of investments); the PTURN factor (measuring the degree of portfolio turnover); and the MOMEN factor (measuring the trading sensitivity to current earning news).

Table 1 provides definitions of the three factors used to classify institutional investors into 3 groups. Due to the lack of data regarding companies' full list of institutional shareholders, this study only examines top 20 shareholders of the selected firms, of which individual shareholders are excluded. After obtaining the results for each factor, institutions who invested in the sampled companies only in year 2008 but not in year 2009 are dropped, because this study analyzes annual reports in the year ended 2009. The categorization conceived by Bushee (1998) suggests that institutions with high (low) BLOCK scores will have their portfolios characterized by larger (smaller) average investments in their chosen portfolio firms.

Due to more (less) frequent trade, institutions with high (low) PTURN scores are less (more) likely to have a long-term investment commitment to any given firm in their portfolio. Generally, traders who tend to increase (decrease) their holdings in stocks with positive (negative) current news will have high MOMEN scores. Likewise, traders who increase (decrease) their holdings with negative (positive) current earning news score lower on the MOMEN.

Table 1. Institutional Investor Characteristics*

Factor	Definition
BLOCK (Average percentage holding)	$(\sum W_{k,2009} PH_{k,2009})/\sum W_{k,2009}$
PTURN (Portfolio turnover)	$\sum \lvert \Delta W_{k,2009} \rvert / (\sum W_{k,2009} + \sum W_{k,2008})$
MOMEN (Trading sensitivity to current news)	$(\sum \Delta W_{k,2009} RWE_{k,2009})/\sum \lvert \Delta W_{k,2009} \rvert$

$W_{k,\ 2009}$: portfolio weight (shares held times stock price) in firm k at end of 2009.

$\Delta W_{k,2009} = W_{k,\ 2009} - W_{k,\ 2008}$

$PH_{k,\ 2009}$: percentage of total shares in firm k held by institution at end of 2009.

$RWE_{k,\ 2009}$: stock price sensitivity to earning announcements acquired by event study is used as a proxy for seasonal random walk in year 2009.

* The characteristics are calculated at the end of each financial year for institutions in top 20 shareholders from annual reports. The yearly values are all the yearly available for the financial year to get end of the year values of each characteristic for each institution.

Source: Adapted from Bushee (1998)

Table 2 summarizes the criteria used by Bushee (1998) to arrive at the three types of institutional investors. For the purpose of this study, the indicator variable for each group (TransInst, QuasiInst and DedicInst) is coded as 1 if the shareholding is dominated by this type of institutional investors; otherwise 0. Bushee (1998) suggests that this approach will avoid the problem of high correlation between the three groups in percentage ownership.

Table 2. Classification rules of institutional investors

Type	BLOCK	PTURN	MOMEN
Transient	Relatively Small	High	High
Quasi-indexer	Small	Low	Low
Dedicated	High (high concentration)	Low	Nearly 0

TransInsts are those institutions who have highly diversified investments (low BLOCK), trade frequently (high PTURN) and increase their share ownership responding to positive earnings announcements; QuasiInsts are those institutions with large, diversified portfolios and relatively high turnover but add to their shareholdings if there are negative earnings announcements; DedicInsts refers to institutions which hold highly concentrated and stable portfolios, and show little sensitivity to earnings announcements (Bushee and Noe, 2000).

Due to the difficulty of directly capturing random walk change in earnings per share of firms, stock price sensitivity to earning announcements is used as a proxy for random walk change, so as to obtain trading sensitivity to current news. Stock price sensitivity to earning announcements data is acquired by employing an event study, measured using the firm specific abnormal returns around an earnings announcement. The objective of an event study is to examine the stock market's response to events often related to information releases of the stock market. According to the semi-strong form of efficient market hypothesis, the market price fully reflects all publicly available information (Fama 1970; Jensen 1978; Watts and Zimmerman 1986). Therefore, an unanticipated event linked with an abnormal stock return will be observed to have information content. The event study methodology is relatively easy to implement due to the nature of the necessary data (being publicly traded firms' name, stock prices, event dates and trading volumes).

The second determinant of potential pressure placed on management to voluntarily disclose the company's risk-related information is the competency of the company's audit committee. Competency is deemed to entail both the independence and financial expertise of members. First, the committee's independence ratio (independent members to total members committee) can be attained by information directly self-reported on audit committee members in 2009 annual reports of the sample companies. Second, audit committee's financial expertise is measured in terms of whether committee members in 2009 held relevant qualifications, and/or had substantial financial experience.

Based on the argument of agency theory, investors can price protect themselves from agency costs, giving manager incentives to disclose more risk related information. Therefore the bigger the firm is, the higher the price the investors could afford in monitoring the agent's opportunistic behavior. Previous studies show a positive association exists between companies' size and the quantity of risk disclosure (Buzby, 1975; Linsley and Shrives, 2005, 2006; Mangena and Tauringana, 2007; Abraham and

Cox, 2007). Thus, the model in this study includes the control variable of corporate size by using market capitalization.

4 Results

4.1 The Poisson Model and Correlation Analysis

In this study, Poisson models are employed in regressing institutional ownership and audit committee competency on risk information disclosures. Poisson regression models have been extensively applied as a means of analyzing data that contains a count of item occurrences. For the purpose of this research, the Poisson model is chosen over the standard ordinary least squares (OLS) regression for several reasons. The dependent variable in question for this study is measured as a count of appearances of relevant sentences on risk disclosure. This count variable is positive or zero by nature as an event can only occur or not occur, and cannot occur a negative number of times. When count mean is relatively low (less than 10), OLS regression produces undesirable errors (Gardner *et al.*, 1995). If the variance of the predictor variable is small, as is the case when the number of times of risk disclosure has a small range, the regression coefficient for that predictor becomes very unstable and large standard errors would occur (Cohen *et al.*, 2003). Count variables often also display a conditional variance that increases with the value of the predictor, thereby violating the assumption under OLS that errors have constant variance (homoscedasticity). Distributions of count variables also tend to be positively skewed and kurtotic with many low count observations and no negative observations. Under these conditions OLS regression tends to produce undesirable results such as biased significance tests and standard errors (Gardner *et al.*, 1995; Long, 1997).

Company annual reports, while still the best vehicle to inform stakeholders of risk, cannot possibly be expected to mention each type of risk separately under the dependent variable subcategories. In fact, most annual reports are consistently designed not to mention certain types of risk at all, especially in the subcategories of *future* and *negative* risk. This means that there is an unusually large amount of 0s included in the sample. When there are increased frequencies of 0s, this leads to a right skewing of the Poisson distribution. In order to appropriately include these data in the sample, the zero inflated Poisson model is used for *future* and *negative* risk subcategories (Greene, 1994; Hall and Zhengang, 2004; Long, 1997). All other categories in this study are analyzed using the standard Poisson regression model.

Pearson correlations in Table 3 show QuasiInst the most correlated independent variable to other independent variables. It is highly inversely correlated with DedicInst and positively correlated with ACIndep and ACExpert. Therefore, QuasiInsts will be eliminated, and only DedicInsts and TransInsts retained in the subsequent regression analysis in order to avoid a multicollinearity problem and meet the assumption under the Poisson model that explanatory variables are independent from each other.

Table 3. Pearson Correlations

	ACIndep	ACFinExp	TransInst	DedicInst	QuasiInst	ExtAudit
ACFinExp	.307*					
TransInst	-.003	-.049				
DedicInst	-.240	-.281*	-.380*			
QuasiInst	.255*	.326**	-.216	-.821**		
ExtAudit	.104	.114	-.101	.168	-.115	
MktCap	.122	-.042	-.191	.272*	-.169	.157

**, * denotes significant correlation at <0.01 and <0.05 levels respectively, for two-tailed tests.

Variable definitions:

ACFinExp	=	audit committee members' financial expertise, measured by being with either an accounting related qualification or extensive financial experience
ACIndep	=	audit committee members' independence ratio
TransInst	=	firms with transient institutional ownership in year 2009
DedicInst	=	firms with dedicated institutional ownership in year 2009
QuasiInst	=	firms with quasi-indexer institutional ownership in year 2009
ExtAudit	=	firms with Big 4 auditors in year 2009
MktCap	=	Square root of market capitalization of the selected firms in year 2009

The resultant Poisson regression model and variable notations are as follows:

$$ln(NRD) = \alpha + \beta_1 ACINDEP + \beta_2 ACFINEXP + \beta_3 DEDICINST + \beta_4 TRANSINST + \beta_5 SQRTMRKTCAP \quad (1)$$

Interpretation of the Poisson model should be used with caution, as it is not an ordinary linear model. Equivalent to the above model, the multiplicative model is:

$$NRD = e^{\alpha} e^{\beta_1 ACINDEP} e^{\beta_2 FINEXP} e^{\beta_3 DEDICINST} e^{\beta_4 TRANSINST} e^{\beta_5 SQRTMRKTCAP} \quad (2)$$

Therefore, the coefficients are α, β_1, β_2, β_3, β_4 and β_5. The interpretation is: 1 unit increase in an independent variable, given other variables are constant, results in the estimated dependent variable increasing by e^coefficient if the coefficient is positive; and decreasing by e^coefficient times if the coefficient is negative.

4.2 Descriptive Statistics on the Extent of Risk Disclosure

Consistent with the method and definitions in counting the number of risk disclosures, descriptive details of risk information is represented by Table 4. Studies done by Linsley and Shrives (2006), and Abraham and Cox (2007) in UK coded 6168 risk disclosure sentences and 8842 pieces of risk information (words out of sentences) respectively, whereas only 1836 risk reporting sentences have been coded in the current study. Different risk disclosure requirements are not the major reason leading to such difference in the aggregate amount of risk information disclosure, as regulatory requirements in the UK are quite minimal as in Australia.

Table 4. Descriptive statistics on Risk Disclosure (count of number of sentences in Annual Reports)

	Min	Max	Mean	SD	Sum	%
Operational Risk					**521**	**28.38%**
Risk Management						
Past	0	10	3.08	2.513	203	
Future	0	5	1.18	1.626	78	
Neg	**0**	**4**	**0.27**	**0.775**	**18**	**0.98%**
Risk Performance						
Past	0	7	2.05	2.019	135	
Future	0	7	1.59	1.881	105	
Neg	**0**	**1**	**0.02**	**0.123**	**1**	**0.05%**
Financial Risk					**963**	**52.45%**
Risk Management						
Past	0	15	6.52	3.278	430	
Future	0	3	0.3	0.744	20	
Neg	**0**	**7**	**0.41**	**1.163**	**27**	**1.47%**
Risk Performance						
Past	0	15	5.53	2.758	365	
Future	0	12	2.24	2.24	148	
Neg	**0**	**0**	**0**	**0**	**0**	**0**
Environmental Risk					**352**	**19.17%**
Risk Management						
Past	0	11	3.45	2.463	228	
Future	0	7	0.68	1.192	45	
Neg	**0**	**6**	**1.8**	**1.712**	**119**	**6.48%**
Risk Performance						
Past	0	10	0.76	1.53	50	
Future	0	4	0.44	0.994	29	
Neg	**0**	**0**	**0**	**0**	**0**	**0**
Total performance	3	33	12.62	4.867	832	45.32%
Neg	0	1	0.02	0.123	1	**0.05%**
Total management	4	30	17.45	5.978	1004	54.68%
Neg	0	10	2.48	2.329	164	**8.93%**
Future					**425**	**23.15%**
Operational Future	0	10	2.77	2.636	183	
Financial Future	0	12	2.55	2.241	168	
Environmental Future	0	7	1.12	1.741	74	
Total risks disclosed					**1836**	**100%**

The large differences can be attributed to two major reasons: the sample selected in the present study is from ASX top 201 to top 350, whilst the sample selected in the UK study is from FTSE 100 Index. As several studies contend that there is a positive association between companies' size and the quantity of risk disclosure (Buzby, 1975; Linsley and Shrives, 2005; Mangena and Tauringana, 2007), it is reasonable that studies in UK coded more risk information. The inconsistent amount of disclosures also results from different coding rules applied. Only when the report acknowledged that a risk existed, exists, or will exist did the coder actually code it in this study.

Results in Table 4 are first addressed in relation to disclosures of positive versus negative information. Table 4 reveals that total risk management information does not exceedingly out number total risk performance information, but negative risk does. 8.93% negative risk management information was coded whereas only 0.05% negative risk performance information was coded. Moreover, negative environmental risk information contributes approximately three quarters of total negative risk management information. More than 90% of risk disclosures are positive information, which portrays the managers and companies in question in a much more favorable light. By displaying this 'good news', managers seek to introduce a potential cascade of events that could ultimately act in line with their own self-interest. It appears that managers tend to view signaling theory as working in the realm of positive risk information. However, to establish credibility in capital markets, a company should 'signal' both positive and negative information to the prospective market. In the absence of any relevant disclosures or any negative disclosures, investors are likely to impute a discount on the value of the firm according to signaling theory. The results showing 90% of risk disclosures as positive information suggest that signaling theory is not being widely applied in terms of negative risk-related information.

Further evaluation of the negative risk disclosures in Table 4 shows that virtually no negative risks have been coded except environmental. It is apparent that management is less willingly to talk about the negative types of risks, unless the risks are completely out of their control, such as negative environmental risk. Seldom will management publicly report about negative risk that they have some control over, such as negative financial and operational risks. This explains why negative environmental risk information is disclosed far beyond the other two. These findings are consistent with a large stream of literature (Rayner, 1992; Beck, 1998; Beretta and Bozzolan, 2004; Mobus, 2005) on behavioral aspects of managerial decision making which argues that individuals like to take credit for the good things that occur, and like to assume that they have no control over the bad things that happen. Rayner (1992) further asserts that technological advance increases the propensity of management to avoid blame, due to the fact that technology speeds up the dissemination of information and therefore the consequences associated with 'bad events'.

Turning to the three types of risk, Table 4 reveals that the amount of financial risk information disclosed stands out as 52.45% of total risk disclosures compared to 28.38% for operational risk and 19.17% for environmental risk. There are two possible reasons for the higher financial risk disclosure. First, financial risks are easier to identify and objectively measure than broader and more complex risks that organizations face in the operational and environmental risk categories. Second, financial risks disclosure is required by *AASB 7 Financial Instruments: Disclosures*, whereas environmental risks and operational risks are not mandatorily required to be disclosed in Australia. Jorgensen and Kirschenheiter (2003), and Akhigbe *et al.* (2008) argue that the mandatory nature of the regulatory disclosure provisions is likely to explain the emphasis found in risk disclosures. Taylor *et al.* (2010) suggest that the introduction of AASB139 and IFRS in Australia may motivate management for better corporate transparency. This observation also supports the research done by Mobus (2005) that mandatory accounting disclosures play a role in making financial reporting a means of conveying reliable information rather than mere information.

Also in Table 4 are comparisons of past and future information. Future risk information only contributes less than a quarter (23.15%) of total amount of disclosures. Healy and Palepu (2001) argue that litigation provides a means of mitigating information asymmetry problems, but it would also reduce managers' incentive to disclose information, in particular, forward looking information.

4.3 Multivariate Analysis of Determinants of Risk Disclosure

Table 5 represents Poisson regression results on factors affecting the extent of risk information disclosed in annual reports of the sampled mid-size listed companies in Australia in 2009. As risk disclosures are grouped into different categories, the dependent variables tested include: the extent of total risk information disclosed; the extent of total operational /financial/environmental/ performance/ management risk information; the extent of negative and future operational/financial/ environmental/performance/ management risk information.

Table 5. Poisson regression results under different categories of risk disclosures[1]

Variable[3] / RDType[2]	Intercept	ACIndep	ACFinExp	DedicInst	TransInst	MktCap	prob>χ^2 [b]
TOTALRD	3.1080	0.2116***	0.0648	-0.0644	0.1547*	0.0000	0.0009
	22.3773	**1.2356**	**1.0669**	**0.9376**	**1.1673**	**1.0000**	
	(0.0000)	(0.0072)	(0.4492)	(0.2551)	(0.0659)	(0.8527)	
TotOperRD	3.2673	0.3448**	-0.0066	-0.1535	0.2737*	-0.0001***	0.0000
	26.2411	**1.4117**	**0.9935**	**0.8577**	**1.3148**	**0.9999**	
	(0.0000)	*(0.0221)*	*(0.9680)*	*(0.1507)*	*(0.0523)*	*(0.0002)*	
NegOperRD	3.1359	0.0021	0.6530	-0.8434	-16.2080	-0.0002	0.6611
	23.0085	**1.0021**	**1.9214**	**0.4302**	**0.0000**	**0.9998**	
	(0.2820)	*(0.9990)*	*(0.6990)*	*(0.2470)*	*(0.9920)*	*(0.4790)*	
FutOperRD	2.1606	0.5713*	-0.1189	-0.0566	-0.2059	-0.0001	0.2239
	8.6762	**1.7706**	**0.8879**	**0.9449**	**0.8139**	**0.9999**	
	(0.0020)	*(0.0510)*	*(0.7000)*	*(0.7620)*	*(0.4260)*	*(0.1060)*	
TotFinRD	2.0548	0.1093	0.0432	-0.0380	0.0809	0.0000**	0.2281
	7.8052	**1.1155**	**1.0441**	**0.9627**	**1.0843**	**1.0000**	
	(0.0000)	*(0.3050)*	*(0.7107)*	*(0.6248)*	*(0.5052)*	*(0.0480)*	
NegFinRD	-7.7927	-0.8287	-0.1035	1.7190**	-30.5915	0.0005**	0.0598
	0.0004	**0.4366**	**0.9017**	**5.5789**	**0.0000**	**1.0005**	
	(0.0410)	*(0.5710)*	*(0.9270)*	*(0.0370)*	*(1.0000)*	*(0.0220)*	
FutFinRD	-0.9315	0.8119***	0.1984	0.0621	0.1816	0.0001*	0.0112
	0.3940	**2.2522**	**1.2194**	**1.0641**	**1.1991**	**1.0001**	
	(0.2140)	*(0.0050)*	*(0.5550)*	*(0.7330)*	*(0.5600)*	*(0.0720)*	
TotEnvRD	0.9564	0.4060**	0.2087	0.1289	0.1151	0.0000	0.1276
	2.6023	**1.5007**	**1.2320**	**1.1375**	**1.1220**	**1.0000**	
	(0.0410)	*(0.0279)*	*(0.2860)*	*(0.3207)*	*(0.5763)*	*(0.6487)*	
NegEnvRD	2.0775	0.2084	-0.0970	0.2569	-0.3660	-0.0001*	0.3292
	7.9844	**1.2317**	**0.9076**	**1.2929**	**0.6935**	**0.9999**	
	(0.5261)	*(0.6040)*	*(0.8230)*	*(0.2720)*	*(0.3930)*	*(0.0520)*	
FutEnvRD	2.6848	0.6598	-0.1530	0.2450	-16.7636	-0.0002**	0.0165
	14.6553	**1.9344**	**0.8581**	**1.2776**	**0.0000**	**0.9998**	
	(0.0610)	*(0.1220)*	*(0.7500)*	*(0.5420)*	*(0.9910)*	*(0.0500)*	
TotMgtRD	2.5374	0.3200***	0.0250	-0.0048	0.2681**	0.0000	0.0022
	12.6467	**1.3772**	**1.0254**	**0.9952**	**1.3074**	**1.0000**	
	(0.0000)	*(0.0029)*	*(0.8295)*	*(0.9504)*	*(0.0154)*	*(0.7263)*	
NegMgtRD	1.6603	0.3995	-0.2174	0.0661	-0.7459*	-0.0001	0.2491
	5.2607	**1.4910**	**0.8046**	**1.0683**	**0.4743**	**1.0000**	
	(0.0170)	*(0.2420)*	*(0.5110)*	*(0.7340)*	*(0.0720)*	*(0.2560)*	
FutMgtRD	2.8414	0.7981**	0.3797	0.0825	-0.5703	-0.0002***	0.0013
	17.1397	**2.2213**	**1.4618**	**1.0860**	**0.5654**	**0.9998**	
	(0.0010)	*(0.0240)*	*(0.2930)*	*(0.7020)*	*(0.1460)*	*(0.0000)*	
TotPerfRD	2.4699	0.1282	0.1100	-0.0815	0.0116	0.0000	0.3115
	11.8213	**1.1368**	**1.1163**	**0.9218**	**1.0117**	**1.0000**	
	(0.0000)	(0.2670)	(0.3803)	(0.3277)	(0.9285)	(0.8714)	
NegPerfRD[a]	n.a.						
FutPerfRD	1.5665	0.6813***	-0.3330	-0.0528	0.0941	0.0000	0.0249
	4.7899	**1.9765**	**0.7168**	**0.9486**	**1.0986**	**1.0000**	
	(0.0030)	*(0.0010)*	*(0.1200)*	*(0.7120)*	*(0.6720)*	*(0.5640)*	

- power of e coefficient in normal font;
- **e^coefficient** in **bold.** As stated in Section 4.1, in a Poisson regression model 1 unit increase in the independent variable, given other variables are constant, means the estimated dependent variable increases by e^coefficient if the coefficient is positive; and decreases by e^coefficient times if the coefficient is negative;
- *p-value* in *italics;*
- ***, **, *denotes statistical significance at <0.01, <0.05, and <0.1 levels respectively;

[a] only 1 piece of negative risk performance information was coded from the selected companies in year 2009; the regression cannot be run as a result.

[1] This table provides the standard Poisson regression results for dependent variables TOTALRD, TotOperRD, TotFinRD, TotEnvRD, TotMgtRD, TotPerfRD, and the zero inflated Poisson regression results for the rest of the dependent variables (the type of risk disclosures).

Table 5 reveals that firms with greater DedicInst investors do not exhibit significantly different risk disclosures, apart from one positive relationship between DedicInst and the extent of negatively-oriented financial risk disclosure (NegFinRD). This one significant relationship could be confounded by the fact that much of the disclosure of NegFinRD is due to external auditors imposing it to comply with AASB 7. Overall, therefore, the finding is that DedicInst shareholders are not pressuring company management to publicly disclose risk information. This result gives support to the arguments by Solomon *et al.* (2000) that institutional managers rely less on publicly available information on risk disclosure in company reports if that institution has a large holding of that company in its portfolio and has a longer investment horizon. Their strategy is to seek more timely information on the investee's risk management and performance through private channels to management. So the results support Solomon et al.'s (2000) view that DedicInst shareholders are fairly neutral about annual report disclosures of risk information. On the other hand, Abraham and Cox (2007) contend that DedicInst shareholders, who have ample resources and capabilities to access private risk information, would not want this private information disclosed to competitor investors. Such public disclosure would be costly to the DedicInst investment manager under the proprietary cost hypothesis (Verrecchia, 1983).

The hypothesis $\boldsymbol{H_{1A}}$ concerning a negative relationship between DedicInst and risk disclosure is based on the proprietary cost argument. It is not supported by the result in Table 5. Instead the results support Solomon *et al.*'s (2000) argument that DedicInst shareholders have a moderate or relatively neutral view on risk disclosure in annual reports.

Table 5 further reveals that when firms have greater TransInst investors there is a significant positive effect across most risk disclosure categories. As seen in the TransInst column in Table 5, there is a significant relationship with TOTALRD, TotalOperRD, TotMgtRD and NegMgtRD. With a higher proportion of TransInst shareholding, an investee company is expected to be encouraged to provide a higher extent of risk information disclosure because a TransInst effectively represents a highly diversified share ownership to the investee company, but with single professional-management of the TransInst representing a prospectively powerful principal. The agency theory argument is that agency costs would be higher in firms with more dispersed share ownership because of greater separation of ownership and control (Fama and Jensen, 1983). However, for a large TransInst shareholder, management would have a sense of resource dependency which would encourage higher corporate transparency to appease the TransInst.

The hypothesis $\boldsymbol{H_{1B}}$ concerning a positive relationship between TransInst and risk disclosure is based on this argument of the separation but power of the principal to monitor the presence of adverse selection by the agent. It is supported by the result in Table 5. Interestingly, the categories of risk disclosure that are likely to be most relevant to TransInst investment managers, namely, future-oriented risk and negative risk performance disclosures, are not significantly related to TransInst in Table 5. This implies that company management responds to the presence of TransInsts by providing greater quantity, as distinct from quality, of risk information in the annual report.

An audit committee is considered a pre-eminent governance mechanism in the corporate reporting process. The findings in this study about the effect of a more competent audit committee are shown in the ACIndep and ACFinExp columns of Table 5. First, there are significant positive relationships between ACIndep and the risk disclosure categories of TOTALRD, TotOperRD, TotEnvRD, FutOperRD, FutFinRD, TotMgtRD and FutMgtRD. This is an impressive range of influences on risk disclosures of an Audit Committee that has a higher independence ratio of members. The agency theory argument is that the greater the independence of the audit committee from top management, the more it is likely to advocate the interests of the company's shareholders in terms of reducing information asymmetry.

The hypothesis $\boldsymbol{H_{2A}}$ concerning a positive relationship between ACIndep and risk disclosure is strongly supported by the result in Table 5. Importantly, the results reveal the effect of producing significantly higher future-oriented information about operating risk, financial risk and risk management risk. It is concluded that more independent audit committee is able to increase the amount of risk information disclosed in the areas of total and future risk information. This result is consistent with previous studies (Xie *et al.*, 2003; Karamanou and Vafeas, 2005; Hoitash *et al.*, 2009).

Turning to the results in Table 5 concerning ACFinExp, there is not one significant relationship to a risk disclosure category. Clearly $\boldsymbol{H_{2B}}$ concerning a positive relationship between ACFinExp and risk disclosure is rejected by the result in Table 5. It is evident that substantial financial qualifications or experience is not a pre-requisite for a member of an Audit Committee to have enough competence to influence the Board and management to produce greater transparency on risk in the annual report.

5 Conclusions

While this study initially seeks to measure the quantity in term of number of sentences of risk information disclosed in annual reports, by content analyzing risk disclosures in sub-categories of risk performance, future-oriented risk information and negative risk information, the study has been able to shed more light upon the quality of risk disclosure in terms of its

decision-relevance to users. This study focuses on institutional ownership and the presence of a competent audit committee to explain the pressures on management to make voluntary corporate risk disclosures in various decision-relevant categories of disclosure.

In contrast to Abraham and Cox's (2007) finding that risk disclosures are negatively but weakly relate to long-term institutional ownership, this study has found almost no relationship between DedicInst ownership and risk disclosure categories. This finding is consistent with the proprietary cost perspective of DedicInsts invoked by Bushee and Noe (2000). By comparison, in line with studies done by Bushee and Noe (2000) and Abraham and Cox (2007), a positive relationship is found between TransInst ownership and several risk categories, but not those that have higher decision-relevance for investors.

In respect of the effect of audit committee independence on risk disclosures, in line with previous studies (McMullen and Raghunandan, 1996; Beasley, 1996; Abbott and Parker, 2000; Magena and Tauringana, 2007), significant positive relationships are found with several risk disclosure categories, including total risk, total operating risk, total risk management, future operating risk, future financial risk and future risk management information. Such results support the agency monitoring quality argument. However, financial expertise of Audit Committee members is found to have no impact on the extent of risk disclosure.

Finally, limitations in this study are outlined, together with suggestions for further research. First, the measures of risk reporting are limited to quantification of sentence counts of narrative in company annual reports. Beretta and Bozzolan (2004, 2008) argue that quantity of disclosure alone cannot determine the effectiveness of risk disclosure. However, the quality of risk disclosures was studied via specific categorizations which enabled inferences to be made about the extent of decision-usefulness of the types of risk information disclosed. Further studies are necessary to more directly test the quality of risk disclosure. Either a subjective quality weighting, established by a panel of experts, could be applied to future content analysis of risk disclosures, or a survey of risk information users could be the basis for future studies. Second, using content analysis to aggregate the amount of risk disclosure is subjective regardless of methodological rigor. Unerman's (2000) study shows that the reliability may also be adversely affected if a content analysis study employs a coding instrument which only takes account of words and numbers. To mitigate this problem, a reliable coding method is essential for drawing reliable conclusions in further studies in this field. A third limitation is classification of institutional ownership type. Due to the lack of institutional investors' data, only the top 20 shareholders (excluding individual shareholdings) of a firm in the annual reports are examined. Furthermore, the current study adopts yearly data because of lacking corresponding quarterly data. For higher accuracy, future study could find all institutional investors' shareholding data, as well as employing quarterly or even monthly data. Fourth, this study is only a one-year cross sectional study, and the year used of data selection may not reflect typical economic or financial conditions since it was a year in which capital markets were affected by the global financial crisis. Given these limitations, this study provides findings of interest to corporate regulators, institutional investors and company audit committees in Australia. While other studies on risk disclosure in Australia are also available, they are predominantly focused upon financial risks alone. Key players to be supported as drivers of a broad-based approach to corporate reporting in Australia are uncovered by this study.

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