THE EFFECT OF THE FINANCIAL CRISIS ON RISK DISCLOSURES: A COMPARATIVE STUDY OF U.S. AND CANADIAN CORPORATIONS

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Abstract

The effect of the financial crisis on enterprise risk management (ERM) disclosures was examined through a content analysis of the 2007 and 2008 annual reports of S&P 500 and S&P- TSX Composite companies in the energy, materials, industrials, and consumer discretionary sectors. Fourteen types of risk were tracked and categorized. The total number of risk disclosures by S&P 500 companies hardly increased at all from 2007 to 2008, while the total number of risk disclosures by TSX companies increased slightly. Overall, the 2008 financial crisis has not had a major impact, if any, on risk disclosures by major non-financial U.S. and Canadian corporations.

Keywords: Financial Crisis, Risk Diclosure, Canada, the USA

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1. Introduction

The world is suffering from a severe financial and economic crisis which started in 2007 from the collapse of the housing market in the US, and which ultimately affected major economies worldwide (Magnan and Markarian, 2011). In the wake of this crisis, Enterprise Risk Management (ERM) has gained substantial momentum as a potentially effective response to risk management challenges (Paape and Spekle, 2012). As the leading approach to managing and optimizing risks, ERM determines how much uncertainty is acceptable within an organization, providing companies with a strategic risk analysis that cuts across business units and departments and considers end-to-end processes. By adopting ERM, a company gains the ability to align its risk appetite[29] and risk tolerance[30] with business strategy (FEI, 2013).

The global economic downturn and distressed financial markets have put pressure on companies to have stronger corporate governance, board oversight and risk management. The companies that manage risk in a way that is tailored to changing market conditions and aligned with their overall business strategy will emerge as the biggest winners (O'Riordan, 2011).

There is a growing demand for better reporting of business risks. The demand for better risk reporting has intensified markedly in response to the global financial crisis of 2007 and beyond. There is a widespread view that reporting of risks ahead of the crisis failed to provide adequate disclosures and information about the risks (ICAEW, 2011)

Investors need to understand the risks that a company takes to create value and they want to have information on the sustainability of current value-

[29] Risk appetite is the amount of risk, on a board level, an entity is willing to accept in pursuit of value. It reflects the entity's risk management philosophy, and in turn, influences the entity's culture and operating style. Many entities consider risk appetite qualitatively, with such categories as high, moderate, low; while others take a quantitative approach, reflecting and balancing goals for growth, returns and risks (Moody, 2008). Risk appetite, which post- crisis emerged as a critical foundation of the risk management process, remains a key challenge for many firms (Accenture, 2011; Ernst & Young, 2012).

[30] Risk tolerance is closely related to risk appetite. COSO (2004) indicates that it is the acceptable variation relative to the achievement of an objective. Thus, in setting an organization's risk tolerance, its management must consider the relative importance of all the related objectives and then align those tolerances with its overall risk appetite (Moody, 2008).

creation strategies (Beretta and Bozzolan, 2004). Top managers must therefore be in a position to assure investors that risks and uncertainties are well managed (De Loach, 2000). This requires not only the implementation of firm-wide risk management systems but effective communication about risks that affect a firm's strategies (Beretta and Bozzolan, 2004).

Maingot, Quon and Zeghal (2012) examined the 2007 and 2008 ERM disclosures of non- financial companies on the S&P TSX Composite Index. The hypothesis was that the 2008 financial crisis would have an impact on risk disclosures assuming that a heightened awareness of risks would be reflected in the annual reports. Contrary to expectations, they found that the 2008 financial crisis had only a minor impact on the risk disclosures of major non-financial Canadian corporations.

The objectives of this study are:

(a) to examine risk disclosures by non-financial U.S. companies and to determine the impact of the 2008 financial crisis on these disclosures;

(b) to examine risk disclosures by non-financial Canadian companies and to determine the impact of the 2008 financial crisis on these disclosures;

(c) to compare the number of risk disclosures by these U.S. companies with Canadian companies in the same sectors.

To facilitate the sectoral comparison between the two countries, we selected the four largest non-financial sectors in Canada in terms of their representation on the S&P TSX Composite Index and examined the annual reports of the companies from these four sectors that were listed on the S&P 500 and on the S&P TSX Composite Indices.

The paper proceeds as follows. Section 2 discusses the relationship between ERM, corporate governance and internal control, and Section 3 examines the requirements for the disclosure of ERM information by US and Canadian corporations. Section 4 outlines the research methodology and Section 5 presents the results and data analysis. Section 6 summarizes the basic conclusions.

2. Erm, Corporate Governance and Internal Control

According to the AICPACICA (1999), risk is the chance of something adverse occurring that will have an impact on the achievement of objectives. It is measured in terms of likelihood and consequences. The challenge for companies is how best to disclose the risks they face in a way that is clear and sufficient, focusing on information that is material to investors, while not exhaustive or overwhelming (CICA, 2008). People mean different things when they talk about "risk" in the context of risk reporting and risk disclosure. Usually, they mean risk in the negative sense of a possibility of incurring losses or reduced profits. Sometimes they talk about "risks and opportunities" or "risks and rewards" (ICAEW, 2011).

Balancing risks and rewards have always been a challenge for companies. This has become more pronounced today against the background of the global financial crisis and the great uncertainty in the global economy (Price Waterhouse Coopers, 2009; Tjaden, 2013). Effective enterprise risk management (ERM) has emerged as a key, if not the most important, priority for companies (Protiviti, 207; Accenture, 2011; Ernst and Young, 2012). Since the financial crisis, weaknesses in ERM practices became painfully visible and companies are currently under significant pressure to strengthen their risk management systems and to take appropriate actions to improve stakeholder value protection (Paape and Spekle, 2012).

Organizations that take risks and manage risks well are more likely to achieve or exceed their objectives (AICPACICA, 1999; Lamm-Tennant and Lightfoot, 2010). As mentioned, risk can be viewed as both an opportunity and a threat. In the past, organizations tended to take a defensive position towards risks, viewing them as situations to be minimized or avoided. Increasingly, organizations have come to recognize the opportunistic side and the value-creating potential of risk (CAS, 2003; Nocco and Stulz, 2006; Lamm-Tennant and Lightfoot, 2010).

Interest in ERM has grown rapidly in recent years with regulators, professional bodies and rating agencies, like Standard & Poor's, calling for its adoption (Arena et al., 2010; Paape and Speklé, 2012). In response to this demand, an increasing number of companies is adopting ERM (Protiviti, 2007; Accenture, 2011; Ernst and Young, 2012), but its implementation remains poorly integrated (Mikes, 2005, 2009; Power, 2007).

The practice of risk management has shifted in a fundamental way. In the past, companies managed risk by "silos", in which different types of risk - strategic, business, credit, market, operational - were managed by different organizational units separately (Lam, 2006; Fabozzi and Drake, 2009). However, a paradigm shift in managing risk has occurred. Instead of looking at risks from a silo-based perspective, the trend is to take a holistic approach towards managing an organization's risk which has become known as enterprise risk management (Gordon et al., 2009). This new approach views all risks together, within a coordinated and strategic framework (Lam, 2006; Nocco and Stulz, 2006). While there is no right way to manage risk, there is a strong consensus that ERM should be integrated throughout the organization. This adds reality to management, as well as engaging more of the organization in an integrated process (Conference Board of Canada, 1997).

Gordon et al., (2009) suggest that a general argument gaining momentum in the literature is that the implementation of an ERM system will improve firm performance (Barton et al., 2002; Lam, 2003; Stulz, 2003; CAS, 2003; Nocco and Stulz, 2006; Hoyt

and Liebenberg, 2009; Paape and Speklé, 2012; Quon et al., 2012). However, empirical evidence confirming this relation between ERM and firm performance is quite limited and is not based on a robust measure of ERM (Gordon et al., 2009). By adopting a systematic and consistent approach to managing all the risks confronting the organization, ERM is presumed to lower a firm's overall risk of failure, to increase its performance and, in turn, to add value to the organization (Gordon et al., 2009).

There are many definitions of ERM. The holistic approach to risk management and an organization's performance value is reflected in the definition given by the Casualty Actuarial

Society Committee on Enterprise Risk Management:

"ERM is the discipline by which an organization in an industry assesses, controls, exploits, finances, and monitors risks from all sources for the purpose of increasing the organization's short- and long-term value to its stakeholders" (CAS, 2003, p. 8).

However, the more popular definition of ERM, used in the literature, is the one that was published in September, 2004 by the Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2004):

"Enterprise risk management is a process, effected by an entity's board of directors, management and staff, applied in a strategy setting across the enterprise, designed to identify potential events that may affect the entity, to manage risk to be within its risk appetite, and to provide reasonable assurance regarding the achievement of entity objectives" (COSO, 2004, p. 2).

The COSO (2004) framework is presented as a cube, with eight factors - internal, environment, objective setting, event identification, risk assessment, risk response, control activities, information communication and monitoring - in one dimension, the four environments of strategic, operations, reporting and compliance in a second dimension, and the four organizational levels of subsidiary, business unit, division and entity-level in a third dimension. According to Burton (2008), the COSO (2004) document depicts ERM in a managerial and prospective light, normatively defining specific elements for its implementation, and advocating that it should benefit decision-making and management control. ERM can be different things in different organizations or even within the same organization at different times (Arena et al., 2010). Power (2009) notes the danger of ERM lapsing into "rules-based compliance", and failing to become embedded in managers' decision-making and business processes. A culture of risk management should be embedded throughout the organization (Bruno-Britz, 2009).

The goals of ERM, as presented by COSO (2004), are to create, protect and enhance shareholder value by managing the uncertainties surrounding the achievement of the organizational objectives (Barton et al., 2002). The professional literature indicates that the COSO (2004) ERM document is relatively well understood, especially by the companies striving to implement it (Sobel and Reding, 2004). Canadian companies have largely adopted the COSO (2004) ERM framework (Martens, 2005), and it has become a world-level template for best practice (Power, 2007). In developing its ERM framework, COSO (2004) recognizes that the appropriate ERM system will likely vary from firm to firm. In essence, COSO suggests a contingency perspective toward the appropriate ERM system for a particular organization (Gordon et al., 2009).

Companies need to align corporate governance with risk management (Sobel and Reding, 2004). While there are many definitions of corporate governance (The Cadbury Report, 1992; The Dey Report, 1994), there is one presented by the OECD that provides a definition that captures the sense of corporate governance within the framework of ERM.

OECD defines corporate governance as:

"A set of relations between a company's management, its board, its shareholders, and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means for attaining those objectives and monitoring performance are determined" (OSFI, 2013).

Enterprise Risk Management is increasingly becoming a key element of good corporate governance. Some companies have developed sophisticated and institutionalized ways to ensure that risk is identified and analyzed. Others have no risk management capacity (Adamson, March 22, 2011). While it is impossible to eliminate risks, companies have been developing processes and policies to improve how risks are identified and analyzed. It is these techniques of risk management that are increasingly becoming a key component of good corporate governance.

The board of directors, senior management, external auditors and internal auditors are the "cornerstones of the foundation on which effective corporate governance must be built", (IIA, 2002). Sobel and Reding (2004) include "risk owners". These are people in a corporation who are responsible and accountable for managing risks. Some large organizations, especially in banking and insurance, appoint a Chief Risk Officer (CRO) or other senior executive. Others have risk management committees or other coordinating mechanisms (Lindsay, 2003; Lawlor, 2012; Caldwell, 2012). The formation of a risk committee or the appointment of a CRO sends out a strong message that the company is taking risk management seriously (Lawlor, 2012).

What is the appropriate role of the board in ERM? According to Caldwell (2012), traditional models support the view that boards should not be involved in day-to-day risk management. Rather, through their risk oversight role, directors should be

able to satisfy themselves that effective risk management processes are in place and functioning. The risk management system should allow management to bring to the board's attention the company's material risks. Management is directly responsible for ERM. The board should, however, assume ultimate responsibility for corporate governance (Sobel and Reding, 2004). The board plays a pivotal role in approving the overall strategy and risk appetite, and oversees senior management. It should probe, question and get answers from management to ensure that risk has been fully considered in the strategic and business planning process (Lindsay, 2003; Sheath, 2010).

Beasley et al., (2008) found that ERM is having impacts on the internal audit function and that these impacts are greatest when the organization has a more complete ERM framework in place. Complete ERM adoption is a significant undertaking and can provide numerous opportunities for internal audit involvement.

The AICPA (2010) Audit Committee Brief explores the relationship between ERM, corporate governance and internal control (IC). Corporate governance functions essentially to enable an organization to reach long-term goals and objectives. ERM exists as a subset of corporate governance, and ICs as a subset of ERM. ICs focus on a smaller scale within the company, sometimes ignoring the strategic objectives that ERM includes. Knight (2006) argued that corporate governance; ERM and IC are interrelated and interdependent. He further claimed that corporate governance may be regarded as the glue which holds an organization together in pursuit of its objectives.

3. Disclosures of Erm Information by U.S. and Canadian Corporations

The mandatory disclosures of risk reporting by the Financial Accounting Standards Board (FASB), the Securities and Exchange Commission (SEC), and the New York Stock Exchange (NYSE) are examined here. The FASB and the NYSE require companies to provide information about their exposure to risk, financial and market risk disclosures and financial instrument disclosures. The US GAAP regulations require detailed disclosures for fair value accounting (FVA) of financial instruments (FASB, 2006). In the US, FVA was a default option in accounting for some assets prior to 1993 (i.e. lower of cost or market). In 1993, the FASB, through SFAS No. 115 mandated that some securities be accounted for at their fair value, thus directly affecting a firm's balance sheet and income statement. According to Magnan (2009), the main rationale for SFAS 115 was the reduction of gains trading by financial institutions' managers (i.e. the ability to choose how and when unrealized securities portfolio gains are recognized into the income statement). This was replaced by SFAS No. 157, FASB (2006). FASB (2006) formally defines fair value and frames its measurement and disclosures of risk. FASB (1998) Accounting for Derivative Instruments and Hedging Activities, SFAS, 133, requires mandatory disclosures of financial instruments use and risk exposure to financial and market risks reported in the footnotes of the financial statements. This standard has been revised by the FASB in 2008.

The NYSE Corporate Governance rules now include explicit requirements for NYSE registrant audit committees to assume specific responsibilities with respect to risk assessment and risk management, including risks beyond financial reporting (NYSE 2003). They require that the audit committee discuss guidelines and policies that govern the process by which risk assessment and risk management is undertaken. Discussions should address major financial risk disclosures and the steps the board has taken to monitor and control such exposures, including a general review of the company's risk management programs. The NYSE rules permit the creation of a separate committee or subcommittee to be charged with the primary risk oversight function (Harvard Law School Forum, 2009).

In July, 2009, the SEC proposed new rules to improve corporate disclosures regarding risk, compensation and corporate governance matters. This became effective on February 28, 2010. Companies are now required to implement these new disclosures in proxy and information statements, annual reports and registration statements. These disclosures are designed to better enable shareholders to evaluate the leadership of public companies and increase corporate accountability by increasing transparency in the following areas:

(a) Risk - by requiring disclosure of the board's role in risk oversight and compensation risks.

(b) Governance and Director Qualifications - by requiring more disclosure about director background and qualifications (SEC, 2009).

In Canada, mandatory accounting rules are set by the Canadian Institute of Chartered Accountants (CICA). In particular, the CICA Handbook Section 3860 requires that firms disclose any information that assists users of financial statements to assess the risks related to financial instruments. These risks include price risk (currency risk, interest rate risk and market risk), credit risk, liquidity risk and cashflow risk. (Canada adopted International Financial Reporting Standards (IFRS) on January 1, 2011 for listed companies. The IFRS on Fair Value, IFRS 13, is applicable after January 1, 2013). The US GAAP regulations therefore require more specific, detailed disclosures for fair value of financial instruments (FASB, 2008), and accounting for derivative instruments and hedging activities (FASB, 1998).

3.1 Management Discussion and Analysis Risk Disclosures

Risk disclosures in the Management Discussion & Analysis (MD&A), both in the US and Canada are voluntary. The US Securities and Exchange Commission (SEC) requires publicly traded companies to disclose "risk factors" in their annual reports (10-K) and to update them in their quarterly 10-Q reports, if they change. The factors to be disclosed, defined in the SEC's prospectus requirements are "the most significant factors that make the offering speculative and risky" (ICAEW, 2011).

Both in the US and Canada, securities exchange regulators require that registrant firms disclose certain information, including risk, mainly in the MD&A sections of the 10-K reports in the US and in the annual reports in Canada. In the US, the SEC requires companies (a) to identify any known trends, or any known demands, commitments, events or uncertainties that will likely affect the company's liquidity (Regulation S-K, Item 303, paragraph (a)(2)). (b) to describe any known material trends in the registrants' capital resources, and (c) to describe any known trends or uncertainties that will impact on net sales or revenues or income from continuing operations.

The motivation for the requirements is the risk that users of the company's financial statements will draw unwarranted conclusions about the future from the historical information in the statements (ICAEW, 2011).

The Ontario Securities Commission (OSC) in Canada requires companies to disclose certain information in the MD&A section of the financial statements. The MD&A requires that the company:

"discuss important trends and risks that have affected the financial statements, and trends and risks that are reasonably likely to affect them in the future."

It is neither necessary nor useful to provide disclosures about every risk and uncertainty that a company faces. It is important for MD&A preparers first to identify a complete set of risks and then consider those that merit disclosure (CICA, 2008).

The MD&A should be written for current and prospective investors to help them decide whether to invest or continue to invest in the entity. It should provide a narrative description "through the eyes of management". In terms of the content of risk disclosures in the MD&A, it is important to provide investors not only with an explanation of each risk and the likelihood that it will materialize, but also an indication of how its materialization could affect the company's business and its performance. Investors are also interested in understanding management's risk tolerance. They want to know about actions or strategies, if any, that a company has taken or implemented to mitigate identified risks (CICA, 2008).

The MD&A requirements, both in the US and Canada, are for information that cannot be standardized. The SEC's guidance states:

"The MD&A requirements are intentionally flexible and general. Because no two registrants are identical, good MD&A disclosure for one registrant is not necessarily good MD&A disclosure for another. The same is true for MD&A disclosure of the same registrant in different years."

Canada has requirements for the MD&A similar to those in the US (ICAEW, 2011).

3.2 Sarbanes - Oxley Act

The US Sarbanes-Oxley Act of 2002 (SOX, 2002) raised the attention devoted to internal controls (section, 404). It has imposed numerous requirements on companies and boards, CEOs, CFOs and auditors' certification of quarterly and annual financial statements. While not directly tied to risk oversight, compliance should directly map into risk management (Magnan and Makarian, 2009; Harvard Law School Forum, 2009; ICAEW, 2011).

3.3 Prospectus and Annual Reports

Firms disclose more about risks in their prospectuses than in their annual reports and do so without excessive boilerplate (ICAEW, 2011). There is a view that prospectus disclosures about risks are rightly more extensive than those found in the annual report since it is not expected that the annual report would keep up to the disclosure requirements found in the prospectus. The risk considerations are wide-ranging. Topics include environmental, pricing, foreign exchange, labour relations, competition and all other relevant maters (AICPACICA, 1999; Beretta and Bozzolan, 2004).

According to ICAEW (2011), the prospectus is an attempt to raise money from people who are deemed to be in a state of ignorance about the business. The annual report addresses those who have already decided to become investors in the business and, therefore, they can be reasonably assumed not to be in a state of ignorance about it. Therefore, it should not be surprising to find that annual reports currently disclose less about risks than those found in prospectuses (AICPACICA, 1999; Beretta and Bozzolan, 2004; ICAEW, 2011).

4. Research Methodology

The 2007 and 2008 annual reports of 189 S&P 500 Index corporations in the energy, materials, industrials, and consumer discretionary sectors were examined, particularly the Management's Discussion and Analysis (MD&A) and the Notes to the Financial Statements.

The focus on these four sectors facilitated sectoral comparisons with 127 Canadian corporations

listed on the S&P TSX Composite Index. These four sectors comprise more than 81% of the 156 non-financial companies on the S&P TSX (for 2007 and 2008).

Fourteen different types of risks were identified. These were categorized into three groups:

- **Financial:** Foreign Exchange, Interest Rate, Credit, Market, Economic
- **Business:** Political, Technology, Government Regulation, Weather, Seasonality
- **Operational:** Environmental, Operational, Supplier, Natural Resource

Using content analysis, we identified instances where each type of risk was mentioned in the annual reports; this mode of analysis has been widely used in the accounting research literature, particularly for examining social and environmental disclosures (Milne and Adler, 1999; Zeghal and Ahmed, 1990).

5. Results and Analysis

The number of disclosures is an indication of how diligently companies respond to the requirements described previously. While only financial and market risks are mentioned specifically in these requirements, all important risks are to be disclosed.

In this section, we examine:

- the number of S&P 500 corporations disclosing risks and the average number of risks disclosed, before and after the financial crisis;
- the number of TSX corporations disclosing risks and the average number of risks disclosed, before and after the financial crisis;
- differences in the percentages of S&P 500 and TSX corporations disclosing risks and in the average number of risks disclosed;
- changes in the market capitalization of companies on the S&P 500 and TSX Composite Indices.

It should be noted again that this study looked only at the S&P 500 and TSX corporations in the energy, materials, industrials, and consumer discretionary sectors.

5.1Risk Disclosures by S&P 500 Corporations

The Number of Companies Disclosing Risk by Type of Risk

Table 1 displays, by type of risk, the number (and proportion) of S&P 500 companies disclosing each of fourteen types of risk in 2007 and 2008. For each of the three general categories of risk, the overall number is the number reporting at least one of the risks under that category.

Table 1. Number of S&P 500 Companies Disclosing Risks by Type of Risk, in 2007 and 2008

	2007		2008	
Type of Risk	**Number**	**Relative Frequency**	**Number**	**Relative Frequency**
FINANCIAL RISKS				
Foreign Exchange	163	86%	167	88%
Interest Rate	175	93%	183	97%
Credit	143	76%	144	76%
Market	188	99%	188	99%
Economic	189	100%	189	100%
Overall	**189**	100%	**189**	100%
BUSINESS RISKS				
Political	149	79%	151	80%
Technology	95	50%	95	50%
Govt Regulation	189	100%	189	100%
Weather	98	52%	98	52%
Seasonality	87	46%	87	46%
Overall	**189**	100%	**189**	100%
OPERATIONAL				
Environmental	161	85%	161	85%
Operational	52	28%	52	28%
Supplier	81	43%	83	44%
Natural Resource	24	13%	25	13%
Overall	**182**	96%	**182**	96%

Overall, all 189 S&P 500 companies reported at least one type of risk in both 2007 and

2008. The number of companies disclosing risks increased the most for interest rate risk (+4%, from 175 to 183), and the second most for foreign exchange risk (+2%, from 163 to 167). No other type of risk increased by more than 2. However, if we were to treat the proportions as independent estimates from random samples (which they are not), then none of these increases would be statistically significantly different from zero. Whether the differences are of practical significance is a subjective judgment.

The five types of risk classified as Financial Risks were reported most frequently, with both market and economic risks being reported by virtually all companies. The five types of risk classified as Business Risks were reported as a group somewhat less frequently, with only government regulation risk being reported by all companies. Finally, the four types of risk classified as Operational Risks were reported least frequently, with only environmental risks being disclosed by more than half of all companies.

The Average Number of Risk Disclosures by Sector

Table 2 shows, by sector, the mean and standard deviation of the number of risks reported by S&P companies in 2007 and 2008 (the maximum number of risks that can be reported by any company is 14). On average, companies in the energy sector reported more risks than each of the other three sectors. If the companies in each sector were treated as a random sample (which they were not), then the differences between the energy sector and each of the other three sectors would be highly statistically significant ($p < 0.003$).

Table 2. Average Number of Risks Disclosed (out of 14) by S&P 500 Companies by Sector, in 2007 and 2008

Sector	Number of S&P 500 Companies	2007		2008	
		Mean	Standard Deviation	Mean	Standard Deviation
Energy	40	10.6	1.7	10.7	1.7
Materials	29	9.2	1.7	9.4	1.7
Industrials	54	9.3	1.8	9.3	1.8
Consumer Discretionary	66	9.2	1.8	9.3	1.7
Average	**189**	**9.5**	**1.8**	**9.6**	**1.8**

Overall, the number of risks disclosed increased slightly from 9.5 in 2007 to 9.6 in 2008, an increase of 1%). Broken down by sector, the increase is highest in the materials sector and is non-existent in the industrials sector.

5.2 Risk Disclosures by TSX Corporations

The Number of Companies Disclosing Risk by Type of Risk

Table 3 displays, by type of risk, the number (and proportion) of TSX companies disclosing different types of risk in 2007 and 2008.

Overall, all 127 TSX companies reported at least one type of risk in both 2007 and 2008. Moreover, Financial Risks were reported by all companies. Of the four types of risk classified as Operational Risks, 121 (95%) of companies reported at least one type of risk. Of the five types of risk classified as Business Risks, 118 (93%) reported at least one type of risk in 2007 and 119 (94%) in 2008.

In the Financial Risks category, the number of companies disclosing risks increased the most for credit risk (from 101 to 110 or +7%), and the second most for interest rate risk (from 98 to 103 or +4%) and for economic risk (from 108 to 113 or +4%). In the Business Risks category, the greatest increase in the number of companies disclosing risks was for political risk (from 73 to 77 or +4%). In the Operational Risks category, environmental risk increased the most (from 98 to 101 or +3%); in the Financial Risks category, foreign exchange risk increased from 119 to 122 or +2%. No other type of risk increased by more than 2. However, if we were to treat the proportions as independent estimates from random samples (which they are not), then none of these increases would be statistically significantly different from zero. Whether the differences are of practical significance is a subjective judgment.

Table 3. Number of TSX Companies Disclosing Risks by Type of Risk, in 2007 and 2008

	2007		2008	
Type of Risk	**Number**	**Relative Frequency**	**Number**	**Relative Frequency**
FINANCIAL RISKS				
Foreign Exchange	119	94%	122	96%
Interest Rate	98	77%	103	81%
Credit	101	80%	110	87%
Market	91	72%	92	72%
Economic	108	85%	113	89%
Overall	**127**	100%	**127**	100%
BUSINESS RISKS				
Political	73	57%	77	61%
Technology	28	22%	30	24%
Govt Regulation	108	85%	110	87%
Weather	28	22%	28	22%
Seasonality	23	18%	22	17%
Overall	**118**	93%	**119**	94%
OPERATIONAL				
Environmental	98	77%	101	80%
Operational	116	91%	116	91%
Supplier	30	24%	31	24%
Natural Resource	10	8%	10	8%
Overall	**121**	95%	**121**	95%

The Average Number of Risk Disclosures by Sector

Table 4 shows, by sector, the number (and standard deviation) of risks reported by TSX companies in 2007 and 2008 (the maximum number of risks that can be reported by any company is 14). On average, companies in the materials sector reported fewer risks than each of the other three sectors. If the companies in each sector were treated as a random sample (which they were not), then the differences between the materials sector and each of the other three sectors would be highly statistically significant ($p < 0.005$).

Table 4. Average Number of Risks Disclosed (out of 14) by TSX Companies by Sector, in 2007 and 2008

Sector	**Number of TSX Companies**	**2007**		**2008**	
		Mean	**Standard Deviation**	**Mean**	**Standard Deviation**
Energy	45	8.7	1.7	8.8	1.6
Materials	44	6.8	2.3	7.3	2.0
Industrials	20	9.1	2.3	9.4	2.3
Consumer Discretionary	18	8.8	1.7	8.9	1.6
Average	**127**	**8.1**	**2.2**	**8.4**	**2.0**

Overall, the number of risks disclosed increased slightly from 8.1 in 2007 to 8.4 in 2008, an increase of 3.7%. Broken down by sector, the increase is highest in the materials sector (from 6.8 to 7.3) and second highest in the industrials sector (from 9.1 to 9.4). These increases cannot be considered as statistically significant, but whether the increases are of practical significance is a subjective judgment.

5.3 Comparison of Risk Disclosures for S&P 500 and TSX corporations

Differences in the Percentages of Companies Disclosing Risks by Type of Risk

Table 5 displays, by type of risk, the difference in the relative numbers of S&P 500 and TSX corporations disclosing risks, with a positive difference denoting a proportion of S&P 500 companies and a negative difference denoting a higher proportion of TSX companies. The standard errors of the differences are estimated, treating the two groups of S&P 500 and TSX companies as random samples (which they were not).

Table 5. Differences in the Percentages of S&P 500 and of TSX Companies Disclosing Risks by Type of Risk, in 2007 and 2008

	2007		2008	
Type of Risk	**Difference**	**Standard Error**	**Difference**	**Standard Error**
FINANCIAL RISKS				
Foreign Exchange	-8%	3.3%	-8%	2.9%
Interest Rate	16%	4.2%	16%	3.7%
Credit	-4%	4.7%	-11%	4.3%
Market	27%	4.0%	27%	4.0%
Economic	15%	3.2%	11%	2.8%
Overall	0%	0.0%	0%	0.0%
BUSINESS RISKS				
Political	22%	5.3%	19%	5.2%
Technology	28%	5.2%	26%	5.3%
Govt Regulation	15%	3.2%	13%	3.0%
Weather	30%	5.2%	30%	5.2%
Seasonality	28%	5.0%	29%	4.9%
Overall	7%	2.3%	6%	2.1%
OPERATIONAL				
Environmental	8%	4.5%	5%	4.4%
Operational	-63%	4.1%	-63%	4.1%
Supplier	19%	5.2%	20%	5.2%
Natural Resource	5%	3.4%	5%	3.4%
Overall	1%	2.4%	1%	2.4%

Overall, the relative number of disclosures was higher for S&P 500 companies than for TSX companies. Broken down by type of risk, the difference was greatest for operational risk by far, with the proportion of TSX companies a +63% higher than that of S&P 500 firms. All of the remaining differences that were more than very minor showed a larger relative number of disclosures for S&P 500 than for TSX companies. The differences in the percentages were 30% for weather risk, 27% to 28% for market, technology, and seasonality risks, 22% for political risks, 19% for supplier risk, and 15%-16% for interest rate, economic, and government regulation risks. If these differences were treated as coming from independent random samples (which they were not), then all of them would be considered to be highly statistically significant.

Only the difference in the relative number of credit risks reported changed by a noticeable amount, from 4% higher for TSX companies in 2007 to 11% higher in 2008.

Differences in the Average Number of Disclosures by Sector

Table 6 shows, by sector, the difference in the relative number of risk disclosures between S&P 500 and TSX corporations, with a positive difference denoting a higher number for S&P 500 companies and a negative difference denoting a higher number for TSX companies.

Table 6. Differences by Sector in the Number of Risk Disclosures between S&P 500 and TSX companies in 2007 and 2008

Sector	Number of S&P 500 Companies	2007		Number of TSX Companies	2008	
		Difference	Standard Error		Difference	Standard Error
Energy	40	1.90	0.37	45	1.90	0.36
Materials	29	2.40	0.47	44	2.10	0.44
Industrials	54	0.20	0.57	20	-0.10	0.57
Consumer Discretionary	66	0.40	0.46	18	0.40	0.43
Average	**189**	1.40	0.24	**127**	1.20	0.22

For each of the four sectors, the relative number of risk disclosures by S&P 500 companies was higher than by TSX companies. However, these differences were much greater for the energy and materials sectors than for the industrials and consumer discretionary sectors. The differences in the energy and materials sectors would be considered very highly statistically significantly different from zero, if they had come from independent random samples (which they did not).

5.4 Changes in Market Capitalization

Table 7 shows the market capitalization (in billions of dollars) of companies on the S&P 500 in 2007 and 2008. The differences between the means and medians indicate how skewed the market capitalizations are. These differences are the greatest for companies in the energy sector and the skewness is highlighted by the sizes of the standard deviations.

Table 7. Market Capitalization ($ billions) of S&P 500 Companies

	2007			2008		
	Median	Mean	Stdev	Median	Mean	Stdev
Energy	19.7	44.9	89.6	9.62	28.8	69.8
Materials	8.67	14.00	11.92	4.96	8.95	12.51
Industrials	13.04	26.93	50.91	8.48	15.89	24.44
Consumer Discretionary	11.25	18.47	19.38	6.36	13.08	15.87

Table 8 shows the market capitalization of companies (in billions of dollars) on the S&P TSX Composite in 2007 and 2008. The differences between the means and medians again indicate how skewed the market capitalizations are. Again it is the energy sector with the highest skewness.

Table 8. Market Capitalization ($ billions) of S&P TSX Composite Companies

	2007			2008		
	Median	Mean	Stdev	Median	Mean	Stdev
Energy	2.32	8.79	14.35	1.27	6.08	10.09
Materials	2.13	5.27	9.34	.93	4.00	8.30
Industrials	1.76	3.88	5.22	1.25	2.91	4.70
Consumer Discretionary	2.16	4.86	6.10	1.70	3.64	5.38

Both tables show how much the market capitalization dropped from 2007 to 2008. The markets reacted very quickly to the 2008 financial crisis.

Conclusions

The working hypothesis was that the 2008 financial crisis had an impact on risk disclosures by major corporations on the S&P 500 since it was thought that a heightened awareness of risks resulting from the crisis would be reflected in the annual reports.

Contrary to expectations, a comparison of annual reports before and after the financial crisis found that the 2008 financial crisis hardly had any impact on the risk disclosures of major U.S. corporations in the energy, materials, industrials, and consumer discretionary sectors. This finding corroborates earlier findings based on the risk disclosures of non-financial Canadian companies on the S&P TSX Composite Index (Maingot, Quon and Zeghal, 2012).

Overall, the average number of disclosures increased from 9.5 to 9.6 (+1.0%) for S&P 500 companies, and from 8.1 to 8.4 (+3.7%) for TSX companies (the maximum number of disclosures per company is 14). The average number of disclosures per company was higher, but the increase from 2007 to 2008 was smaller for S&P 500 compared to TSX companies. This suggests that the S&P companies followed the requirements for reporting more diligently. Clearly, these increases were not of a magnitude that one might have expected after a major financial crisis.

Broken down by type of risk, the proportion of companies disclosing risks was generally higher for S&P 500 than for TSX companies, except for foreign exchange, credit and operational risks. For each of the four sectors, the average number of disclosures was higher for S&P 500 than for TSX companies. However, these differences were much greater for the energy and materials sectors than for the industrials and consumer discretionary sectors.

We conclude that the small increases in the number of risk disclosures by S&P 500 and TSX companies after the financial crisis did not make the readers of the annual reports more aware of the increased risks that companies faced in the wake of the 2008 financial crisis. Given the precipitous drop in market capitalization from 2007 to 2008, one might have thought that this might be reflected in the risk profiles of companies. That this was not the case may be more indicative of the reluctance of companies to be totally transparent than of companies not being aware of increased risks.

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