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

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Abstract

The effect of the financial crisis on the level of 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 Index companies in the consumer discretionary, energy, industrials, and materials sectors. We found that the 2008 financial crisis had a negligible impact on the level of risk disclosures by major non-financial U.S. and Canadian corporations. Comparing the average levels of risks disclosed between the two countries, any differences in the level of risk exposure, risk consequences, or risk management could not be considered to be statistically significant.

Keywords: Financial Crisis, Risk Level, Canada

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1. Introduction

In an earlier paper, Maingot et al (2014) examined the *number* of risk disclosures made by non-financial companies on the S&P 500 and the S&P TSX Composite Index. The objectives of this study are to continue that analysis by focusing on the *level* of the risks disclosed. More specifically, the objectives are:
(a) to examine the level of risk disclosures by non-financial U.S. companies and to determine the impact of the 2008 financial crisis on these disclosures;
(b) to examine the level of risk disclosures by non-financial Canadian companies and to determine the impact of the 2008 financial crisis on these disclosures; and
(c) to compare the levels of risk disclosures by these U.S. companies with Canadian companies.

To facilitate the sector-by-sector comparison between the two countries, the four largest non-financial sectors on the S&P TSX Composite Index were selected and 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 were examined.

The world is still recovering from the financial crisis and resulting economic recession which began in 2007 in the United States and spread to the major economies around the world (Magnan and Markarian, 2011). Since the crisis, there has been a growing demand for better reporting of risks, and there is a widespread view that companies reporting risks ahead of the crisis failed to provide adequate disclosures and information about these risks (ICAEW, 2011). Enterprise Risk Management (ERM) has become an effective approach to managing and optimizing risks (Paape and Speklé, 2012).

Investors need to understand the risks that a company takes to create value (Beretta and Bozzolan, 2004). Therefore, 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 (CICA, 2008).

Instead of managing risks from a silo-based approach, ERM is a holistic approach where all risks are viewed together within a coordinated and strategic framework (Lam, 2006, Nocco and Stulz, 2006). Companies are aligning corporate governance with risk management (Sobel and Reding, 2004), and ERM is increasingly becoming a key element of good corporate governance. ERM is also having impacts on internal control and the internal audit function (Beasley et. al., 2008; SOX, 2002; Harvard Law School Forum, 2009).

In both the US and Canada, mandatory disclosure of risk reporting are required by the Financial Accounting Standards Board (FASB), the Securities and Exchange Commission (SEC), the New York Stock Exchange (NYSE), and the Canadian Institute of Chartered Accountants (CICA). However, risk disclosures in the Management Discussion and

Analysis (MD&A) section of the annual reports are voluntary in both countries.

2. 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 sector-by-sector 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; Zéghal and Ahmed, 1990). The risks disclosed were categorized in accordance with Table 1, as discussed in AICPA/CICA (1999).

Table 1. Categorization of Risk Exposure, Consequence and Management

Risk Exposure	Risk Consequence	Risk Management
Rare	Insignificant	Accept Risk
Improbable	Minor	Reduce Risk
Possible	Moderate	Transfer Risk
Probable	Major	Avoid Risk
Certain	Catastrophic	

3. Results and Analysis

Maingot et al (2014) examined the number of disclosures as an indication of how diligently companies responded 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 paper, we follow with an analysis of the average disclosed level of risk between Canadian and U.S. corporations, and changes in these levels between 2007 and 2008.

3.1 Comparisons of the Disclosed Levels of Risk Exposure, Risk Consequences and Risk Management

3.1.1 The Average Level of Risk by Type of Risk

Tables 2 and 3 display the average levels of risk exposure, risk consequences, and risk management by type of risk for S&P 500 and TSX companies, respectively, for 2007 and 2008.

Table 2. Average Levels of Risk Exposure, Risk Consequences and Risk Management Disclosed by S&P 500 Companies, by Type of Risk, in 2007 and 2008

Type of Risk	Average Level of Risk Exposure		Average Level of Risk Consequences		Average Level of Risk Management	
	2007	2008	2007	2008	2007	2008
FINANCIAL RISKS						
Foreign Exchange	4.90	4.89	2.64	2.64	2.24	2.21
Interest Rate	4.98	4.96	2.62	2.60	2.37	2.32
Credit	4.64	4.66	2.92	2.94	1.88	1.88
Market	4.96	4.97	3.24	3.24	1.77	1.77
Economic	4.32	4.37	2.92	2.93	1.30	1.30
BUSINESS RISKS						
Political	4.09	4.13	2.74	2.74	1.20	1.20
Technology	4.13	4.15	2.98	2.98	1.54	1.54
Government Regulation	4.83	4.84	3.10	3.10	1.65	1.65
Weather	4.08	4.13	2.92	2.93	1.10	1.10
Seasonality	4.40	4.43	2.87	2.90	1.48	1.48
OPERATIONAL						
Environmental	4.91	4.91	3.44	3.44	1.76	1.75
Operational	4.12	4.13	3.33	3.33	1.63	1.63
Supplier	3.89	3.89	2.78	2.77	1.28	1.31
Natural Resource	3.88	3.84	3.08	3.04	1.31	1.30
OVERALL	**4.57**	**4.58**	**2.96**	**2.96**	**1.67**	**1.67**

Coding of Risk Levels		
Levels of Risk Exposure	***Levels of Risk Consequence***	***Levels of Risk Management***
1 - Rare	*1 - Insignificant*	*1 - Accept Risk*
2 - Improbable	*2 - Minor*	*2 - Reduce Risk*
3 - Possible	*3 - Moderate*	*3 - Transfer Risk*
4 - Probable	*4 - Major*	*4 - Avoid Risk*
5 - Certain	*5 - Catastrophic*	

Table 3. Average Levels of Risk Exposure, Risk Consequences and Risk Management Disclosed by TSX Companies by Type of Risk, in 2007 and 2008

Type of Risk	Average Level of Risk Exposure		Average Level of Risk Consequences		Average Level of Risk Management	
	2007	2008	2007	2008	2007	2008
FINANCIAL RISKS						
Foreign Exchange	4.96	4.93	2.88	2.87	2.26	2.27
Interest Rate	4.79	4.78	2.55	2.49	2.05	2.10
Credit	3.26	3.58	2.38	2.50	1.87	1.93
Market	4.98	4.98	3.27	3.27	1.40	1.40
Economic	4.86	4.91	3.38	3.61	1.75	1.83
BUSINESS RISKS						
Political	4.60	4.61	3.39	3.39	1.34	1.32
Technology	4.71	4.70	3.46	3.50	1.52	1.52
Government Regulation	4.61	4.61	3.26	3.27	1.35	1.35
Weather	4.52	4.52	3.26	3.26	1.45	1.45
Seasonality	4.87	4.91	2.91	2.91	1.53	1.32
OPERATIONAL						
Environmental	4.58	4.59	3.26	3.26	1.72	1.75
Operational	4.54	4.54	3.63	3.63	2.09	2.08
Supplier	3.75	3.79	3.27	3.26	1.63	1.58
Natural Resource	4.20	4.20	4.00	4.00	1.10	1.10
OVERALL	**4.56**	**4.59**	**3.14**	**3.16**	**1.75**	**1.77**

Coding of Risk Levels		
Levels of Risk Exposure	***Levels of Risk Consequence***	***Levels of Risk Management***
1 - Rare	*1 - Insignificant*	*1 - Accept Risk*
2 - Improbable	*2 - Minor*	*2 - Reduce Risk*
3 - Possible	*3 - Moderate*	*3 - Transfer Risk*
4 - Probable	*4 - Major*	*4 - Avoid Risk*
5 - Certain	*5 - Catastrophic*	

There was virtually no difference between the average levels of disclosure from 2007 to 2008 for the S&P 500 companies and only minor increases for the TSX companies. This general observation applied to all types of risk and to all three aspects of risk (exposure, consequences and management) for both S&P 500 and S&P TSX companies. The only exceptions were credit risk and economic risk disclosures by TSX companies where there were some larger increases in the average level of risk disclosed, particularly in the level of risk exposure for credit risks and in the level of risk consequences for economic risks (the standard errors[1] of the differences based on paired samples are 0.06 and 0.04, respectively).

Looking at the three aspects of risk separately, there was no difference in the average disclosed level of risk exposure between S&P 500 and TSX companies. TSX companies disclosed a higher average level of risk consequences (3.15 versus 2.96) and a higher average level of risk management (1.76

[1] It is acknowledged that the companies were not randomly chosen and the standard error calculation may not be applicable; however, the standard error does give some sense of the nature of the differences.

versus 1.67), but these differences could not be considered statistically significant.

Table 4 shows the 2008 differences between S&P 500 and TSX companies in the average levels of risks disclosed, for different types of risk. The standard errors of the differences are displayed; these would be valid if we were to treat each sample as randomly chosen, which they were not. However, the calculated values give some context to the nature of the differences.

Table 4. Differences by Type of Risk in the 2008 Average Levels of Risk Exposure, Risk Consequences and Risk Management Disclosures between S&P 500 and TSX Companies

Type of Risk	Difference in Average Level of Risk Exposure		Difference in Average Level of Risk Consequences		Difference in Average Level of Risk Management	
	Diff	SE	Diff	SE	Diff	SE
FINANCIAL RISKS						
Foreign Exchange	-0.04	0.05	-0.23	0.06	-0.06	0.10
Interest Rate	0.18	0.07	0.11	0.08	0.22	0.10
Credit	**1.08**	0.10	0.44	0.10	-0.05	0.07
Market	-0.01	0.03	-0.03	0.07	0.37	0.06
Economic	-0.54	0.08	-0.68	0.07	-0.53	0.08
BUSINESS RISKS						
Political	-0.48	0.10	-0.65	0.09	-0.12	0.07
Technology	-0.55	0.09	-0.52	0.13	0.02	0.10
Government Regulation	0.23	0.07	-0.17	0.07	0.3	0.06
Weather	-0.39	0.13	-0.33	0.13	-0.35	0.13
Seasonality	-0.48	0.13	-0.01	0.13	0.16	0.13
OPERATIONAL						
Environmental	0.32	0.06	0.18	0.08	0	0.07
Operational	-0.41	0.14	-0.3	0.10	-0.45	0.11
Supplier	0.1	0.18	-0.49	0.13	-0.27	0.11
Natural Resource	-0.36	0.34	-0.96	0.23	0.2	0.19

Looking at the different types of risk exposure, the largest and most interesting difference was in credit risk, with S&P companies reporting an average of 4.65 (closer to "certain" than to "probable") and TSX companies reporting an average of 3.40 (from 3.26 in 2007 to 3.58 in 2008), which ratings are between "possible" and "probable". This reflected perhaps a more stable banking sector in Canada than in the U.S. and the origins of the financial crisis in the U.S. The next largest differences were in economic, political, technology, weather, seasonal, operational and natural resource risk exposures, with the Canadian firms reporting higher risks in all these types of risk. If we were to treat the samples as though they were randomly chosen, then all these differences would be statistically significant.

In risk consequences, the largest difference is seen in natural resource risk, with S&P companies reporting an average of 3.06 ("moderate risk consequences") and TSX companies reporting an average of 4.00 ("major risk consequences"). However, it should be noted that only 13% of S&P 500 companies and 8% of TSX companies reported any natural resource risk. Differences in the average risk consequences of about 0.5 are seen in economic, political, technology, supplier, and credit risks. TSX companies reported the higher level of risk consequences for the first four types of risk above, but the S&P 500 companies reported a higher level of risk consequences for credit risks. Not only did the S&P 500 companies report a higher level of credit risk exposure, but they also reported a higher level of credit risk consequences. If we were to treat the samples as though they were randomly chosen, then all these differences would be statistically highly significant.

In risk management disclosures, the largest differences between S&P 500 and TSX companies were in economic and operational risks, with TSX companies reporting a more activist risk management strategy than S&P 500 companies. The next largest differences were in supplier and weather risk management strategies where TSX companies reported higher levels of risk management strategies, and in market and interest rate risks where S&P 500 companies reported higher levels. If we were to treat the samples as though they were randomly chosen, then all these differences would be statistically highly significant.

3.1.2 The Average Level of Risk by Sector

Tables 5 and 6 display the average levels of risk exposure, risk consequences, and risk management by sector for S&P 500 and TSX companies, respectively, for 2007 and 2008.

Table 5. Average Levels of Risk Exposure, Risk Consequences and Risk Management Disclosed by S&P 500 Companies by Sector, in 2007 and 2008

Sector	Number of Companies	Average Level of Risk Exposure		Average Level of Risk Consequences		Average Level of Risk Management	
		2007	2008	2007	2008	2007	2008
Energy	40	4.42	4.44	3.03	3.03	1.66	1.66
Materials	29	4.55	4.54	2.96	2.96	1.58	1.57
Industrials	54	4.62	4.64	2.94	2.94	1.77	1.76
Consumer Discretionary	66	4.63	4.65	2.92	2.92	1.65	1.64
OVERALL	**189**	**4.57**	**4.58**	**2.96**	**2.96**	**1.67**	**1.67**

Coding of Risk Levels		
Levels of Risk Exposure	Levels of Risk Consequence	Levels of Risk Management
1 - Rare	1 - Insignificant	1 - Accept Risk
2 - Improbable	2 - Minor	2 - Reduce Risk
3 - Possible	3 - Moderate	3 - Transfer Risk
4 - Probable	4 - Major	4 - Avoid Risk
5 - Certain	5 - Catastrophic	

Table 6. Average Levels of Risk Exposure, Risk Consequences and Risk Management Disclosed by TSX Companies by Sector, in 2007 and 2008

Sector	Number of Companies	Average Level of Risk Exposure		Average Level of Risk Consequences		Average Level of Risk Management	
		2007	2008	2007	2008	2007	**2008**
Energy	45	4.55	4.60	3.15	3.20	1.78	1.80
Materials	44	4.69	4.68	3.14	3.12	1.62	1.64
Industrials	20	4.55	4.58	3.28	3.36	1.79	1.84
Consumer Discretionary	18	4.36	4.40	2.95	2.92	1.87	1.87
OVERALL	**127**	**4.56**	**4.59**	**3.14**	**3.16**	**1.75**	**1.77**

Coding of Risk Levels		
Levels of Risk Exposure	Levels of Risk Consequence	Levels of Risk Management
1 - Rare	1 - Insignificant	1 - Accept Risk
2 - Improbable	2 - Minor	2 - Reduce Risk
3 - Possible	3 - Moderate	3 - Transfer Risk
4 - Probable	4 - Major	4 - Avoid Risk
5 - Certain	5 - Catastrophic	

In the previous section, we found that any differences in the average disclosed level of risk exposure, risk consequences, or risk management between S&P 500 and TSX companies could not be considered statistically significant, despite individual differences when broken down by type of risk.

Table 7 shows the 2008 differences by sector between S&P 500 and TSX companies in the average levels of risks disclosed. The standard errors of the differences are displayed; these assume that the companies were randomly selected from each sector or that they are representative of other companies in the population.

Table 7. Differences by Sector in the 2008 Average Levels of Risk Exposure, Risk Consequences and Risk Management Disclosures between S&P 500 and TSX Companies

Sector	Number of Companies Compared	Difference in Average Level of Risk Exposure		Difference in Average Level of Risk Consequences		Difference in Average Level of Risk Management	
		Diff	SE	Diff	SE	Diff	SE
Energy	40 vs 45	-0.16	0.05	-0.17	0.06	-0.14	0.06
Materials	29 vs 44	-0.14	0.07	-0.16	0.07	-0.07	0.08
Industrials	54 vs 20	+0.06	0.09	-0.42	0.10	-0.08	0.08
Consumer Discretionary	66 vs 18	+0.25	0.05	0.00	0.08	-0.23	0.07
OVERALL	189 vs 127	-0.01		-0.20		-0.10	

The average level of risk exposure reported by S&P 500 companies was higher than by TSX companies in the consumer discretionary sector. A smaller difference was seen in the industrials sector, again with a higher level of risk exposure among S&P 500 companies. However, for the energy and materials sectors, the average risk exposure levels were higher for the TSX companies. While the TSX companies in these sectors reported risk exposure less often, they reported higher average levels of risk. If the samples were randomly selected, then the calculated standard errors of the differences would suggest that the differences in the disclosed level of risk exposure was statistically significant for the consumer discretionary, energy and materials sector.

The average disclosed level of risk consequences was higher for TSX companies for three of the four sectors, but in the consumer discretionary sector, there was virtually no difference between TSX and S&P 500 companies. The non-zero differences were statistically significant.

Finally, the average disclosed level of risk management strategies was higher for TSX companies for each of the four sectors; however, only the differences in the energy and consumer discretionary sectors were statistically significant.

6. Conclusions

The working hypothesis was that the 2008 financial crisis had an impact on the level of risk disclosures by major corporations on the S&P 500. It was hypothesized 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 found that the 2008 financial crisis had minimal impacts on the level of disclosed risks for major U.S. corporations in the energy, materials, industrials, and consumer discretionary sectors. This finding corroborates earlier results based on the risk disclosures of non-financial Canadian companies on the S&P TSX Composite Index (Maingot, Quon and Zéghal, 2012).

There was virtually no difference between the average levels of disclosure from 2007 to 2008 for the S&P 500 companies and only minor increases for the TSX companies. This general observation applied to all types of risk and to all three aspects of risk (exposure, consequences and management) for both S&P 500 and TSX companies. The only exceptions were credit risk and economic risk disclosures by TSX companies where there were some larger increases in the average level of risk disclosed. These results are consistent with an earlier study (Maingot et al, 2014) which found that the financial crisis had very little impact on the number of risk disclosures.

Comparing the average levels of risks disclosed between the two countries, there was no difference in the average disclosed level of risk exposure between S&P 500 and TSX companies, and the non-zero differences in the average levels of risk consequences or in the average levels of risk management strategies could not be judged statistically significant.

For individual types of risks, we found that the S&P 500 companies reported not only a higher level of credit risk exposure, but also a higher level of credit risk consequences. This might be due to a more stable banking sector in Canada than in the U.S. However, the S&P companies reported credit risks less often (see Maingot et al, 2014). In risk management disclosures, the largest differences between S&P 500 and TSX companies were in economic and operational risks, with TSX companies reporting a more activist risk management strategy than S&P 500 companies.

Looking at all the types of risks combined and reporting only differences that are potentially statistically significant, the TSX companies reported higher levels of risk exposure in the consumer discretionary, energy and materials sectors, higher levels of risk consequences in the energy, industrials and materials sectors, and more activist levels of risk management in the consumer discretionary and energy sectors. The only sector where the TSX reported higher levels of risk exposure, risk consequences and risk management was the energy sector.

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