

The Relationship Between the Information Disclosure and  
the Firms' Risk Exposure:

A Canadian Study

By

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# **Abstract**

## **The Relationship Between the Information Disclosure and the Firms' Risk Exposure: Evidence from companies listed in the Toronto Stock Exchange**

**By Yijun Wang**

This paper utilizes an event-study in order to investigate the relationship between information disclosure and firms' risk exposure. 50 companies listed on the Toronto Exchange Stock as the samples are drawn from the whole Financial Service industry over 3 years from 2009 to 2011. By employing the disclosure index and calculating the Z-score for individual company, we analyze the characteristic of the relationship and several possibly potential causes.

The results of T-test indicate that information disclosure is significantly related to the firms' risk exposure. What is more, strategic and non-financial information is positively associated with risk exposure. While financial information has not significant impact on the risk exposure.

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# Chapter 1

## Introduction

After the financial crisis, risk management has become an increasingly important consideration for firms. Corporate governance has focused on the enterprise risk management (ERM) approach to improve performance.

Generally, companies suffer from both internal and external risk. Operating risk, market risk, credit risk, and equity risk all impact on companies. However, for the listed companies, they have to disclose their information to the public so that their shareholders, debt holders and potential investors will have information to make informed decisions. Then the question that arises is whether the more information that is disclosed to the public, will this voluntary information lead to a reduction in market risk and improve corporate governance.

A variety of articles have investigated and studied the relationship between risk information disclosure and enterprise risk management on corporate governance. This paper expects to study the relationship between information disclosure and firms' risk exposure. Instead of the risk information, we focus on financial information, nonfinancial information, and strategy

information in terms of the disclosure index referred in their work on China.

(Kun et al., 2008)

Finally, we will test the relationships within the information related to the risk exposure.

Chapter 2 reviews the literature articles and then, four hypotheses for the project are presented. Chapter 3 introduces briefly the methodologies used in the project and the sources of data. The results and analysis are covered in Chapter 4. Finally, Chapter 5 provides a summary of this report.

# Chapter 2

## Literature review and Hypotheses

### 2.1 Literature review

The risks involved in business have an essential impact on the life of the enterprise. At the extreme, serious risk may result in bankruptcy. Therefore, for a firm, enterprise risk management can play a key role.

An optimal enterprise risk management system is a comprehensive process that needs to consider a number of factors such as operational strategies inside the firm, market environment outside the firm, employment, liquidity and credit analysis. In addition, Abrams et al. (2007) pointed that this requires information collection and risk assessment. Consequently, there is a considerable relationship between the risk exposure and information of the firm.

In terms of the risk, an individual company will suffer several kinds such as operating, market, credit, and liquidity. However, the biggest risk is bankruptcy, which results in the ending of a firm and little opportunity to recovery.

Obaid (2011) viewed the information about the Z-score developed by Altman in 1968. It said that Z-score is a discriminate and predictive model to measure the distance to default of manufacturing companies. Initially, five ratios

with the certain weights were included in the model, but in the current proposed version and adjustment, the fifth ratio (sales/total assets) has been omitted since it gives a high value for non-manufacturing companies. As a result, the modified model consists of four re-assigned variables with respect to new weights. It is assumed that the default possibility or bankruptcy will happen if a Z-score is below 1.10 (Altman, 1968).

To manage both the quantitative and qualitative corporate financial disclosures, disclosure strategies should consider both the internal and external elements. It means that the disclosure decisions should include varied factors such as agency costs (Leftwich et al., 1981), information asymmetries (Hughes, 1989), disclosure related costs (Ali et al., 1994), and litigation costs (Skinner, 1994). Since the enterprise risk management is a part of the aspect belonging to the corporate governance, Christopher et al. (2010) claimed that the information environment should receive considerable attention both in determining the extent of the agency problems and in designing the mechanisms to allay these conflicts among the corporate constituencies.

In this study, we focus on the information asymmetry and a disclosure index is employed to measure the information asymmetry/signaling, which indicates the level of the information disclosure. Grossman (1981) and Spence (1973)

suggest that voluntary disclosure is an appropriate method to release information asymmetry problems, such as moral hazard and adverse selection.

This paper aims to study the function of the information disclosure in the firm's risk exposure, so a classification for the information is required. A similar to the approach mentioned by Kun et al. (2008) detailing three kinds of information is identified: strategic information, financial information, and non-financial information.

Financial information can be viewed from the financial statements in the company's annual report and according to the accounting issues to identify the quality and quantity of the financial information. The actual non-financial information that a business review should unfold, when relevant, contains certain wide issues, the corresponding policies and the effectiveness of those policies. For instance, the range of specified issues comprises: environmental matters, company employees, supplier relationships, and social and community matters. In principle, then, companies might be expected to report on a broad range of social and environmental (Henriques et al., 2010).

## **2.2 Hypotheses**

### **2.2.1 Information disclosure and risk exposure**

Before classifying the information into three separate subsets, we study the entire information disclosure that will have an impact on the firm's risk exposure. Wang et al. (2008) studied the relationship between information disclosure and the cost of debt. According to the same logic and thinking, our investigation substitutes risk for cost of debt. Furthermore, the risk is mainly identified by the bankruptcy risk

H1: The extent of voluntary disclosure for listed companies is related to the firms' risk exposure.

### **2.2.2 Strategic information**

In the whole voluntary information disclosure lists, although strategic occupies a little proportion, it also should be considered since business strategy indicates the direction for the firm in the future. However, whether the more strategic information is declared to the public, the more risk the firm will undertake or the converse is important to determine.

H2: The extent of risk exposure in the listed companies increases with higher proportion of strategic information disclosure.

### **2.2.3 Financial and non-financial information**

Financial information is used to suggest the enterprise capital movement status and characteristics of the economic information. It combines with other material but in priority, it is the monetary data that is key. In contrast, non-financial information is the information material that shows the direct or indirect contact with the producing and operating activities of enterprises in the form of non-financial information material, such as background information of a firm, the strategic objectives, business planning, business performance or activities index, management discussion, forward information, sensitivity analysis for risk and all that.

I would like to study whether there are the different effects on the firm's risk exposure with respect to the two kinds of information or which kind of information is more significant associated with the firm's risk exposure.

H3: The extent of risk exposure in the listed companies increases with higher proportion of financial information disclosure.

H4: The extent of risk exposure in the listed companies increases with higher proportion of non-financial information disclosure.

# Chapter 3

## Research methodology

I will employ the new methodology of the disclosure index and corporate governance index to operate my project. By reading the annual reports of every company in the sample over the period from 2009 to 2011 and ranking the predetermined lists of relevant items about the voluntary information disclosure. Finally, the score of strategic, financial, non-financial information and the total information can be computed by the disclosure indices. At the same time, the risk exposure is represented by the bankruptcy risk, which is measured by the Z-score. The specific contents of the items listed about voluntary information disclosure are presented in Appendix I.

A STATA Software is used with an appropriate model to find their coefficients respectively and explore their relationship with the correlation coefficient. After an analysis of the results, I can come to the conclusions for the hypotheses

### 3.1 Sample selection

My study contains all of the 50 companies listed in the Toronto Stock Exchange from the sector of financial services and all the companies are

selected randomly from the website:

[http://www.tmx.com/TMX/HttpController?GetPage=ListedCompaniesViewPage  
&SearchCriteria=Name&SearchKeyword=Z&SearchType=StartWith&Page=1&  
SearchIsMarket=Yes&Market=T&Language=en](http://www.tmx.com/TMX/HttpController?GetPage=ListedCompaniesViewPage&SearchCriteria=Name&SearchKeyword=Z&SearchType=StartWith&Page=1&SearchIsMarket=Yes&Market=T&Language=en)

After that, the required elements associated with the voluntary information disclosure and Z-score are collected from each company's annual report running a period of three years from 2009 to 2011. Additionally, disclosure information scores (strategic, financial and non-financial information) are considered as the independent variables and Z-score is the only one dependent variable. I also add other control variables and test variables, the specific illustration of which will be provided in the next part.

The market price used to compute the market value of the individual company on the public day of annual report, comes from the website <http://www.nasdaq.com> and a search of the historical prices.

## **3.2 Index and variables**

### **3.2.1 Disclosure index**

Since the level of information disclosure cannot be measure a directly, Cooke and Wallace (1989) generated a suitable proxy such as an index of disclosure that can be employed to examine the extent of information disclosed

by companies. Our study also applies this method to measure the extent of voluntary disclosure by companies. We use the same steps as the article written by Kun et al. (2008) and there are mainly two steps to develop the disclosure index as follows: (1) based on the disclosure index used in earlier studies (Cooke, 1989) a preliminary list of 93 items was generated; (2) Fourteen items were dropped from the list because they were mandatory disclosure requirements so that 89 items associated with voluntary information were generated.

After establishing the disclosure index, a scoring sheet was developed to assess the extent of voluntary disclosure. Depending on these items, I check whether they are present or absent in company's annual report and score 1 or 0. Then repeat the work and compute the marks as a result. For instance, if a company disclosed an item of information included in the index, it received a score of 1, and 0 if it is not disclosed (see Cooke, 1989, p. 182). Furthermore, based on the model developed by Meek et al. (1995), the voluntary disclosure items are further classified into (1) strategic, (2) non-financial, and (3) financial information.

Another thing should be emphasized is that the disclosure index is unweighted. In other words, we assume that each item of disclosure is as important as others Gray et al.(1995) and Cooke (1989, p. 182) claimed that

unweighted indices are a reasonable research approach in terms of all users of corporate annual reports.

### **3.2.2 Z-score**

A Z-score is a discriminate and predictive model developed by Altman in 1968 to measure the distance to default of manufacturing companies.

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 0.999X_5 \quad (3.1)$$

In this equation, five ratios are involved and the descriptions of the elements are as follows:

#### **Altman's Z-Score**

X1: Working Capital / Total Assets × 1.2

X2: Retained Earnings / Total Assets × 1.4

X3: EBIT / Total Assets × 3.3

X4: Market Value of Equity / Book Value of Total Liabilities × 0.6

X5: Sales / Total Asset × 0.999

The model including five ratios is appropriate for the listed companies.

The company will be bankruptcy if the value of Z-score below 1.8 and it will be

safe when the value of score is higher than 2.99. The more the value of the Z-score, the better situation the company runs. Meanwhile, an adjusted model, which consists of four ratios, is suitable for the non-listed companies, changes the weights and like that:

$$Z = 1.0X3 + 6.56X1 + 3.26X2 + 0.72X4 \quad (3.2)$$

### 3.2.3 Variables

To test the Hypotheses 1 to 4, I will draw support with the STATA Software to perform four regressions based on the following model:

$$\text{RISK} = \text{DSCORE} + \text{MKTVAL} + \text{LEV} + \text{ROA} + \text{ROE} + \text{COD} + \text{EPS} + e. \quad (3.3)$$

This model can be separated into three subsets since the information consists of strategic, financial, and non-financial ones. The models are presented as follows, respectively:

$$\text{RISK} = \text{TSCORE} + \text{MKTVAL} + \text{LEV} + \text{ROA} + \text{ROE} + \text{COD} + \text{EPS} + e.$$

$$\text{RISK} = \text{SSCORE} + \text{MKTVAL} + \text{LEV} + \text{ROA} + \text{ROE} + \text{COD} + \text{EPS} + e.$$

$$\text{RISK} = \text{FSCORE} + \text{MKTVAL} + \text{LEV} + \text{ROA} + \text{ROE} + \text{COD} + \text{EPS} + e.$$

$$\text{RISK} = \text{NFSCORE} + \text{MKTVAL} + \text{LEV} + \text{ROA} + \text{ROE} + \text{COD} + \text{EPS} + e.$$

In these equations, market value and leverage are two control variables where Market value (MKTVAL) is a control variable for firm size in the model. A large amount of disclosure studies have discovered that firm size is a vital element in

the declaring volatility associated with the degree of disclosed information by corporate. Academicians approve a positive relationship between firm size and voluntary disclosure in the setting of U.S. (Firth, 1979), Swedish (Cooke, 1989), Malaysia (Hossain et al., 1994) and Japanese firms (Cooke, 1991), as well as for firms listed on multiple exchanges (Meek et al., 1995). Adding this variable, I expect to examine whether the same relationship applies for my study.

Leverage (LEV) is another control variable in the model. Demonstrably, as the increased potential for wealth transfers from debt holders to shareholders and managers, agency costs, and hence disclosure, will increase for firms that own correspondingly more debt (Jensen & Meckling, 1976). However, research results on this relation are in dispute. Sengupta (1998) declared that U.S. companies with high analyst disclosure quality evaluations would not like to expense more cost in issuing debt. Identically, Meek et al. (1995) found an observable, negative relationship between leverage and voluntary disclosure for U.S., U.K., and continental European multinationals.

Conversely, other study findings refuted critically. Bradbury (1992) suggested a dramatically positive relationship between leverage and disclosure for New Zealand firms. Chow and Wong-Boren (1987), in contrast, presented that there is no relationship between leverage and disclosure in their sample of Mexican firms. Since the relationship between leverage and disclosure

information is disputable, I am interested in explore it in my model.

The following table (Table 3.1) provides an additional illustration for the other variables in the model, which aims to examine the hypotheses more exactly and study the concerned relationship more efficiently.

Table 3.1

Explanations of dependent and independent variable

Dependent variables	
Risk Exposure (RISK)	Z-score

Control variables	
Firm size (MKTVAL)	Log of the companies' total assets
Leverage (LEV)	Ratio of total debt to owners' equity

Independent variables	
Return on asset (ROA)	Net income divided by the total asset
Cost of debt (COD)	Interest expenses divided by total debts
Return on equity (ROE)	Net income divided by the shareholders' equity
Earnings per share (EPS)	Net income divided by the number of share

Test variables	
DSCORE	Proportion of the actual score allocated to a company to the maximum possible score applied
SSCORE	Proportion of the actual strategic disclosure score allocated to a company to the maximum possible score applied
NFSCORE	Proportion of the actual non-financial disclosure score allocated to a company to the maximum possible score applied
FSCORE	Proportion of the actual financial disclosure score allocated to a company to the maximum possible score applied

# Chapter 4

## Results and analysis

### 4.1. Empirical results of the tests (H1-H4)

#### 4.1.1. Descriptive statistics

Originally, there were 150 observations needing to be tested in the investigation. However, four of them are outliers that will mislead the results. Therefore, I remove these and study the remaining 146 objectives

Panel A of Table 4.1 represents descriptive statistics for the variables in the analysis. As definite statement, if the value of Z-score is higher than 2.99, then the firm is safe and far from bankruptcy. In contract, as the value of Z-score is less than 1.8, the firm is dangerous in the bankruptcy and the senior management have to consider the method to recover the life of the company or end with liquidate. The 'grey area' indicates the value within the range from 1.8 to 2.99, in which the leadership of the company should pay more attention to causes resulted to the risks and take actions to relieve the conflict.

Viewing the table, we can find that the mean of the Z-score is 3.77, which exceeds 2.99, so on average the 49 firms are safe and have no trouble with bankruptcy. Nevertheless, the standard deviation is the second highest, 9.97. It

indicates that several firms with the high Z-score offset the difference arise from the firms with the low Z-score. In the actual data, some firms' Z-score is even negative and has the seriously trouble with bankruptcy.

In terms of the information disclosure, the total scores of voluntary information disclosure (DSCORE) items is seventy-eight. It consists of eight scores of strategic information (SSCORE), forty-three scores of non-financial information (NFSCORE), and twenty-eight scores of financial information (FSCORE). The detail about these information lists is available in Appendix A.

Skimming through the Panel A of Table 2, the mean of the DSCORE is 49.65 which is over fifty percent, as well as the SSCORE, NFSCORE, and the FSCORE. Additionally, compared with some dual-listing Chinese firms, the level of information disclosure within these Toronto Stock Exchange listed companies is considerable. As Wang, Sewon and Claiborne (2008) have referred in the article, with substantially higher pressure suffered by dual-listing Chinese firms, they would not prefer to disclose non-financial information in Hong Kong market. However, non-financial information is one of vital elements concentrated by investors to assess a company's sustainability in the long-term period. Therefore, it indicates for us that the regulatory of disclosed information in Canada or North America is more convincing and splendid.

Although the mean of the information disclosure is cogent, the high

standard deviation of that, 15.95, is worried. It suggests that some companies disclose much information but some ones expose only a little. More specially, the high standard deviation arises from the large fluctuation on the disclosed non-financial information, 9.57. Therefore, according to the above result, I put forward a hypothesis that non-financial has more impact on the firm's risk exposure. The statement will be verified and explained by the regression model later in the chapter.

Table 4.1

Summary statistics for the RISK & VOLUNTARY DISCLOSURE model

Panel A: Descriptive statistics for 146 observations

Variable	Mean	Std. Dev.	Minimum	Maximum
Z-SCORE	3.77	9.97	-6.35	67.32
MATVAL	9.23	1.48	6.60	12.41
LEV	6.14	10.56	-11.32	90.22
DSCORE	49.65	15.95	17	75
SSCORE	5.85	1.78	1	8
NFSCORE	26.65	9.57	7	41
FSCORE	17.15	6.08	6	28
ROA	0.04	0.11	-0.34	0.72

COD	0.03	0.08	0	0.96
ROE	0.12	0.30	-1.53	2.04
EPS	1.64	2.30	-2.91	18.05

---

Panel B of Table 4.1 reveals results of pairwise correlations with significant level for each key variable. Every pairwise presents two value. The upper one is the correlation coefficient and the underneath one is the P-value about the significance on the individual variable. It means that if the P-value is less than 0.10, 0.05, or 0.01, then the value is significant in the 10%, 5%, or 1%, respectively. The matrix has suggested the significance at 1% level using the symbol star “\*”.

Coefficient of Correlation ( $r$ ) is a quantitative concept to explain the relationship between random variables. The strength of relationship can be measured within the numerical value ranges from +1.0 to -1.0.

Generally speaking,  $r > 0$  suggests positive relationship,  $r < 0$  explains negative relationship. Meanwhile,  $r = 0$  points these variables are not related or not dependent. In addition,  $r = +1$  and  $r = -1$  indicate a perfect positive correlation and perfect negative correlation, respectively. The closer the coefficients are to

+1.0 and -1.0, the greater is the strength of the relationship between the variables (Amit May 2, 2009).

Turning to the correlation matrix resulted from our study, it indicates that every individual information disclosure (DSCORE, SSCORE, NFSCORE, and FSCORE) is related with risk exposure (Z-score) and negatively associated with it at 1% significant level. Specially, non-financial information is the most strongly and negatively associated with the risk exposure. No matter what the characteristic of the relationship they have, the existence of the associated relation has proved. Next, according to the comprehensive results arising from the four regressions by STATA computer system, I will analyze the situation related to the hypotheses.



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## 4.1.2. Multivariate analysis

The comprehensive regression consequences from four regressions have been summed up and classified, which identify with the six hypotheses, displaying in the following Table 3. I draw some conclusions and discover a few problems as well.

Looking through the all four panels, I find that the value of adjusted  $R^2$  is low. There are two main reasons being associated with the outcome. First is the whole economic environment. Over the period from 2008 to 2009, financial crisis swept the widespread financial market. The fluctuation and uncertainty of the market was huge which triggered the circumstance of individual company and even the whole industry in confusion. When viewing the 150 financial reports about the 50 listed companies on the Toronto Stock Exchange from 2009 to 2011, I perceive that the financial compulsory items like total assets, net operating income, and liabilities vary much within a company lasting 3 years and across nearly all the observations. What is more, compared with the market price and book value of per share, the difference is large since the economic environment makes it difficult to estimate the trend for the next period. As a consequence, the test variables like ROE, EPS, and the elements used to

calculate the Z-score are not ideal so that the fit of goodness is not perfect. The second cause can be due to the problems arising from the individual company. A bit mistakes occur in the consolidated financial statement. For instance, as the regulator code, mandatory disclosure of the company's financial position should last 2 years. However, the same period value of total asset or others showing in the 2009 annual report is different from that in the 2010 annual report, which brings trouble to collect data and the final results. Because of the two reasons, the goodness of fit for the model is harmfully impacted.

In terms of the relationship between the information disclosure and firms' risk exposure related to the hypotheses, some summarized results are come out as follows.

Panel A explains the relationship between risk exposure and total information disclosure. The results can verify the validity of first hypothesis (H1): the extent of voluntary disclosure for listed companies is related to the firms' risk exposure.

The correlation coefficient,  $r$ , is -0.18, in which the sign of "-" indicates that the information disclosure is negatively associated with the firms' risk exposure but the strength is not very significant. In another word, if the company discloses one item of information less than before, then its Z-score will increase by 0.18 and it will be safer.

Table 4.2

Regression results of the relationship model

Panel A: the relationship between risk exposure and total information disclosure

Goodness of fit			
Adjusted $R^2$		0.1005	
F statistics		3.31*	
Intercept		9.80 (6.05)	
	Expected sign	Z-score	Significance
Independent variables			
DSCORE	-	-0.18	0.06*
MKTVAL	+	0.32	0.094
LEV	-	-0.06	0.09
ROA	+	16.62	10.20
COD	+	17.63	10.23***
ROE	-	-4.81	3.63
EPS	-	-0.16	0.40

\*, \*\*, \*\*\* indicate the correlation coefficient is significant at the 0.01, 0.05, and 0.10 level, respectively.

The result from Panel B aims to check the second hypothesis (H2): the extent of risk exposure in the listed companies increases with higher proportion of strategy information disclosure. The correlation coefficient is -1.09, which presents the strongest negative relationship between the two objective variables compared with the other three pairwise relationships. The regression results also suggest that company's public less strategic information and then its Z-score will be higher and the situation is safer. The result supports our hypothesis (H2), since the higher is the Z-score, the less risk exposure the firm has.

Panel B: the relationship between risk exposure and strategic information disclosure

Goodness of fit			
Adjusted $R^2$	0.0825		
F statistics	2.86*		
Intercept	12.97 (6.05)**		
	Expected sign	Z-score	Significance
Independent variables			
SSCORE	-	-1.09	0.54**

MKTVAL	-	-0.29	0.74***
LEV	-	-0.07	0.10
ROA	+	16.78	10.30
COD	+	15.65	10.48
ROE	-	-5.3	3.65
EPS	-	0.11	0.40

\*, \*\*, \*\*\* indicate the correlation coefficient is significant at the 0.01, 0.05, and 0.10 level, respectively.

---

According to the Panel C, we can identify that the negative relationship also apply for the risk exposure and non-financial information disclosure. It means that the more a firm disclosure non-financial information to outside, the bigger risk exposure it will undertake. This conclusion is accordance with the third hypothesis (H3): the extent of risk exposure in the listed companies increases with higher proportion of non-financial information.

Panel C: the relationship between risk exposure and non-financial information disclosure

Goodness of fit
-----------------

Adjusted $R^2$	0.1539		
F statistics	4.77*		
Intercept	7.74 (5.91)		
	Expected sign	Z-score	Significance
Independent variables			
NFSCORE	-	-0.42	0.10*
MKTVAL	+	0.81	0.78
LEV	-	0.07	0.09
ROA	+	15.44	9.90
COD	+	17.29	9.91***
ROE	-	-4.53	3.51
EPS	-	-0.25	0.39

\*, \*\*, \*\*\* indicate the correlation coefficient is significant at the 0.01, 0.05, and 0.10 level, respectively.

---

Panel D indicates the relationship between risk exposure and financial information disclosure and this result is the only one opposite to the hypothesis (H4): the extent of risk exposure in the listed companies increases with higher

proportion of financial information.

Although the sign of the correlation coefficient illustrates that if one company publish more financial information, then it will suffer less risk, yet it is not significant at 1%, 5%, or 10% significant level. Consequently, this conclusion cannot be explained well and their relationship need to an advanced study employing a more exact method.

Panel D: the relationship between risk exposure and financial information disclosure

Goodness of fit			
Adjusted $R^2$	0.0558		
F statistics	2.22**		
Intercept	12.41 (6.16)**		
	Expected sign	Z-score	Significance
Independent variables			
FSCORE	+	0.04	0.17
MKTVAL	-	-0.98	0.79
LEV	-	-0.09	0.098
ROA	+	16.59	10.46

COD	+	19.42	10.46***
ROE	-	-5.97	3.71
EPS	-	-0.08	0.41

\*, \*\*, \*\*\* indicate the correlation coefficient is significant at the 0.01, 0.05, and 0.10 level, respectively.

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Finally, we discuss some findings related to other test variables. Viewing the four tested, cost of debt (COD) is positively and significantly associated with the firms' risk exposure. We can understand it as the more cost of debt an individual firm suffers, the less risk it must undertake since the higher Z-score suggests the less possibility the firm will be bankruptcy.

Another interesting finding points that return on asset (ROA) is positively related to the firms' risk exposure. However, return on equity (ROE) and earning per share (EPS) present a negative relationship between the two objective variables. It means that the less ROA, but more ROE and EPS will result in less risk exposure or higher Z-score.

# Chapter 5

## Conclusions and Recommendations

This paper investigates the relationship between information disclosure and the firms' risk exposure with a focus on the Canadian financial services industry and the companies listed on the Toronto Stock Exchange.

50 listed companies in the sector of financial services were selected and over a 3 year period (2009-2011) annual reports were read to find the responding information by the index items. After regressing the pre-decided model, we can summarize the conclusion. The goodness of fit,  $R^2$ , is low. Since the financial crisis and the problems in the inter-company, the values of variables fluctuate much and outliers driving from the model impact the available of the model. 2) The information disclosure is negative related to the firms' risk exposure. 3) The extent of firms' risk exposure in the listed companies' decreases with less strategic information disclosed to public. 4) The more non-financial information is published to outside by companies, the more risk these companies should undertake. 5) A higher Z-score can arise from more financial information disclosed. 6) COD and ROA is positively associated with the risk exposure. However, 7) ROE and EPS is negatively associated with risk exposure.

There are several limitations of this study, and future research can be developed and optimized the analysis in some degree. First, my observations are limited. 50 listed companies cannot represent the overall financial service industry. More firms could be investigated to enhance the accuracy. Second, only one form of disclosure channel, namely the annual report, is searched. I could focus on additional vehicles of announcement about disclosure. Finally, I could keep away from the crisis environment and choose a stable period to study again. In accordance with comparison, an evidential explanation would be provided and the analysis would be improved.

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# Appendix A. Voluntary disclosure items list

## General corporate characteristics

1. Organizational structure
2. Physical output and capacity utilization

## Corporate strategy

3. Statement of strategy and objectives-general
4. Statement of strategy and objectives-financial
5. Statement of strategy and objectives-marketing
6. Statement of strategy and objectives-social
7. Description of marketing network-domestic
8. Description of marketing network-foreign

## Acquisitions and disposals

9. Reasons for acquisitions
10. Financing detail of acquisition
11. Reasons for disposals
12. Considerations received on disposal
13. Discussion of future business opportunity of disposal
14. Future capital expenditure

## Research and development

15. Corporate policy on R&D
16. Number employed in R&D
17. Forecast of R&D expense
18. Discussion of new product development

## Future prospects

19. Qualitative forecast of sales
20. Quantitative forecast of sales
21. Qualitative forecast of profits
22. Quantitative forecast of profits
23. Qualitative forecast of cash flows
24. Quantitative forecast of cash flows
25. Assumption underlying forecasts
26. Factors affecting future business-political
27. Factors affecting future business-economical
28. Factors affecting future business-technological
29. Rate of return expected on projects

## Employee information

30. Geographical distribution of employees
31. Categories of employees by gender

- 32. Recruitment information
- 33. Reasons for changes in employee number or categories
- 34. Policy on employees trained
- 35. Amount spend on training
- 36. Number of employee trained
- 37. Employee appreciation
- 38. Data on accidents
- 39. Cost of safety measures
- 40. Discussion of employee welfare
- 41. Equal opportunity policy statement
- 42. Effects of employee welfare

Social responsibility and value-added disclosure

- 43. Environment protection programs-quantitative
- 44. Environment protection programs-qualitative
- 45. Charitable donations (amount)
- 46. Community programs (general.)

Segment information

- 47. Competitor analysis
- 48. Market share analysis-qualitative
- 49. Discussion of industry trends-prior

50. Discussion of industry trends-future

51. Proportion of raw materials purchase local

Financial review information

52. Cash flow ratios

53. Liquidity ratios

54. Gearing ratios

55. Return on capital employed

56. Other ratios

57. Aging of receivables (debtors)

58. Breakdown and analysis of operating expenses

59. Breakdown and analysis of administrative expenses

60. Breakdown of operating expenses into fixed/variable.

61. Index of selling prices

62. Index of sales volume

63. Index of raw materials prices

64. Disclosure in intangible valuations (expect goodwill and brands)

65. Dividend payout policy

66. Financial history or summary-six or more year.

67. Off-balance sheet financing information

68. Advertising information-qualitative

69. Advertising information-quantitative

70. Effects of interest rates on results

71. Effects of interest rates on future operations

Foreign currency information

72. Effects of foreign currency fluctuations on future operations-qualitative

73. Major exchange rates used in the accounts

74. Effect of exchange rates on current performance

75. Effect of exchange rate on future performance

76. Foreign currency exposure management description

Stock/price information

77. Market capitalization at year end

78. Market capitalization trend

79. Geographic distribution of shareholder