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Three Essays on Risk Factor Disclosures

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by

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Abstract

Beginning in 2005, the US Securities and Exchange Commission (SEC) proposed changes to the disclosure of risk information in the annual 10-K reports. Based on these changes, large firms in the US are required to disclose risk factors in Item 1A of their 10-K. This study contains three essays that review the current literature on Risk Factor Disclosures (RFDs) and employ empirical methods to test the usefulness of this disclosure.

The first essay reviews the existing literature on RFDs and provides direction for future research. This review discusses the strengths and limitations of current research in the field and suggests further research relating to the call for comment by the SEC, the contents and topics in RFDs, the usefulness of RFDs to investors, in contractual settings, and the market in general.

In the second essay, I develop a new measure of RFDs that captures managerial discretion in risk factor reporting to examine the usefulness of RFDs in the private and public debt markets. In both debt markets, I find that RFDs are informative and that the risk profile of firms is reflected in their cost of debt. In the private debt market, I find that firms with RFDs above expectation have lower cost of debt as possible reward for transparency. Similarly, firms with RFDs below expectation also have lower cost of debt, suggesting banks already know that the firms are less risky. In the public debt market, I find that firms with RFDs above expectation have higher cost of debt while firms with lower risk disclosure than expected have lower cost of debt. The results suggest public lenders take RFDs as representative of firm risk.

The third essay examines the effect of corporate governance on managerial discretion in reporting RFDs and the subsequent impact on cost of debt. To examine this effect, I focus on firms that pay a penalty for perceived higher risk in the public debt market. I find evidence that corporate

governance promotes transparency in reporting RFDs. I also find that risky firms with either strong or weak corporate governance have higher cost of debt, suggesting corporate governance may not be important to public lenders.

The findings in this dissertation suggest that RFDs are both informative and useful to borrowers and lenders. The findings are useful to regulators in setting mandatory disclosure requirements, debt providers in evaluating firm risk, and management in implementing organizational corporate governance structures.

Dedication

This dissertation is dedicated to the loving memory of my mother, Mrs. Anotu Olajumoke Oladejo. I pray that we reunite in Jannah. Ameen.

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Chapter 1: General Introduction

Beginning in 2005, the US Securities and Exchange Commission (SEC) made it mandatory for large companies to disclose the most significant risks relating to the company or its securities in Item 1A-Risk factors of the annual 10-K report. This disclosure aims to provide investors with a clear and concise summary of the material risks faced by the issuer. Risk Factor Disclosures (RFDs) have, however, been criticised as boilerplate (Business Wire, 2016). The SEC has responded to this criticism by encouraging companies to improve on the quality of the disclosure (Johnson, 2010), while also issuing a call for comments on how to improve the disclosure (SEC, 2016).

Although recent research provides evidence that RFDs are useful, predominantly in the equity market, there are unanswered questions on the usefulness of RFDs in other settings. For example, questions remain as to how RFDs and managerial discretion in reporting RFDs affect the cost of debt including the impact of strong corporate governance on discretions in reporting RFDs. To contribute to the literature on RFDs, in chapter 2, I conduct a review of the current RFD literature and suggest directions for future research. In chapter 3, I develop a new measure to capture managerial discretion in reporting RFDs and then examine the effect of RFDs and managerial discretion in reporting RFDs on cost of debt in the private and public debt market. In chapter 4, I extend the findings from chapter 3 and investigate the effect of strong corporate governance on managerial discretion in reporting RFDs and the effect on cost of debt for firms that are perceived as risky in the public debt market.

I find that RFDs are indeed informative and useful in the private and public debt markets. In the private debt market, firms with RFDs above expectation have lower cost of debt, which may

be a reward for transparency. Firms with RFDs below expectation also have lower cost of debt, suggesting banks know these firms are less risky and do not penalize them. In the public debt market, disclosing higher risk than the expectation is associated with higher cost of debt. On the other hand, firms disclosing less risk than that expected have lower cost of debt. The results suggest public lenders take RFDs as representative of firm risk. In addition, I find evidence that strong corporate governance promotes transparency in reporting RFDs in the public debt market. I also find that risky firms with weak corporate governance have higher cost of debt. There is however no cost of debt mitigating effect for risky firms with strong corporate governance.

This dissertation is the first study to provide a comprehensive review of the literature on RFDs, thereby providing a platform for future research in the field. It is also the first study to introduce a measure to capture discretionary reporting in RFDs and examine the effect of this measure on cost of debt in the private and public debt markets. Furthermore, it is the first study to examine the role of strong corporate governance on discretions in reporting RFDs and the subsequent impact on cost of debt in the public debt market.

The findings discussed herein are useful to regulators in setting mandatory disclosure requirements, debt providers in evaluating firm risk, and management in implementing corporate governance structures in their organization.

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Chapter 2: Essay One

Risk Factor Disclosures: A Review and Directions for Future Research

Abstract

To a large extent, prior research has examined the disclosure of corporate risk information in firms' annual reports. Beginning in 2005, the US Securities and Exchange Commission (SEC) proposed changes to the disclosure of risk information in annual 10-K reports. These changes mandated large firms in the US to disclose risk factors in a specific section of their 10-Ks, referred to as Item1A. While research on the impact of this change is still in its infancy, some studies has suggested that RFDs are vague, repetitive, and boilerplate.[1] As a result, the SEC has called on managers to ensure that the risks disclosed reflect the risks faced by their firms. Furthermore, the SEC is reviewing RFDs and has requested comments on how to improve the disclosure.

In light of the importance of risk information disclosure and the interest of the SEC in improving this disclosure, this chapter reviews the existing literature on RFDs to determine how informative this disclosure is. My findings suggest that RFDs are not boilerplate. Rather, they contain information that is useful to both investors and regulators. Following from this review, I identify directions for future research that can be informative for academic scholars, regulators, and other stakeholders that rely on RFDs in decision making.

[1]http://www.businesswire.com/news/home/20160121005251/en/Corporate-Risk-Disclosures-Dominated-Non-Specific-%E2%80%9CBoilerplate%E2%80%9D-Fail

2.1. Introduction

The objective of this chapter is to provide an exhaustive review and synopsis of the current state of the literature on RFDs which will serve as a springboard for future research on the content and usefulness of this disclosure. Disclosure of risk factors in Item 1A of the annual 10-K became mandatory for large public firms in the United States beginning in 2005. Based on SEC regulations, firms are required to identify the most significant factors that make their stock offering speculative or risky. This disclosure aims to provide investors with a clear and concise summary of the material risks faced by the issuer. Management disclosure of RFDs has, however, been criticised as boilerplate after it was made mandatory by the SEC (Business Wire, 2016). This criticism has resulted in the SEC encouraging companies to improve on the quality of the disclosure (Johnson, 2010). To ensure that the risk disclosures are informative, the commission further emphasizes that companies are expected to disclose risks that are specific to their operations and not risks that could apply to any issuer.

Recent studies assessing the information content of risk disclosures found evidence of some information content in the disclosure. Campbell, Chen, Dhaliwal, Lu, and Steele (2014), Filzen (2015), Campbell, Cesshini, Cianci, Ehinger, and Werner (2016) found that RFDs are informative to investors, while Brown, Tian, and Tucker (2014) found the information useful to regulators. To enhance our understanding of this disclosure and to identify opportunities for future research, this chapter presents the existing literature on RFDs and proposes directions for further research. The papers reviewed in this chapter are categorized into the following themes: RFD words and topics, investor and contracting usefulness, and market-wide usefulness.

Papers on RFD words or topics identify and group common themes that address specific risks. The risk categories identified include financial, regulatory, tax, macroeconomic, systematic,

legal, and idiosyncratic risks. Among other findings, these papers showed that the number of risk factor topics included in RFDs has increased over time and that specific firm characteristics, such as research and development (R&D) intensity, are associated with the type of risk disclosed. Identifying relevant topics and words included in RFDs provides an opportunity to examine the risk category that is most informative for users of the report as well as a platform to examine how the contents of RFDs have changed over time.

Studies on the usefulness of risk disclosures to investors have examined various topics including the relationship between risk disclosure and information asymmetry, future cash flow, future stock returns, volatility of stock returns, stock market reaction, analyst risk assessment, and changes between voluntary and mandatory regimes (Campbell et al., 2014; Campbell et al.,2016; Hope, Danqi, & Hai, 2016; Nelson & Pritchard, 2016). The main finding from these studies was that RFDs are informative and not boilerplate as speculated. There is still potential for further research in this field especially in relation to value relevance of risk disclosure and cost of equity. On the other hand, research on contracting usefulness of risk disclosure is still in its infancy and to date there is only one identified study on both debt contracting (Chiu, Guan, & Kim, 2017) and compensation contracting (Israelsen & Yonker, 2017). Chiu et al., (2017) find that RFDs improve information transparency and are useful to credit investors while Israelsen & Yonker (2017) find that RFDs relating to key man life insurance are associated with negative market reactions. Future studies could investigate the impact of RFDs on cost of debt or other debt market features, such as debt default risk and yield to maturity. Studies could also examine the relationship between RFDs and various measures of managerial risk-taking incentives, such as the sensitivity of managerial wealth to stock return volatility and stock price.

Studies relating to the general market have also examined various RFD topics, including how risk disclosures change after SEC comment letters are received and the impact of RFDs on industry and product market competition (Brown et al., 2014; Yen, Li, & Chen, 2016). In general, these studies found that firms change their RFDs after receiving comment letters from the SEC and that receiving a comment letter has a spillover effect across the industry. However, questions remain as to the effect of corporate governance mechanisms on RFDs and the relationship between firm level characteristics and the extent of risk disclosure.

A summary of the papers reviewed, including the topic of the paper, methods used, time period covered in the study, sample, and findings is presented in Table 1. The methods used to collect data on RFDs are mainly through content analysis employing both manual and automated methods to extract key words or key topics discussed. The studies vary from examining only RFD topics (Bao &Datta, 2012; Huang & Li, 2011) to examining both the topics and testing the usefulness of the disclosure (Campbell et al., 2014; Mirakur, 2011). The period of research mainly covers the post-mandatory disclosure period after 2005 to as recent as 2017, and the sample selection is mostly based on firms that have reported risk factor disclosure in the annual 10-K and fall within the definition of large firms as required by SEC.[2]

To identify papers on RFD, I first conducted a search using Google Scholar with the key phrase (in quotation marks) 'risk factor disclosure' to identify both published and working papers in the field.[3] I focused only on articles that examine Item1A risk factor disclosures and exclude papers on general risk disclosure. Then, I did another search to identify Item 1A risk factor disclosure anywhere in the article from 2005 to date; this search returned over 17,000 articles.

[2]SEC defines small companies as those with less than $75m market capitalization. Thus, we can infer that large accelerated filers have market capitalization greater than $75m: https://www.sec.gov/rules/other/265-23/adavernslides081005.pdf

[3]This search included reviewing the citations of papers generated by Google Scholar.

Upon further examination, only 300 of these articles appeared to be relevant.[4] The final search was conducted through Social Science Research Network (SSRN), which did not identify any new article,[5] thus providing reasonable assurance that all relevant studies on RFD had been identified. The papers were read and the findings analyzed and categorized into various groups based on the key research questions of each study. As a result of this analysis, gaps in the literature were identified to provide opportunities for future studies that can contribute to our understanding of RFDs.

This analysis is, to date, the only study to provide a comprehensive review of the literature on RFDs and it provides a platform for future research in this field. The findings discussed herein inform both users of the annual report as well as regulators on the usefulness of the disclosure and how the disclosure can be improved to enhance its informativeness.

The remaining sections of this chapter are structured as follows: in the second section, I examine Item1A-RFDs and review papers that examine either the topics or the content of this type of disclosure. In the third section, I review studies on investor relevance of risk disclosure relating to value relevance, risk relevance, future cash flow, and information asymmetry. The fourth section reviews studies on contracting relevance of risk factor disclosure. In the fifth section, I review studies on market-wide usefulness of RFDs which are not directly related to investing or contracting usefulness. The sixth section concludes this study. Sections three to five conclude with suggestions for further research.

[4]By the 200th article the search was returning irrelevant articles.
[5]Google Scholar returned a search of both published and working papers.

2.2. Item 1A Risk Factor Disclosure

2.2.1 Risk factor disclosure regulation

Beginning in 2005, the Securities and Exchange Commission (SEC) made it mandatory for large firms to report risk factors as Item 503(c) of Regulation S-K. This requirement became effective for fiscal years ending on or after December 1, 2005. In addition, the SEC required firms to include qualitative disclosures of risk factors in Item 1A of the annual 10-K filing. This disclosure is described by the SEC as a "discussion of the most significant factors that make the offering speculative or risky" and is aimed at providing investors with a clear and concise summary of the material risks in the issuer's securities. Furthermore, the SEC provided guidelines for reporting this information, including examples of relevant risk factors. Specifically, the SEC required that the section be written in "plain English", updated in quarterly reports, and avoid the unnecessary restatement and repetition of risk factors. The following guidance was provided by the SEC for Item 1A:

> Where appropriate, provide under the caption "Risk Factors" a discussion of the most significant factors that make the offering speculative or risky. This discussion must be concise and organized logically. Do not present risks that could apply to any issuer or any offering. Explain how the risk affects the issuer or the securities being offered. Set forth each risk factor under a sub caption that adequately describes the risk. (SEC, 2005)

The SEC also provided guidelines on the content to be included in risk disclosures, suggesting that risk factors could include: (1) lack of an operating history; (2) lack of profitable operations in recent periods; (3) financial position; (4) the business or proposed business; or (5) lack of a market for common equity securities or securities convertible into or exercisable for common equity

securities. An example of Item 1A disclosure is presented in Appendix A.[6] This sample disclosure discusses risks related to the business in terms of profitability, cash reserves, dependence on the chief executive officer, exposure to currency fluctuations, market and industry risks, and risks related to stock ownership.

One of the goals of including risk factor disclosures in forms 10-Q and 10-K, as outlined by the SEC, is to further enhance the value of forward looking statements in informing investors and markets. RFDs are not required to be audited externally. Criticism of this disclosure requirement has been based mainly on the fact that firms do not have to quantify this risk and managers are not held liable for the quality of the disclosure. Despite guidance from the SEC, the quality of the disclosure has been criticized as lacking information content. To address this criticism, in 2016 the SEC issued a request for comment on issues relating to the disclosure (SEC, 2016). The main concern of the SEC is that the risk factor disclosures are generic in nature and not tailored to reflect the registrant's particular risk profile. This request for comment, numbered 145 to 156, addresses twelve main topics on RFDs including how to improve risk factor disclosure and whether registrants should be asked to discuss how the risks disclosed will be addressed, as well as if said risks can be quantified. Other issues addressed in the request for comment include whether registrants should be encouraged to provide more detail in their description of risks and whether generic risks should be included in the RFD. Table 2 presents a summary of the request for comments by the SEC and potential avenues for future research, discussed further in section 2.2.2.

[6] The disclosure is for Dynacq [Ticker: DYII] for the 2012 fiscal year and includes only a section of the full disclosure.

2.2.2 Proposed future research questions on risk factor disclosure regulation

The following research questions can provide insight to the SEC on improving RFDs based on the call for comment summarized in Table 2.

1. Is there a relationship between the level of specificity or detail of risk factor disclosure and its usefulness? Hope et al. (2016) provided initial evidence of an association between the level of detail in RFDs and both market reaction to 10-K filling and analyst assessment of fundamental risk. Other investor usefulness research areas, such as future cash flows and firm value, can also be examined to provide more evidence on the specificity of RFDs.
2. Is there an association between the length of Item 1A disclosure and understandability of the disclosure? Dyer et al. (2016) showed that Item 1Arisk factor disclosure is mostly responsible for the increase in length of annual 10-K fillings, thereby suggesting that the length of this disclosure has significantly increased in recent years. Future studies can address the association between the length of 10-K filling and other measures of understandability such as the Fog index.[7]
3. Are generic risk disclosures useful? Are there incremental benefits to providing more specific risk factor disclosures? It would be interesting to develop a measure of generic risk disclosure and examine the information content in comparison to specific risk disclosure; this will guide the SEC in determining whether more specific disclosure is necessary.
4. What are the costs versus benefits of requiring additional disclosure? How will increasing the length of RFDs affect its usefulness? Additional disclosure comes at a cost and also increases the length of the disclosure. It is important to capture the negative implications of asking registrants to provide more information and how this request can affect firms.

[7] The Gunning Fog index is a weighted average of the number of words per sentence and the number of long words per sentence: http://gunning-fog-index.com/index.html. A higher Fog index implies the text is less readable.

5. How are risk disclosures useful in debt and compensation contracts? Is the risk profile of firms reflected in these contracts? Most of the studies on RFDs focus on investors. As seen in comment 155 in Table 2, the SEC is interested in whether there are other audiences that value this disclosure. Examining the debt market provides an interesting opportunity to examine the usefulness of this information for other audiences.

Research on RFDs is still at an early stage and most of the studies to date have focused on the content and informativeness of the disclosure, particularly in relation to the stock market. The need to further examine RFDs is significant considering that this disclosure has greatly increased in content over the years and it is one of the three topics responsible for practically all of the increase in the length of the annual 10-K[8] (Dyer et al., 2016). In the sections that follow, I discuss research that examines various aspects of RFDs and how these studies can provoke future research that will enhance the usefulness of the disclosure for both market participants and regulators.

2.2.3 Risk factor disclosure content or topics

Based on my review, only two papers focus solely on the content or topics discussed in Item 1A risk factor disclosures: Huang and Li (2011) and Bao and Datta (2012). Huang and Li developed a new approach by applying a computational method to quantify textual information. Their multilabel text classification algorithm, called ML-CKNN, can identify 25 types of risk factors in Item 1A of the 10-K report. According to Huang and Li, this new method generates information similar to that of Natural Language Processing (NLP), but the approach is more advanced in the quantification of textual information.[9] The method involved reading through hundreds of annual reports to identify 25 types of risk factors (Table 1). Four student researchers were recruited to

[8] Out of the 150 topics examined, fair value, internal controls, and risk factor account for virtually all the increase in 10-K length between 1996 and 2013.

[9] Other methods include: content analysis using packaged software, counting keywords, and text classification.

label 10,000 risk factors into the 25 risk factor types. This process resulted in 3,153 risk factors from 4,267 companies' RFDs in 2007.The ML-CKNN algorithm works by computing a similarity score for each label category and ensuring that the risk factors are properly classified. The algorithm also enhances transparency of the parameters and can be adjusted to recognise homogenous and heterogeneous risk factor disclosures. To test the algorithm, 21,077 10-K files from January 2006 to May 2010 were collected from the Electronic Data Gathering, Analysis and Retrieval (EDGAR) system. The algorithm was able to classify roughly 75% of risk factors and 99% of labels. To validate the results, the performance of the algorithm was compared to other similar multi-label algorithms, and ML-CKNN outperformed the others in terms of accuracy based on five performance metrics.

The risk factor categories (Table 3) identified by Huang and Li can be useful in textual analysis research in accounting and finance. This study indirectly contributes to the accounting literature on RFD by shedding light on the types of information disclosed in RFDs. The main weaknesses of the study, as noted by the authors, are that ML-CKNN ignores the interdependencies between different labels and that the algorithm requires a long time to run.

Bao and Datta (2012) addressed the two limitations found in Huang and Li (2011). These limitations relate to the manual process of pre-defining the risk types before categorization and the substantial effort required to label the training data in the algorithm. The authors claimed that their paper is the first study on automatic discovery of risk and mapping of risk factors to a risk type. Bao and Datta utilized all disclosed risk factors as inputs to derive a set of risk types which were then matched to the most probable risk types. In extracting the set of risk types, a modified form of Latent Dirichlet Allocation (LDA) – a natural language processing tool used to analyse data – extracted the risk types. According to Bao and Datta, this algorithm, called sent-LDA, is 50 times

faster and can generate more meaningful topics compared to normal LDA models. Using 14,799 RFDs from Item 1A of the 10-K forms, the authors generated 30 risk topics that were successfully matched to the 25 risk topics found in Huang and Li (2011), thus ensuring that all risk types identified in Huang and Li were included. These topics were grouped by the most probabilistic words,[10] which are not descriptive but rather groups of words that address similar risks. For example, cost, regulation, environmental, law, operation, and production risk types were all grouped together as one category, topic 4, while cost, contract, operation, plan, increase, pension, and delay were grouped together as another category, topic 9. One problem with Bao and Datta's classification, which the authors do not acknowledge in the study, is the classification of the same word under multiple topics. For example, the word 'price' appears under topics 2, 3, and 15, and the word 'financial' is classified under topics 1, 5, 6, 15, 17, 25, 26, and 28. It remains to be seen how this multiple classification can be managed in future research studies.

Bao and Datta also examined trends in the use of these words or topics between 2006 and 2010. The authors showed an increase in the discussion of some topics over the study period. For example, the use of the term 'macroeconomic risks' increased significantly between 2008 and 2010 probably due to the financial crisis. The findings from Bao and Datta's study can be used by researchers, financial analysts, business managers, and those who need to interpret large amounts of textual data.

Mirakur (2011) also explored the content of RFDs in Item 1A with the purpose of examining whether this disclosure is associated with firm performance. The study was conducted in three stages. The first stage involved categorizing risk factors and identifying key risk words for a random sample of 122 firms selected from Compustat in the year 2009. The next stage involved

[10]The topics are presented in Table 3.

running descriptive statistics for the 122 firms to identify the risk disclosure that can be considered repetitive or boilerplate and then identifying the disclosures that will likely provide relevant information. Finally, Mirakur examined the relationship between various accounting measures of firm performance and risk factor categories including the influence of industry on risk disclosure. Initially, 116 general or high-level categories were identified, this was further compressed into 29 risk topics: accounting, acquisitions, calamities, capital expenditures, capital structure, cash, competition, contracts, credit risks, customer concentration, distribution, government, industry, intellectual property, international, inventory, investments, key personnel, labor, legal, macro, marketing, operations, regional, solvency, stock price, suppliers, and takeover. This descriptive analysis also included comparisons across industries to determine the influence of industry on risk disclosure. The results of this descriptive analysis showed that the most common risk categories mentioned by companies are: capital structure, leverage, inability to pay interest, competition, government, key personnel, and macro risks such as recession, inflation, and financial crisis. However, Mirakur did not find any industry influence, suggesting that RFDs are firm-specific and do not capture industry-wide risk. Further, the study examined the relationship between four accounting measures (leverage, capital expenditure scaled by Property, Plant, and Equipment (PPE), operating risk (cash scaled by total assets), and cash acquisitions scaled by PPE) and found evidence of an association between RFD and both capital expenditure and operating risk.

The paper concludes by proposing several avenues for future research, including using automated methods to process data, investigating whether risk factor can be used to replace stock volatility or earnings volatility, studying the relationship between risk and firm financial performance, efficient capital allocation, and market-based risk measures, and examining the association between firm risk and key person life insurance. Interestingly, the proposed research

on key life insurance was subsequently examined by Israelsen and Yonker (2017), which will be discussed in section 2.5 in relation to market-wide usefulness of RFDs. There are two major limitations in Mirakur (2011) including the small sample size and lack of control variables in the regressions. These limitations affect the ability to generalize the findings reported in the paper.

Both Israelsen (2014) and Campbell et al. (2014) examined whether RFDs are informative, albeit from different perspectives. While Israelsen assessed stock return, beta, and stock volatility, Campbell et al. examined risk factor disclosure and pre-disclosure proxies of firm risk, post-disclosure measures of firm risk, information asymmetry, and abnormal return around the 10-K filing. Similar to Bao and Datta (2012), Israelsen (2014) employed LDA to extract the risk factor disclosures from the SEC filings. The author used computer scripts to search through 10-K filings from 2006 to 2011 and then extracted section 1A from these filings. In cases where the software was not successful, a manual search was also conducted to extract the section. Together, the automated and manual search yielded 27,339 risk factor sections which were then divided into paragraphs to more easily identify the risk words. Thirty topics were eventually extracted by the LDA and each topic was classified based on how closely the risk factors are associated. The 30 identified words are presented along with associated risk words in Table 3.Campbell et al. (2014), on the other hand, developed bespoke software for the purpose of their study. After downloading annual 10-K filings from the EDGAR database, the software was used to extract counts of identified risk words based on the key words identified by Nelson and Pritchard (2007). To verify the accuracy of their data, 300 firms were randomly selected and manually checked to confirm that the correct subsection was extracted. The results showed over 98% accuracy to extract the correct sections. Thirty percent of the key risk words identified were further classified as financial, litigation, or tax risks. The remaining risk words were classified as either other-systematic or other-

idiosyncratic depending on whether the risk factors are firm-specific or economy-wide. The risk words identified by Campbell et al. (2014) are also presented in Table 3.

Israelsen (2014) examined the specific firm characteristics that are most closely associated with the 30 identified factors. These firm characteristics are: size, Book-to-Market (BTM), firm age, R&D intensity, sales, general & administrative expenses, earnings to price ratio, advertising expenses, capital expenditure, productivity, profitability, leverage, capital-to-labor ratio, and industry classification. The results for this test showed that firm characteristics vary with the type of risk disclosure topic. For example, small value firms with low R&D intensity, low advertising expenses, high investment-to-capital, low leverage, and greater labor-intensity are more likely to disclose risks relating to the 'accounting' factor, while more seasoned firms with high BTM ratios and little R&D are more likely to disclose risks relating to 'credit'. This result is similar to the result obtained by Campbell et al. (2014) in examining the relationship between RFDs and pre-disclosure firm risk measures. Using a final sample of 9,076 firm-year observations from 2005 to 2008, Campbell et al. (2014) found that RFDs are associated with nine of the 13 different proxies of pre-disclosure firm risk (expected returns, size, BTM, leverage, stock return volatility, turnover, big N auditor, analysts following, Beta, skewness, net income, and institutional ownership) suggesting that firms with more risks disclose more risk factors and that the type of risk the firm faces determines how much of the disclosure addresses that risk.

Israelsen (2014) further examined the relationship between RFD and stock return volatility to confirm if the risks are reflected in equity market returns. Using daily volatility and idiosyncratic volatility as volatility measures, the results show significant association between 15 of the 30 risk factors and daily volatility. Some of the risk factor topics, such as those relating to Credit, Dividends, International, and Legal, are associated with higher volatility while other topics,

including Demand, EnviroReg, and FinMarket, are associated with lower volatility. The results for idiosyncratic risks were similar to that of volatility except that the word contractual risk is no longer significant while Demand becomes significant. The other tests conducted involved examining the association between the disclosed risks and systematic risks, which was estimated using factor loading for each Fama-French 4-Factor model, and examining the relationship between asset pricing risk factors and the risk factors disclosed by the firms. The results of the test for systematic risk show that more risk disclosures relating to customer demand, cost of input, supply chain, international markets, ability to access credit markets, and ability to develop new products are associated with higher market betas. However, firms with risk disclosure associated with health care, insurance, litigation, information technology, systems failure, real estate, new product and service development, and more general disclaimers have lower market betas, suggesting that these firms are risk-averse. The results for the asset pricing risk factors show that for market returns, most of the risk factors have either positive significant coefficient or are not statistically significant, while for the Small minus Big (SMB) portfolio, many of the factors have negative coefficients, and explain about half of the variation in the SMB portfolio. For High minus Low (HML), the disclosure portfolio explains about 69% of the HML variation, while it explains about 50% of the variation for the momentum strategy returns (UMD). In sum, the style analysis results show that, on average, returns in small value firms and SMB and HML factors are related to disclosed risk about access to credit and aggregate financial markets.

To explore whether the disclosures are informative and whether investors incorporate the information into their risk assessment, Campbell et al. (2014) examined the association between post-disclosure measures of firm risk and the unexpected portion of risk factor disclosure which was obtained by controlling for the pre-disclosure measures of firm risk. The results show that the

unexpected portion of risk factor disclosure is positively associated with post-disclosure, market-based measures of firm risk (beta and stock return volatility), thereby suggesting that investors incorporate risk factor disclosures into these market-based measures. Other tests examined the association between the unexpected portion of RFDs and post-disclosure, market-based measures of information asymmetry, the timeliness in which investors incorporate information from RFDs, which was done by examining the association between short-window, abnormal stock returns around the 10-K release and RFDs, and the association between the unexpected portion of RFDs and abnormal returns surrounding the 10-K release. The results of these tests reveal that the unexpected portion of risk factor disclosure is negatively associated with information asymmetry, suggesting that RFDs decrease information asymmetry. The results also show that RFDs are negatively associated with abnormal stock returns. Thus, investors incorporate risk factor disclosures into firm stock price.

Overall, the results in both studies provide support that RFDs are neither generic nor boilerplate and are informative to investors. Although, the main focus of Israelsen (2014) was asset pricing, the paper contributes extensively to the literature on qualitative disclosures in accounting and the information content of disclosures in the annual 10-K. The analysis by Campbell et al. (2014) offers insight into the effect of disclosure on costs of capital by providing evidence that the type of risk a firm is exposed to affects the type of risks that are disclosed.

In Table 3, I present a comparison of the topics extracted from Item 1A risk factor disclosure, with the exclusion of Mirakur (2011) because of the noted sample size limitation, and map these topics by identifying common themes of risk topics. I start by outlining the topics identified in Bao and Datta (2012), adjust for Huang and Li's (2011) list, and then include Israelsen (2014) and Campbell et al.'s (2014) risk topics or key words. Through this mapping process, I further compressed the

topics into six main categories of RFD: financial, regulatory (legal), macroeconomic, idiosyncratic, legal, systematic, and tax. I propose that these compressed categories of risk topics can be further explored to study the determinants of RFDs among other interesting research opportunities relating to RFD topics discussed below.

2.2.4 Proposal for future research on risk factor disclosure content/topics

In this section, I offer some unexplored areas that can guide future researchers as they examine the risk words that are used in RFDs and how this research can influence regulation.

1. Which of the determinants of risk factor disclosure has the most influence on the quality of the disclosure? Identifying the most common or most influential category of RFDs will help researchers better understand RFDs.
2. Are these determinants of equal usefulness to investors? Should users of annual reports be more concerned about certain categories of disclosure than others? This information will be useful to the SEC in proposing changes to RFDs.
3. Can RFDs be decomposed into a normal component that reflects firm risk and an abnormal component that reflects managerial discretion in reporting? If so, what are the likely implications of managerial discretion to inform or misinform capital market participants? Are firms punished for misinforming the market? Due to the negative nature of RFDs, managers are biased against disclosing too much information. Therefore, identifying the managerial discretion component of RFD will provide insight into how managers negotiate the conflict between protecting their self-interest and complying with regulations.

2.3. Investor Usefulness of Risk Factor Disclosure

More effort has gone into examining the investor usefulness of risk factor disclosures compared to other accounting research areas. The focus on investors is not surprising however, as the SEC states

that risk factor disclosure is aimed at providing investors with a clear and concise summary of firms' material risks. Studies on investor usefulness of RFDs have focused on risk and value relevance of the disclosure, the impact of RFDs on future cash flow, how disclosure of risks affects information asymmetry, the effect of disclosure on analyst risk assessment, and how changes in RFDs have affected investors risk assessment. I discuss the details of these papers below.

2.3.1 Value relevance, future cash flow, information asymmetry, and risk assessment

Broadly speaking, value relevance can be explained as the ability of accounting information to capture firm value. In some accounting literature, value relevance is measured as the ability of earnings to explain variation in returns; the greater the explanatory power, the more decision useful the financial information (Francis, Lafond, Olsson, & Schipper, 2004). The effect of information on firm value can be captured through stock market reaction, stock returns, or other measures of firm value. Studies on investor usefulness have examined market based measures of risk and the relationship between risk disclosure and value relevance of the disclosure (Campbell et al., 2014; Israelsen, 2014; Riley &Taylor, 2014; Filzen, 2015; Campbell et al., 2016; Filzen, McBrayer, & Shannon, 2016; Hope et al., 2016; Gaulin, 2017; Hu, Johnson, & Liu, 2017), association between tax RFD and future cash flow (Campbell et al., 2016), RFD and information asymmetry (Campbell et al., 2014), RFD and analysts' assessment of firm risk (Hope et al., 2016), and RFDs and investors risk assessment (Nelson & Pritchard,2016). Two of the papers, Campbell et al. (2014) and Israelsen (2014) were discussed in detail above. This section will focus on the remaining studies on investor usefulness.

Filzen (2015), Filzen et al. (2016), Campbell et al (2016), and Hope et al. (2016) examined different measures of RFDs and both stock return and stock market reaction. Filzen (2015) investigated the informativeness of risk factor disclosure in the 10-Q filing by examining whether

updates to risk factor disclosures are negatively associated with short-window stock returns and negative earnings shock. This study was extended by Filzen et al. (2016) who assessed the association between future returns and quarterly risk factor updates to provide insights into whether the market fully incorporates updates to risk factor disclosure. Campbell et al. (2016), on the other hand, continued the research in Campbell et al. (2014) by examining the relationship between RFD and both future cash flows and firm value. Hope et al. (2016) examined the relationship between the level of detail in risk factor disclosure and both stock market reaction to 10-K reporting and reliability of analysts' fundamental risk assessment.

Filzen (2015) and Filzen et al. (2016) focused on updates to RFDs. The requirements for quarterly RFDs differ from those of the annual 10-K report; for example, while the annual report requires firms to report all risks they are exposed to, quarterly reports are only necessary when there is an update to the risk disclosed in the annual report. Based on disclosure theory's prediction that managers tend to withhold bad news and disclose good news, and the potential legal penalties that can arise if a material risk emerges, Filzen (2015) speculated that managers weigh the perceived costs of disclosing against the expected cost of non-disclosure when deciding whether or not to disclose bad news. Therefore, if updates to RFDs provide investors with information about potential negative outcomes they should have adverse outcomes in future periods and a negative effect on future cash flows and stock returns. Similarly, Filzen et al. (2016) expected quarterly risk factor updates to create uncertainties regarding future cash flow to the firm in both magnitude and likelihood if the risk materializes, making it difficult to predict the future state of the firm. Campbell et al. (2016) conducted their study in a tax setting because future cash flows associated with taxes can be directly captured in tax measures, such as effective tax rate and cash taxes paid, unlike future cash flow implications of other risk factors that are dispersed throughout

the financial statement. According to the authors, high levels of tax risk disclosures can have two implications; it can indicate that firms have engaged in some risk-taking activities that will lower future tax payments and increase future cash flow, or it can imply that the firm has taken tax positions that will expose the firm to taxes and penalties which will lower future cash flow and increase tax payment. Building on the assumptions that the market possesses some degree of efficiency and that analysts make use of public information, Hope et al. (2016) examined whether and how investors and analysts benefit from more specific disclosures. Specificity was operationalized as words or phrases that convey specific information about the firm.

Filzen (2015) predicted lower abnormal returns around the 10-Q filing for firms with risk factor updates relative to firms without risk factor updates. If the risk disclosures provide investors with information about future negative earnings, firms with risk factor updates should have more adverse outcomes in the future. Filzen also predicted that firms with risk factor updates are more to likely experience adverse effects on future earnings relative to firms without risk factor updates. This expectation is continued in Filzen et al. (2016). Based on the same rationale, Filzen et al. (2016) predicted that quarterly risk factor updates will be negatively associated with future stock market returns and extends the prediction to the effect of the language of disclosure. The authors expected that the negative stock market reaction will be stronger for weak updaters, firms that avoid the use of strong language to describe the risk, compared to strong updaters. In the study, strong updaters were defined as firms who use many words related to firm fundamentals. Campbell et al. (2016) expected current tax risk factor disclosure to be associated with future stock return if investors fully incorporate the implications of the disclosure. If investors find the disclosure complex and difficult to comprehend, then there should be no relationship between tax risk disclosures and future stock returns. However, if the high tax disclosure is regarded as tax

aggressiveness that will lower future tax payments, then investors will react to that information resulting in positive stock returns. Considering the usefulness of RFDs for investors, and relying on the assumption that more precise disclosures imply greater information content that should elicit more market reaction, Hope et al. (2016) expected investors to put more weight on risk disclosures with greater specificity, which should facilitate the incorporation of risk information into stock price. This is because research has shown that uncertainty about the variance of a firm's cash flow is priced and that more precise signals receive greater weight (Heinle & Smith, 2017). Hope et al. (2016) predicted a positive association between stock market reaction to the 10-K report and the level of specificity of risk factors. They also expected that more specific RFDs will provide further information that analysts can use to assess a firm's fundamental risk. In summary, updates to RFDs should be associated with stock returns, earnings shock, and future stock market returns, while tax RFDs should be associated with future firm value and future stock returns, and the level of specificity of RFDs should be associated with stock market reaction and reliability of analyst risk assessment.

In both Filzen (2015) and Filzen et al. (2016), the authors used the same python programming language to extract Item1A from SEC filings. In Filzen (2015), the study period was from 2006 to 2010 and the final sample was 13,165 firm-quarters, excluding firms with market value of less than $100 million.[11] For Filzen et al. (2016), the study period was from 2006 to2014, with a sample of 52,955 10-Q fillings for 4,343 unique firms. The variable of interest in both papers, UPDATER, was equal to 1 for firms with risk factor updates in the 10-Q filing, otherwise the value is zero. For a firm to be considered as an UPDATER, a risk factor section must be extracted from the 10-Q, the extracted section must be more than 200 words, and the section must

[11]The regulation excludes small firms, which are firms with market capitalization of less than $75m. The author uses an exclusion level of$100m to be more conservative.

be at least 100 words longer than the previous quarter for the second and third quarters. In addition, Filzen et al. (2016) classified firms in the top quartile as strong updaters and those in the bottom third quartile as weak updaters based on a defined word list.[12] The method in Campbell et al. (2016) was based on the same procedure as Campbell et al. (2014) with updated tax keywords that capture tax related risks, such as "foreign tax, haven, tax provision, taxable income, and tax law". The sample period was from 2005 to 2010, although the actual period extends into 2013 to meet the requirement of three-year forward data for some of the variables. The sample sizes were 7,234, 6,735, and 6,312 for the one one-year forward, two-year forward, and three-year forward sample, respectively. Hope et al. (2016) used a technique called Named Entity Recognition (NER) to identify and extract specific measures under different categories, including identified names of persons, locations, organizations, and quantitative values in percentages, money values in dollars, time, and dates. To test stock market reaction, the final sample was 14,865 firm-year observations from 2006 to 2010 and to examine analyst risk assessment 627 firms were classified into the top and bottom quintile.

Filzen (2015) tested the stock market reaction as the Cumulative Abnormal Return (CAR) three days around the day of 10-Qfiling. In addition, quarterly earnings surprise was calculated as the change in earnings, scaled by total assets and then multiplied by 100. Similar to Filzen (2015), Hope et al. (2016) measured stock market reaction as the absolute value of three-day abnormal returns around the 10-K filing date. They also examined analyst fundamental risk assessment

[12] The complete word stem list used was: bankrupt, busi, cash, charg, competit, condit, cost, custom, cyclic, demand, divis, earn, economi, environ, expens, financi, incom, lawsuit, legal, liquid, litig, market, oper, product, profit, revenu, sale, season, servic, settlement, solvenc, spend, sue. The complete word list is as follows: bankrupt, business, cash, charge, competition, competitive, competitor, conditions, cost, customer, cyclical, demand, division, earnings, economy, environment, expense, financial, income, lawsuit, legal, liquidity, litigation, market, operations, product, profit, revenue, sales, seasonal, services, settlement, solvency, spending, and sue.

measured as the absolute value of the difference between the one-year ahead realized raw return and one-year ahead stock price forecast in the first analyst report. Filzen et al. (2016) measured market return as three-month buy-and-hold annual return, while Campbell et al. (2016) used the annual buy-and-hold return for each firm. Future cash taxes were measured as one-year, two-year, or three-year cash taxes paid in Campbell et al. (2016), while effective tax rate was used as an alternate measure.

Overall results confirm the informativeness of RFDs and stock market reaction to information in the 10-K. Specifically, Filzen (2015) confirmed significant negative association between UPDATER and both cumulative abnormal returns and earnings surprise, suggesting that firms that release quarterly updates of their risk factors have lower CAR around the 10-Q filing and a downward shift in the distribution of unexpected earnings in all three quarters following the update. However, in terms of earnings surprise, the result becomes less statistically significant as the period increases. The results discussed by Filzen et al. (2016) reveal a negative association between quarterly RFD and future stock returns and also show that the reaction is more negative for weak updaters compared to strong updaters. These results suggest that completeness of reaction to an update is affected by the content of the update. Alternate tests using a trading strategy further confirm these findings. Campbell et al. (2016) showed a negative association between future cash taxes (for all three subsequent years) and tax-related risk words, implying that tax risk disclosure signals an increase in cash flow through a decrease in future cash taxes paid. This result also holds when effective tax rate is used as an alternate test. Other results show a positive association between returns and tax risk disclosure over one-year and two-year horizons, but the results become more positive as the horizon increases suggesting that investors do not immediately price the information in tax risk disclosure. The results in Hope et al. (2016) show that specificity is

negatively related to proprietary cost and accruals and positively related to many other variables including specificity of 10-K, length of 10-K, return volatility, and analyst forecast error. The results to test market reaction provide evidence that a higher level of specificity leads to stronger market reaction to the 10-K report. Further tests showed that specificity of the quantitative disclosures (money, percentage, date, and time) are more significant, but when the disclosure categories are considered individually, money and date are the most significant. Alternate tests, such as using abnormal trading volume to test stock market reaction, examining the period before SEC requirement of RFD, and splitting the sample by proprietary cost, confirmed the study findings. The results also show that greater specificity helps analysts make better estimations.

These papers provide evidence of the informativeness of RFDs for future cash flows, firm value, stock returns, earnings surprises, and analyst risk assessment. The methods used enable researchers to examine different aspects of qualitative disclosures in evaluating the completeness and accuracy of such disclosures. Specifically, Hope et al. (2016) provided empirical evidence that supports the SEC's call for more specific risk disclosures by showing the benefit of improved risk disclosures to investors. These studies clearly demonstrate that RFDs are not boilerplate.

There are four other research papers relating to usefulness of RFDs for investors: Riley and Taylor (2014), Nelson and Pritchard (2016), Gaulin (2017), and Hu et al. (2017). Riley and Taylor (2014) examined the effects of readability of RFDs, varying the degrees of familiarity of the RFDs from familiar, moderately familiar, to unfamiliar in an experimental setting. Nelson and Pritchard (2016) studied how the change from voluntary to mandatory reporting affects the disclosure of risk factors by examining the association between securities fraud litigation and RFDs. They also assessed firms' responses to SEC's 2005 disclosure mandate and the relevance of risk factor disclosure to investors. Gaulin (2017) examined whether managers disclose risk factors that warn

of future adverse outcomes by testing whether managers disclose risk factors in a timely manner and whether the demands for risk factors from the various stakeholders affect managerial disclosure decision. In a theoretical setting, Hu et al. (2017) examined the effect of parameter uncertainty in the pricing of risk by providing evidence that differences in priors[13] result in differential pricing of risk for the same set of assets. The authors used RFDs as a novel instrument to proxy investors' priors on a firm exposure to risk factors.

Because RFDs must be written in plain English with no legal jargon, and based on the management obfuscation hypothesis, Riley and Taylor (2017) expected that managers have an incentive to make annual reports difficult to read so investors are unable to incorporate adverse information into stock prices. Nelson and Pritchard (2016) explained that the provision of the Private Securities Litigation Reform Act (PSLRA) provided as an incentive for firms to voluntarily disclose risk factors in order to enjoy the safe harbour provision, thereby shielding firms from liability for forward-looking statements which could reduce likely litigation costs. Similar to Riley and Taylor (2014), Nelson and Pritchard (2016) examined the SEC's requirement of plain language, meaning that disclosures must go beyond boilerplate discussion of risks and should be thorough, updated year to year, and readable. The expectation is that under the PSLRA, firms with greater probability of litigation have greater expected benefits from disclosing risk factors compared to firms with less likelihood of being sued. Therefore, it is expected that firms with greater risk of litigation will provide more RFDs that are more specific and readable than firms with lower risk of litigation. Also, an increase in litigation risk will trigger more meaningful, readable, and less boilerplate risk factor disclosure for these firms. Furthermore, under a voluntary disclosure regime, firms at greater risk of litigation will provide more RFDs that are less generic

[13] Priors refer to uncertain quantity in the probability distribution under Bayesian statistics.

and more readable while under a mandatory disclosure regime, risk factor disclosures will be similar across firms with both low and high litigation risk. Nelson and Pritchard (2016) also expected meaningful RFDs to improve investors' assessment of expected future cash flow as seen through the positive association between RFDs and market assessment of firm risk. Gaulin (2017) expected managers to be motivated to provide risk information not only because it is a SEC requirement but because investors demand this information as an early warning of negative outcomes, which can subsequently reduce the expected cost of class-action securities litigation under the litigation shield. This shield, however, can only be invoked if the disclosure complies with SEC's regulation on specificity and level of detail. These three studies emphasize the importance of clarity and understandability of RFDs.

The method in Riley and Taylor (2014) involved a survey sent out to 44,000 people. The final study participants were 365 non-professional investors. Using a 1 X 3 mixed research design, participants were randomly assigned to the treatment conditions of more or less readable for a fictional company. The risk words were developed using similar risk factors from a random sample of 100 of the Fortune 500 companies and cover the areas of sales, data security, and control over financial reporting. The familiar risk scenario described risks from a competitive environment and potentially negative effects of changing customer preferences. The second risk factor scenario discussed the moderately familiar risk of holding sensitive client data, while the third risk scenario addressed the unfamiliar risk that an internal control weakness may compromise the reliability of the financial reports. Participants were then asked to provide their initial perception of each risk factor for probability of economic loss, size of economic loss, worry, and overall risk and then provide information on their expected stock price, buy/sell recommendation, and perceptions of managements' reporting credibility. In Nelson and Pritchard (2016), the study examined the period

of voluntary disclosure from 1996 to 2004 and the mandatory regime from 2005 to 2010. Firms were classified as high or low litigation risk based on an estimate of firm-specific ex-ante litigation risk. Five percent of the firms were selected for the high risk sample for a total of 181 firms. Similarly, 5% of the firms in the low risk sample were randomly selected for a total of 112 firms. The three proxies used for RFD characteristics are the risk factor disclosure word count, the resemblance score for non-boilerplate disclosure, and the Fog index for readability. Gaulin (2017) followed the procedure described in Campbell et al. (2014) to extract RFDs, and the final sample in the study included 31,549 firm-years from 2005 to 2015. Three proxies are used to track risk factor evolution over time: total number of risk factors, number of new risk factors, and number of dropped risk factors from the previous filing. To identify new and dropped risks, for each risk factor across the years, a search for an exact match was performed allowing for a minimum of 50% character-level match. If no match was found, the risk factor was considered "new". Where a match was found in year t, the matched risks were dropped in year t-1.Therefore, the remaining risks in year t-1 represented risks that no longer featured in year t and were counted as dropped risks. Definitiveness of the risk factors was measured based on the language in the disclosure (i.e., whether it used general language or named a specific entity or location; similar to Hope et al. 2016), the percentage of words that were numeric such as numbers, percentages, currencies, or dates, and the average words per risk factor. Adverse outcomes were considered as negative net income, negative operating income, sales declines, and business or non-securities litigation.

Hu et al. (2017) first developed a model to show that differences in perceived risk exposure can arise due to different priors for the same asset which can then result in different required returns. The dummy variable to proxy for the dichotomous prior distribution of the beta on a risk factor takes the value of one if a risk factor appears in item 1A of the 10-K report and zero

otherwise. Investors priors on the firm's exposure to the risk was classified as low beta prior if specific risk words or phrases (interest rate, currency and exchange rate, commodity, and economic downturn and recession) do not appear in Item 1A or high beta prior if a word or phrase appear at least once. Interest rate risk factor was measured as the difference between the return on 10-year government bond and the three-month Treasury bill rate. Exchange rate risk was considered as the monthly return of the U.S. dollar against a range of major world currencies. Commodity risk was the monthly return of the All Commodity Price Index and downturn/recession risk was the spread between the five-year bond yield and the yield of the three-month Treasury bill. The sample period was from January 2006 to December 2014 and the authors used Fama-MacBeth regressions to examine the difference between the slopes of the return-factor beta for the two groups (i.e., the high beta and low beta group). For each of the four categories of risk, the sample was divided into whether a firm discloses the risk or not, and the risk exposure to the risk category was calculated using monthly returns data for the previous five years. The firms were then sorted into quintile or tercile portfolios, which are held for one year and rebalanced in January. The average excess return per annum, average exposure to each risk category, average return for long-short portfolios, and the 3-factor model were presented. The difference between return-factor beta slopes for reporting and non-reporting firms was tested by cross section regression of portfolio returns on the cross section of beta.

Riley and Taylor (2014) confirmed that readability affects non-professional investors' assessments of risk and that this effect was different for familiar versus unfamiliar risk. Their results also showed that there is no effect on investment decisions between participants that receive disclosures in readable versus less readable language. Similarly, presentation style had no effect on non-professional investors' assessments of management credibility, and readability had no

effect on whether non-professional investors read and rely on management-provided risk disclosures. Nelson and Pritchard (2016) offered evidence that the amount of disclosure increases with firm risk and high risk firms provide less boilerplate RFD; however, this result is less significant when reporting is mandatory. The study also shows that during the mandatory regime high risk and low risk firms are similar in their use of boilerplate disclosures. The test for readability confirms that firms with more readable Management Discussion & Analysis (MD&A) provide more meaningful RFDs. Furthermore, firms disclose more risk factors if litigation risk increases but do not substantially change their risk factors in response to a decrease in litigation risk, i.e., risk factor disclosure is sticky. This is contrary to the results reported in other studies on updated RFDs (Filzen, 2015; Filzen et al., 2016; Gaulin, 2017). Additionally, Nelson and Pritchard (2017) provided evidence that RFD is positively associated with investor risk assessment for high risk firms only under a voluntary regime and for both high risk and low risk firms when reporting is mandatory. Gaulin (2017) showed a positive association between new risk factors and dropped risk factors for all the measures of future economic outcomes confirming that managers are updating risk factors in an informative and timely manner. The results also suggest that managers disclose more specific risk factors in advance of adverse outcomes and managers respond to private law enforcement by increasing the new risk factors they identify, thereby increasing the total number of risk factors discussed. This increase persists for multiple years for private security litigation but not for SEC comment letters. Also, the results provide evidence that managers react to public enforcement by increasing the definitiveness of their RFDs. The results from Hu et al. (2017) showed that the return-factor beta slope for non-reporting firms is higher than that of reporting firms for all the four risk categories. Furthermore, investors form priors about risk exposure by combining information provided directly by firms with other data, and the relation

between required return and risk factor betas is steeper under low beta prior than high beta prior. These results confirm that the return-factor beta slope is steeper for firms that do not disclose a given risk factor.

The results discussed in Riley and Taylor (2014) provided information about another type of investor, non-professional investors, and the study used an experimental setting which is unique from the other studies discussed herein. The major limitation of the paper was the low response rate of around 1% which threatens the validity of the results. Nelson and Pritchard (2016) highlighted the significance of RFDs to managers and legal counsel for formulating a disclosure strategy and to regulators and courts in evaluating disclosure quality for assessing the risks posed by firms. Gaulin (2017) showed that managers update their disclosure in a timely manner and do not merely copy and paste, while Hu et al. (2017) demonstrated the importance of RFDs as a source of information about firms' risk exposures. Overall, these four studies highlight the importance of clear and precise RFDs and the subsequent impact on firms' risks.

2.3.2 Proposal for future research on investor usefulness

Although there is extensive work already done on investor usefulness of risk factor disclosure, there is still opportunity for further research in this area. The following research questions are proposed for future studies on investor usefulness:

1. What is the effect of risk factor disclosure on the cost of equity capital? Campbell et al. (2014) reported a reduction in information asymmetry effect; examining the effect of this reduction on capital costs will be interesting.
2. How are firms' risk disclosures considered by market participants? Are the firms considered as riskier or more transparent? Risk disclosure is negative by nature and

different from most disclosures in the annual report. Whether more RFD is considered more risk or better quality remains to be investigated.

3. Are firms with better risk disclosures able to raise capital more easily?
4. How do stock markets react to the release and update of risk factor disclosure?[14]Is it possible to isolate the effect of RFD from other information in the 10-K?
5. How are risk disclosures related to the firms' information environment such as investors' and analysts' trading behaviour? Hope et al. (2016) report some benefits of more specific RFD for analysts. Other analyst characteristics can also be examined to better understand these benefits.

2.4. Contracting Usefulness

Studies on contracting usefulness tend to focus on compensation and debt contracting. There is currently only one paper on the usefulness of RFDs in the debt market. There is vast potential for research on the impact of RFDs in the debt market. Apart from the SEC's interest in the benefit of RFDs for other users of the annual 10-K report, examining the debt market is important as debt financing is the predominant source of external financing in the US. The securities issue report for US corporations published by the Federal Reserve Bank shows that over $1.6 trillion bonds were issued in 2016.[15] Section 2.4.3 includes recommendations on research opportunities relating to RFDs and debt contracting.

[14] Since Item 1A is released along with other information, it may be difficult to examine the direct impact.
[15]This data is available from the Federal Reserve Bank current releases: https://www.federalreserve.gov/econresdata/releases/corpsecure/current.htm.

2.4.1 Debt Contracting

Chiu et al. (2017) examined the relationship between RFDs and the pricing of credit default swap. The study builds on the expectation that more transparent or precise accounting disclosures will help reduce credit stakeholder's uncertainty about the underlying firm risk. The authors examined the effect of RFDs on credit default swap spread and whether this effect is greater for firms with high information uncertainty. The sample period extends from 2003 to 2007 and the final sample size is 7,504 firm quarter observations for 535 unique firms. The authors use both level and change research models to examine the research objectives. RFD is measured as a dummy variable that takes the value of one for firms that comply with Item 1A disclosure and zero otherwise. Credit default swap pricing is measured as the natural log of the spread on the first day of trading after SEC filing. Information uncertainty is operationalized as analyst forecast dispersion, number of business segments, and number of credit default swap quote contributors.

The authors find that credit default swap spread reduces from pre-RFDs period to post-RFDs period, suggesting that credit investors incorporate RFDs in their pricing of credit default swap. The authors also use content analysis to examine the association between credit default swap and the length of RFDs. Similar to Campbell et al. (2014), the authors find a positive association between credit default swap spread and RFDs further confirming RFD is priced in credit default swap spreads. The results also show that the effect of RFDs on credit default swap is more pronounced when there is greater information uncertainty. Overall results confirm the usefulness of RFDs in the debt market and opens up further research on the usefulness of RFDs to other audiences other than equity investors. Next, I discuss the only paper on compensation contracting by Israelsen and Yonker (2017).

2.4.2 Compensation contracting

Israelsen and Yonker (2017) examined the human capital risks posed by key employees, defined as an employee who possesses a large fraction of the firm's human capital. In their study, disclosure relating to "key man life insurance" was used as a measure of human capital risk. The human capital possessed by key employees is difficult if not impossible to replace, for example scientists who develop high-tech products and some Chief Executive Officers (CEOs). Thus, companies exposed to key human capital risk may obtain key man life insurance policies due to dependence on such employees or in accordance with loan covenant requirements.

To develop the data, Israelsen and Yonker conducted a search of filings from every firm listed on the New York Stock Exchange (NYSE), NASDAR, and the American Stock Exchange (AMEX) to identify disclosure of key man insurance. A computer script was written to search for phrases such as "key person life insurance", "key woman life insurance" and similar derivatives. Identified firms were further classified as to whether key life employees are disclosed and insured (Disclosure/Yes) or disclosed but not insured (Disclosure/No). Key human capital was set as an indicator variable equal to one for the Disclose/Yes firms and zero for the Disclose/No firms. The sample in the study was 51,316 firm-year observations for 8,013 unique firms from 1996 to 2009. Of the firms that disclose and have insurance, those that state the policy amount were further classified.

To investigate the characteristics of firms that are exposed to key human capital risk, the authors examined differences between firms that insure key employees and those that do not. The results showed that smaller, younger firms with better growth opportunities, lower asset tangibility, and greater propensity to make disclosures are more likely to be key human capital intensive. Also, there is some evidence that these firms have weak governance and most are run by the CEO.

Furthermore, insuring firms tend to be smaller, have poorer growth opportunities, and fewer tangible assets compared to firms with human capital that is not insured. To test whether key human capital firms were riskier, the volatility and abnormal returns for firms with higher key human capital were examined where stock volatility was measured as the daily standard deviation of stock returns and stock idiosyncratic volatility was the standard deviation of the residual from a regression of daily stock returns on the 3 Fama-French factors. The results of this test showed that volatility is higher for firms that make key man insurance disclosures, but there is no difference in the level of risk between firms that choose to insure and those that do not. To test market reaction to the announcement of key employees, firms with key human capital (KHC) intensity were further split into high KHC and low KHC based on the median score in the sample. The results showed that when key executives leave high KHC firms, there is a more negative market reaction but hardly any reaction when key executives depart from low KHC firms. The authors then examined whether firms with key human capital are more innovative than those without, where innovation was measured as the natural log of number of patents filed during the calendar year and the number of citations the patents received. The results showed that firms with key human capital produce more patents than similar sized industry peers. Also, firms with key employees holding MD and PhD degrees produce more patents than firms whose key employees are not doctors. The final test to examine whether key human capital represents a systematic source of risk to an investor did not show any statistical difference between the high and low KHC portfolios; however, when tercile portfolios were created, the results show a difference between the two groups suggesting that investors require compensation for holding firms with key human capital risk.

This study contributes to the literature by identifying and investigating a new type of human capital – key human capital – and providing evidence of the risks associated with key

human capital. Furthermore, focusing only on key employees and not all executives highlights the importance of identifying the type of human capital that is important to firms.

2.4.3 Future research on contracting usefulness

Compared to research on investor usefulness of risk disclosure, the literature on contracting usefulness is very limited. A possible reason is the regulation's focus on investors to the detriment of other financial statement users. In light of the SEC's recent interest in understanding how other users can benefit from this disclosure, we can expect research to increase on contracting usefulness of RFDs. To advance this line of research, I propose the following questions for researchers to consider in examining the topics relating to contracting usefulness of RFDs.

1. Is the risk profile of firms reflected in their risk factor disclosure? Campbell et al. (2014) found that the RFD of firms reflects the type of risks they are exposed to; can RFDs be used as a proxy of risk?
2. How are risk disclosures used by the debt market? The focus of RFD research has been on the equity market. However, understanding its usefulness in the debt market is also relevant.
3. Are risk factor disclosures related to managerial risk-taking incentives and managerial risk aversions? Since managers have the discretion to report more or less risk, understanding how managerial qualities or characteristics are reflected in RFD is important.
4. What is the effect of director's equity-based pay on the quality of risk disclosure? Li (2006) explained that managers have career concerns regarding disclosure of negative information. Examining the association between the quality of RFD and managerial pay incentives will be interesting.

2.5. Market-wide Usefulness

In this section, I discuss other papers on RFDs that do not directly relate to investor or contracting usefulness but benefit the market at large. These papers relate to the effect of SEC comment letters and product market competition. The findings from these papers also enrich our knowledge of RFDs and their application in other management fields outside accounting and finance.

2.5.1 Risk factor disclosures and SEC comment letters

Brown, Tian, and Tucker (2014) and Beatty, Cheng, and Zhang (2015) examined the effect of SEC comment letters related to RFDs. Brown et al. (2014) investigated whether a firm changes its risk factor disclosure after observing SEC comments on its peers' disclosures, while Beatty et al. (2015) assessed the relationship between increased financial constraints risk disclosure and changes in underlying financial risk outcomes for the period before and after the financial crisis and the period before and after a firm receives SEC RFD comment letters. These two periods are significant because the former is associated with changes in underlying financial constraint risk while the latter puts regulatory pressure on the firm which may or may not reflect underlying economic risk. As explained by Brown et al. (2014), the SEC can issue a comment letter after a full review of a firm's filings, a financial statement review, or a targeted review examining only specific issues in the filing. Firms can respond to the comment letter by providing additional information, amending the filing, or disclosing additional information in future filings. Firms avoid receiving SEC comment letters related to RFDs because of the negative consequences of this disclosure, for example the significant amount of time and resources needed to resolve the issues identified, which can lead to uncertainties and distractions for management. In addition, the

comment letter can negatively affect investors' perceptions about the firm which may affect the firm's market return.

Brown et al. (2014) examined how a no-letter firm (a firm that did not receive a SEC comment letter) reacts to comment letters received by the leaders in their industry (at least 20% share), a close industry rival, a large number of industry peers, and an industry peer with the same auditor. The data was obtained from 10-K filings in the EDGAR and Audit Analytics databases for the period between January 2005 and December 2010. The final sample was made up of 13,254 Item 1A filings. The sample firms were grouped into four categories: (1) risk letter firms are firms that receive comments on the risk factor disclosure; (2) 10-K non-risk-letter firms receive comments on 10-K issues other than risk factor disclosure; (3) other-letter firms receive comments on filings other than 10-K; and (4) no-letter firms do not receive any SEC comment letter. RFD modification was measured based on a similarity score and the absolute change in the number of words in the RFD. Beatty et al. (2015) tested the association between the extent of disclosure of financial constraints risk and measures of expected financial constraints and litigation risks. They also tested the association between realized financial constraints and the extent of financial constraints RFDs over the financial crisis period and the association between realized financial constraints and the extent of financial constraints RFDs after receiving an SEC comment letter. The sample for the study was drawn from all 10-K filings from 2006 to 2013 on EDGAR and consisted of 22,434 firm-year observations from 4,658 unique firms. Financial constraint disclosure relates to external capital, leverage, and cash flows.

The results in Brown et al. (2014) confirmed a spillover effect based on industry leader, close rival, or a large number of industry peers receiving SEC comment letters, i.e., a no-letter firm will significantly modify the following year's risk disclosure in response to the comment letter

received by other companies in these situations. The result, however, was not significant when an industry peer with the same auditor receives a comment letter. Beatty et al. (2015) confirmed that risk factor disclosures reflect expected financial constraint but this did not change for the pre-, during, and post-crisis period for the financial constraint measure. It did, however, change for the litigation risk measure, suggesting that RFDs are more sensitive to litigation risk. The results also showed that the quality of RFDs reduce from the pre- to the post-crisis period and that firms increase their disclosures after receiving a SEC comment letter; however, this effect diminishes one-year after receiving the SEC comment letter.

These studies contribute to the RFD and public enforcement literature by showing that there is some reaction to SEC comment letters on risks that have market-wide implications.

2.5.2 Product market competition

Yen, Li, and Chen (2016) examined whether and how firms in more concentrated industries (higher proprietary costs) avoid divulging information to competitors through risk factor disclosures. The study builds on proprietary cost theory and the willingness of managers to provide more or less information when faced with competition. Firms can choose to disclose less to avoid the proprietary cost of disclosure or more when the benefit of sharing cost is higher than the cost. Also, the threat of entrants and litigation risks can influence the level of risk disclosure due to the negative nature of this disclosure. The authors examined the association and similarity between industry concentration and both overall risk disclosure and idiosyncratic RFD.

The sample was drawn from all non-financial firms in Compustat from 2006 to 2009, with a final sample consisting of 8,509 firm-year observations and 1,155 industry years. The risk measures were based on the five RFD categories identified in Campbell et al. (2014). The similarity score followed comparable literature that uses cosine similarity scores, while industry

concentration was measured using the U.S. census-based four-firm concentration ratio. The results showed that firms in more concentrated industries actually increase the number of RFDs in Item1A; they do not decrease the disclosure to avoid divulging information. Furthermore, firms in more concentrated industries may reduce the informativeness of their disclosures by making them similar to their competitors rather than reduce the amount of risk disclosure.

The finding that firms avoid divulging information by making their disclosure content similar to those of their competitors highlights a strategy that firms can use to reduce the informativeness of their disclosure. Future studies can explore the effect of RFDs in other management fields such as organizational behaviour and marketing.

2.5.3 Future research on other topics

Below are some suggested research topics on risk factor disclosures that are not related to investor or contracting usefulness of the disclosure but have some market-wide implications.

1. How do a firm's characteristics determine the type of risk disclosure? Studies can examine the relationship between firm characteristics such as firm size, auditor type, industry, and RFD.
2. Are risk disclosures reflected in firms' performance? Studies can examine accounting and market-based measures of performance to understand the relationship between firm performance and RFD.
3. What is the influence of corporate governance on risk factor disclosures? How do governance attributes, such as board characteristics, influence risk factor disclosures? Several internal and external governance characteristics can be examined and corporate governance indexes can be developed to research the topic.

4. What is the implication of risk disclosure for litigations? Are 'riskier' firms exposed to higher litigation risk?
5. What is the relationship between risk factor disclosure and firms' risk of bankruptcy or fraud?

2.6. Conclusion

This chapter reviews and proposes directions for future research on RFDs. This review focuses on the history and background of the regulation, contents or topics disclosed, studies on investor and contracting usefulness, and research on market-wide usefulness of RFDs, such as effect of SEC comment letters and product market competition. Beginning in 2005, SEC made it mandatory for large firms in the US to disclose risks that significantly affect their businesses or securities in Item 1A of the 10-K report. Following criticisms on the generic nature of this disclosure, the SEC has called for more specific disclosures and also asked the public to provide comments on how to improve risk factor disclosures.

The review of recent research findings shows that this disclosure offers some information that is useful to investors, analysts, and other annual report users, confirming that the RFDs are not boilerplate as speculated earlier. This review maps out the current state of the literature and suggests areas for future research relating to the content of RFDs, investor and contracting usefulness of RFDs, and market-wide usefulness of the disclosure. Directions for future research include analysing the cost versus benefit of improving the disclosure, assessing the usefulness of RFDs for potential users in the debt market, and understanding the association between RFDs and corporate governance attributes.

To date, this review is the only identified study to provide a comprehensive review of the RFD literature. The findings and suggestions provide a platform for future research in this field and are informative to users of the annual report and regulators.

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Appendix

Item 1A.Risk Factors.

The value of an investment in Dynacq Healthcare, Inc. is subject to significant risks, certain of which are specific to our Company, others are inherent in our business and the industry in which we operate, and still others are market related. If any of the matters described in the risk factors listed below were to occur, our business and financial results could be materially adversely affected. The Risk Factors described below apply to the current operations and market for the common stock of the Company, and do not address risks that may arise in the future.

Risks Related to our Business

We continue to incur substantial losses, and we have no current prospect of generating operating profits.

For the fiscal years ended August 31, 2012 and 2011, our business generated a net loss of approximately $12.2 million and $21.0 million, respectively. In recent years, our net patient revenues have declined, relative to historical levels, due to declines in patient referrals. While we continue to seek out additional sources of patient referrals, we have not been able to realize the substantial increase in patient referrals we require in order to generate the revenues needed to offset our operating losses. Our industry is highly competitive, and we have not been able to identify and execute any business plan that might result in an operating profit or even in decreased losses. We are currently evaluating strategic alternatives in an attempt to reverse our historical trend of operating losses, although there can be no assurance that we will be able to reverse this trend. If we are unable to generate positive net income on a consistent basis going forward, we may not be able to continue our operations.

Our cash reserves cannot continue to support the level of losses we have incurred in recent years.

As of August 31, 2012, we had approximately $30.8 million in net assets, including approximately $10.6 million in cash and cash equivalents, available for continuing operations. These reserves are being steadily depleted by our losses, which totalled approximately $33.2 million in our last two fiscal years. If we are unsuccessful in implementing an alternative business plan to increase revenues and improve performance, or are otherwise required to continue to use a substantial portion of our current assets in order to continue our day to day operations, then our continued operations will not be sustainable.

A significant percentage of our revenues are generated through relatively few physicians.

For the fiscal year ended August 31, 2012, approximately 90% of our gross revenues of our Pasadena facility were generated from 7 surgeons. For the fiscal year ended August 31, 2011, approximately 91% of our gross revenues of our Pasadena facility were generated from 11 surgeons. A physician from our medical staff, who accounted for 19% and 7% of gross revenues for the fiscal year ended August 31, 2012 and 2011, respectively, passed away in August 2012. The loss of this physician led to a reduction in our revenues and adversely affected our results of operations. The loss of other physicians who provide significant net patient revenues for the Company may adversely affect our results of operations.

Tables

Table 1: Summary of Literature

Article	Topics	Method	Time Period	Sample	Findings
Bao & Datta 2012	Topic Modelling	Modified version of LDA to identify topics	2006-2010	14,799 10-K filings	Identified 30 risk topics covered in risk factor disclosure.
Beatty, Cheng, &Zhang, 2015	Financial crisis period and response to SEC comment letters	Content analysis to identify sentences on financial constraint risk	2006-2013	22,438 firm-year observations	Financial constraints risk disclosures are positively associated with financial constraints risk outcomes pre-financial crisis period, but the association disappears during the crisis and post-crisis after the firm receives SEC comment letters, i.e., increased regulation.
Brown, Tian, & Tucker, 2014	Spillover effect of SEC comment letters	Change in disclosure using Vector Space Model and change in length of disclosure	2005-2010	13,254 firm-year observations	Firms that did not receive any comment letter from SEC tend to modify a subsequent year's risk disclosure if the SEC commented on the risk disclosure of its industry leader, a close rival, or numerous industry peers; After the release of an industry leaders' comment, firms that did not receive any letter make their subsequent risk disclosure more firm-specific.
Campbell, Chen,	Information content	Word Categorization	2000-2008	9,076 firm-year observations	Firms facing greater risk disclose more risk factors and the type of risk faced by a firm determines how much of the

Article	Topics	Method	Time Period	Sample	Findings
Dhaliwal, Lu, & Steel, 2014					section is dedicated to describing that risk; Information in risk factor disclosure is reflected in idiosyncratic risk, information asymmetry, systematic risk and firm value.
Campbell, Cecchini, Cianci, Ehinger, & Werner, 2016	Future cash flow and stock returns	Content analysis based on key words	2005-2010	7,234 for one-year forward 6,735 for two-year forward 6,312 for three-year forward 6,944 for value relevance test	Significant positive association between tax risk disclosure and future cash flow; Tax risks are positively associated with future stock returns.
Chiu, Guan, & Kim, 2017	The Effect of Risk Factor Disclosures on the Pricing of Credit Default Swaps.	Content analysis.	2003-2007	7,504 firm-quarter observations.	Credit Default Spread (CDS) decreased after disclosure of risk factors. CDS increases with the length of RFDs and the number of risk words. Also, CDS is more pronounced for firms with greater information asymmetry. CDS volatility also decreases from the pre- to the post-disclosure period.
Filzen, 2015	Informativeness of risk factor disclosure in 10-Q	Automated Python programming language	2006-2010	13,165 firm-quarters	Firms with quarterly updates to their risk factor have lower cumulative abnormal returns around the 10-Q filing; Quarterly update is associated with downward shift in the distribution of unexpected earnings three quarters following the update.

Article	Topics	Method	Time Period	Sample	Findings
Filzen, McBrayer, & Shannon, 2016	Future stock returns and stock market efficiency around quarterly update language	Automated Python programming language	2006-2014	52,955 firm-quarters	Evidence of stock market under reaction for firms that do not use words that describe the impact of their risk on firm fundamentals.
Gaulin, 2007	Whether mangers disclose risks to warn of future outcomes	Regression analysis	2005-2015	31,549 firm-years	Managers update their disclosure in an informative manner.
Huang & Li 2011	Topic Labelling	Multi-label text classifier	2006-2010	21,077 10-K filings	Identified 25 risk types.
Hope, Danqi, & Hai, 2016	Level of detail	Automated analysis based on Campbell et al. (2014)	2006-2011	14,865	Absolute value of market reaction to 10-K filing is significantly positively associated with the level of detail; Analysts are better able to assess a firms' fundamental risk when risk factor disclosures are more detailed.
Hu, Johnson, & Liu, 2017	Effect of uncertainty on pricing of risk	Theoretical research	2006-2014	108 monthly returns	Investors form priors about risk exposure. Truthful disclosure of risks can reduce cost of capital.
Israelsen, 2014	Topics of disclosure and firm and industry characteristics associated with disclosure type	Topic modelling using Latent Dirichlet Application (LDA)	2006-2011	21,077 firm-year observations	Average returns in small value firms and in SMB and HML factors are related to the disclosed risks about access to capital and aggregate financial markets.
Israelsen and Yonker, 2017	Key Human Capital	Content analysis; Key word search	1996-2009	51,316 firm-year observations	Firms with key human capital and firms with greater exposure to key human capital are riskier; Stock returns decline at 4% on average following the departure announcement of key employee;

Article	Topics	Method	Time Period	Sample	Findings
					Investors require a premium for exposure to firms with key human capital risk and firms with key human capital are generally more innovative.
Mirakur 2011	Disclosure content and firm performance	Manual content analysis to identify topics	2009 filings	122 random firm-year observations	The 5 most common risk disclosure categories are: capital structure, competition, governance, key personnel, and macro; The risk classifications are not driven by firms' industry and only some risk categories are predictive of capital leverage and cash, but not for leverage and acquisitions.
Nelson & Pritchard, 2016	Voluntary vs. Mandatory risk disclosure regime	Manual extraction of risk factor section.	1996-2010	181 firms (High risk) 112 firms (Low risk)	During voluntary disclosure regime, firms with high litigation risk disclosed a greater number of risk factors that are less boilerplate and easier to read than firms with low litigation risk. This difference disappeared during the mandatory regime. Therefore, firms with high litigation risk use disclosure to mitigate expected cost of litigation.
Riley &Taylor, 2014	Effect of readability on risk factor disclosure	Experimental survey	Not applicable	365 non-professional investors	Readability affects non-professional investors' assessment of risk but has no effect on presentation style or reliance on risks.
Yen, Li, & Chen, 2016	Product market competition	Automated content analysis	2006-2009	8,509 firm-year observations	Firms in more concentrated industries do not reduce the amount of risk factor disclosures but rather provide more similar disclosure to their competitors.

Table 2: SEC Request for Comment Summary

	Request for Comment	Suggestions for Future Research
1145	How could we improve risk factor disclosure? For example, should we revise our rules to require that each risk factor be accompanied by a specific discussion of how the registrant is addressing the risk?	
1146	Should we require registrants to discuss the probability of occurrence and the effect on performance for each risk factor? If so, how could we modify our disclosure requirements to best provide this information to investors? For example, should we require registrants to describe their assessment of risks?	
1147	How could we modify our rules to require or encourage registrants to describe risks with greater specificity and context? For example, should we require registrants to disclose the specific facts and circumstances that make a given risk material to the registrant? How should we balance investors' need for detailed disclosure with the requirement to provide risk factor disclosure that is "clear and concise"? Should we revise our rules to require registrants to present their risk factors in order of management's perception of the magnitude of the risk or by order of importance to management? Are there other ways we could improve the organization of registrants' risk factors disclosure? How would this help investors navigate the disclosure?	Research can build on the work done by Hope et al. (2016) to examine whether the level of specificity or detail is associated with usefulness of risk factor disclosure.
1148	What, if anything, detracts from an investor's ability to gain important information from a registrant's risk factor disclosure? Do lengthy risk factor disclosures hinder an investor's ability to understand the most significant risks?	Studies can examine the relationship between the length of Item 1A disclosure and understandability of the disclosure. Different proxies of understandability such as the Fog index or other lexical quality proxies can be examined. Other factors apart from length can also be examined.
1149	How could we revise our rules to discourage registrants from providing risk factor disclosure that is not specific to the registrant but instead describes risks that are common to an industry or to	Studies have shown some spill-over effect from disclosures. It is possible that generic risks also provide some information to investors. Investigating

	Request for Comment	Suggestions for Future Research
	registrants in general? Alternatively, are generic risk factors important to investors?	the informativeness of generic risks can provide more evidence in this field of research.
1150	Should we specify generic risks that registrants are not required to disclose, and if so, how should we identify those risks? Are there other ways that we could help registrants focus their disclosure on material risks?	
1151	Should we retain or eliminate the examples provided in Item 503(c)? Should we revise our requirements to include additional or different examples? Would deleting these examples encourage registrants to focus on their own risk identification process?	
1152	Should we require registrants to identify and disclose in order their ten most significant risk factors without limiting the total number of risk factors disclosed? If so, should other risk factors be included in a separate section of the filing or in an exhibit to distinguish them from the most significant risks? Alternatively, should we require registrants to provide a risk factors summary in addition to the complete disclosure? Would a summary help investors better understand a registrant's risks by highlighting certain information? Are there challenges associated with requiring a summary of the most significant risks?	Studies can examine the cost versus benefit of requiring additional disclosure in terms of a summary which will also contribute to increasing the length of the 10-K report.
1153	Are there ways, in addition to those we have used in Item 503, our Plain English 153.Rules and guidance on MD&A, to ensure that registrants include meaningful, rather than boilerplate, risk factor disclosure?	
1154	Risk profiles of registrants are constantly changing and evolving. For example, registrants today face risks, such as those associated with cyber security, climate change, and arctic drilling, 494 that may not have existed when the 1964 Guides and 1968 Guides were published. Is Item 503(c) effective for capturing emerging risks? If not, how should we revise Item 503(c) to make it more effective in this regard?	

	Request for Comment	Suggestions for Future Research
1155	What types of investors or audiences are most likely to value the Item 503(c) disclosures?	Studies can examine whether other audiences benefit from risk disclosures. A potential area of future research is examining debt and compensation contracts in line with the risk profile of firms.
1156	What is the cost of providing the disclosure required by Item 503(c), including the administrative and compliance costs of preparing and disseminating this disclosure? How would these costs change if we made any of the changes contemplated here? Please provide quantified estimates where possible and include only those costs associated with providing disclosure under Item 503(c).	

Table 3: Summary of RFD topics

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
1	Shareholder's interest risk	Topic 0: Investment, property, distribution, interest, agreement	Financial: Investment in plant, investment in equipment, leases, improvements, sale of productive assets, locked-in, construction	Dividends Stakeholder	Financial
2	Regulation changes	Topic 1: Regulation, change, law, financial, operation, tax, accounting	Legal & Regulatory: Deregulation, regulatory, regulatory approval, regulatory change, regulatory compliance, regulatory environment, new standard, new method, possibility of restatements, uncertainties in estimates	Regulation	Regulatory/Legal
3	Input prices risks	Topic 2: Gas, price, oil, natural, operation, production	Other systematic: gas, fuel, gasoline, petroleum, metal(s), mineral(s), mining, natural gas, oil, ore, silver, steel, housing, capacity, gold, housing starts, coal, obsolescence, overstocked, price pressure, prices, pricing power, raw material, unsalable inventory	Oil	Macroeconomic
4	Shareholder's interest risk	Topic 3: Stock, price, share, market, future, dividend, security, stakeholder	Financial: stock market listing, stock price drop, stock price volatility, decline in stock price, dividends, illiquid market, underwriting, limited trading, penny stock	Stock Price Disclosure	Financial

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
5	Regulation changes	Topic 4: Cost, regulation, environment, law, operation, liability	Legal and regulatory: casualty, charged, defendant, adverse judgment, anti-trust, environmental, hazardous, product liability, regulation, Superfund	Environmental Regulation	Regulatory/ legal
6	Financial condition risks	Topic 5: control, financial, internal, loss, reporting, history	Financial: financial condition, anti-takeover, dilution, Other idiosyncratic: asset impairment, asset securitization, cost control, downsizing, economies of scale, underlying	Accounting Costs	Financial Idiosyncratic
7	Potential/ongoing lawsuits	Topic 6: financial, litigation, operation, action, legal, liability, regulatory, claim, lawsuit	Legal & Regulatory: class action, compliance, comply, contamination, injury, litigation, pay damages, penalty, enforcement (of judgment),fines, pending lawsuit, plaintiff, potential lawsuit, safety, remediation	Legal	Legal
8	Competition risks	Topic 7: competitive, industry, competition, highly, market		Competition	Systematic
9	Human resource risks	Topic 8: cost, operation, labor, operating, employee, increase, acquisition	Other idiosyncratic: key personnel, labor, labor relations, labor unions, keep & retain top mgt, mgt retention, strike, personnel, redundancy	Human Capital	Idiosyncratic

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
10	New product introduction risks	Topic 9: product, candidate, development, approval, clinical, regulatory	Other idiosyncratic: clinical, new product acceptance, new product dev, product, product dev, product performance, product mix, production, preclinical, patent, advertising, certification, backlog, commercialize, concentration, copyright, licence, market acceptance, marketing innovation, new construction, publicity, research and development	Product Approval Product Development 1 and 2	Idiosyncratic
11	Restructuring risk Merger and acquisition risk	Topic 10: tax, income, asset, net, goodwill, loss, distribution, impairment, intangible	Other idiosyncratic: brand recognition, brand, consolidation, intangible, integrate, intellectual, internal, investment in subsidiaries, restructuring, restructuring implementation,	Accounting	Tax
12	Human resource risks	Topic 11: interest, director, trust, combination, share, conflict	Other idiosyncratic: corporate culture, material weaknesses, reporting controls, Sarbanes-Oxley	Human Capital	Idiosyncratic
13	Potential defects in products	Topic 12: product, liability, claim, market, insurance, sale, revenue	Financial: insider sales	Demand	Idiosyncratic

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
14		Topic 13: loan, real estate, investment, property, market, loss, portfolio	Other idiosyncratic: maintenance, insurance coverage, secret, limited operating history, MBS, M.B.S, Mortgage backed securities, mortgage servicing rights, MSR, M.S.R Other systematic: Mortgage, real, real estate investment trust, REIT, R.E.I.T	Real Estate	Financial
15	Human resource risks	Topic 14: personnel, key, retain, attract, management, employee	Financial: defined benefit, family, reorganization, postretirement, OPEB, O.P.E.B, funded status, unfunded pension, mandatory contribution, adequate staffing, training, union election	Human Capital	Idiosyncratic
16	Volatile stock prices risk	Topic 15: stock, price, operating, stockholder, fluctuate, interest, volatile	Financial: volatility of revenue, operating results, sales	Stock Price	Financial
17	Funding Risks Merger and Acquisition Risks	Topic 16: acquisition, growth, future, operation, additional, capital, strategy	Other idiosyncratic: acquisition, goodwill, goodwill impairment, impairment, joint venture, merger, SPE, S.P.E, Special purpose vehicle, synergy, trademark, variable interest entity, VIE, V.I.E, Proprietary	Growth	Idiosyncratic

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
18	Macroeconomic risks Industry is cyclical	Topic 17: condition, economic, financial, market, industry, change, affected, downturn, demand	Other systematic: economy, EU, Euro, E.U, European union, fiscal policy, foreign currency, aggregate demand, foreign exchange, general business risks, general conditions, seasonal, GDP, G.D.P, GNP, G.N.P, general economic condition, industry, industry environment, inflation, currency collapse, currency, cyclical, demand, economic (condition, downturn, growth), political climate, political instability, pound, middle east, monetary policy, peso, recession, RMB, Rubble, Rupee, terrorism, U.S. dollar, war, Yen, Yuan, Enron, economic uncertainties, electricity, energy, complement, concentration, consumer confidence, consumer spending, consumption, market (demand, supply, place), materials operating environment	International	Macroeconomic
19	Infrastructure risk Disruption of operations	Topic 18: system, service, information, failure, product,	Other idiosyncratic: internet, IT, I.T., information technology, security, software, systems, technological	Systems Internet	Idiosyncratic

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
		operation, software, network, breach, interruption	obsolescence, technologies, technology, web security, website(s), embargo, expand, expanding, export, facilities, franchise(ee),expansion, online Other systematic: saving, substitute		
20	Suppliers risk	Topic 19: cost, contract, operation, plan, increase, pension, delay	Other idiosyncratic: delivery, distribution, distributor, single supplier, reliance on key supplier, contract, sole supplier, suppliers, supply chain, shortages, vendor	Supply Chain Contractual	Systematic
21	Rely on few large customers Suppliers risks Downstream risk	Topic 20: customer, product, revenue, sale, supplier, relationship, key, portion, contract, manufacturing, rely	Other idiosyncratic: customer concentration, customer control, single customer, reliance on key customer	Supply Chain	Idiosyncratic
22	Intellectual property risk Licensing related risks	Topic 21: property, intellectual, protect, proprietary, technology, patent, protection, harm, licence	Legal and regulatory: infringe, intellectual property	Intellectual Property	Regulatory/Legal
23	Volatile demand and results competition risks	Topic 22: product, market, service, change, sale,	Other systematic: commodity, competition, competitor, tariff,	Demand Competition	Systematic

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
		demand, successfully, technology, competition	trade, no current operations,		
24	Potential/ongoing lawsuits	Topic 23: provision, law, control, change, stock, prevent, stockholder, Delaware, charter, delay, bylaw	Legal and regulatory: conflict of interest, related party	Contractual Legal	Regulatory/Legal
25	Regulation changes	Topic 24: regulation, government, change, revenue, contract, law, service	Legal and regulatory: IFRS, I.F.R.S, inquiry(ies), investigation, legislation, government investigation, government policy, government approval, government investigation, FDA approval, Federal, Fraud	Regulation	Regulatory/Legal
26	Financial condition risks	Topic 25: capital, credit, financial, market, cost, operation, rating, access, liquidity, downgrade	Financial: capital, credit rating, downgrade, liquidity, rating, working capital, Maturity, negative operating CF	Financing Credit	Financial
27	Funding risks	Topic 26: debt, indebtedness, cash, obligation, financial, credit, covenant	Financial: credit, covenant, credit risk, bank debt, obligations, loan, debt burden, default, indebtedness, collateral, chapter 11, chapter 7, chapter 9, leverage(d), financing	Financial Market	Financial

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
			costs, refinance(ing), renegotiation, new financing		
28	International risks	Topic 27: operation, international, foreign, currency, rate, fluctuation	Other systematic: exchange rate, financial crisis, foreign currency, Asian crisis, business conditions, forward, growth rates, hedging, Iraq, call, Hedge, Option, Peso, Derivative, discounting, Renminbi, swap, short,	International	Macroeconomic
29	Financial condition risks	Topic 28: loss, insurance, financial, loan, reserve, operation, cover	Financial: operating losses, reinsurance, reserves, revolver	Insurance	Financial
30	Catastrophes	Topic 29: operation, natural, facility, disaster, event, terrorist, weather	Other idiosyncratic: Natural disasters, weather, SARS, September (11th)		Macroeconomic
31			Tax: uncertain tax, VAT, Value added tax, aggressive tax, back taxes, deferred tax, excise, FIN 48, IRS, I.R.S, Internal Revenue Service, IRS audit, IRS judgment, Loss (carry forward, carry backs), property tax(es), provision for	International Revenue	Tax

	Huang & Li (2011)	Bao & Datta (2012)	Campbell et al. (2014)	Israelsen (2014)	Risk represented
			income tax(es), state tax(es), tax(es), tax audit, tax authority(ies), tax liability(ies), tax penalty(ies), taxable		
32				Health Care	Idiosyncratic

Chapter 3: Essay Two

Risk Factor Disclosures and the Cost of Private and Public Debt

Abstract

This chapter examines the relationship between Risk Factor Disclosures (RFDs) in the annual 10-K report and the cost of debt in both the private and public debt markets. I examine this relationship from two perspectives: the direct effect of RFDs on cost of debt, and the indirect effect on cost of debt through Abnormal Risk Factor Disclosure (ARFD). ARFD is a new measure proposed to capture managerial discretion in risk factor reporting and it is estimated as the residual from the regression of RFD on its determinants. To measure RFDs, I use the total number of words in Item 1A-RFD and the aggregate and categorical risk words developed by Campbell, Chen, Dhaliwal, Lu, and Steele (2014). To extract RFDs from company filings in the Electronic Data Gathering, Analysis, and Retrieval Systems (EDGAR) database, I employ an automated content analysis method. I find that firms with greater numbers of RFD words have higher cost of debt in both the private and public debt markets. This finding supports previous research findings that RFDs reflect the risk profiles of firms. I also find that firms in the private debt market are rewarded for transparency with lower cost of debt when there is more risk factor disclosure than expected. However, firms are not penalized with higher cost of debt for risk factor reporting below expectation. In the public debt market, more risk disclosure is associated with higher cost of debt, while less risk disclosure attracts lower cost of debt. This is consistent with the expectation that public debt lenders rely on public disclosures for information. In addition, I find that risk words relating to financial risk tend to be associated with cost of debt, suggesting financial risks are highly relevant in the debt market. The results are consistent when applying the same risk disclosure measures for Item 7-Management Discussion and Analysis (MD&A) of the 10-K report. The findings in this chapter suggest RFDs are both informative and useful to audiences (borrowers and lenders) outside of equity investors.

3. Introduction

Beginning in 2005, the U.S. Securities and Exchange Commission (SEC) made it mandatory for large companies[16] to disclose the most significant risks that apply to the company or their securities in Item 1A-Risk factors of the annual 10-K report. The objective of this disclosure is to inform financial statement users on the risks to which companies are exposed. Recently, the SEC has issued comment letters asking for suggestions on how to make this disclosure more meaningful. Chapter 2 of this dissertation discussed in detail the requirements of Item 1A and reviewed the current literature.

Recent studies have shown some association between Risk Factor Disclosures (RFDs) and earnings and returns (Kravet & Muslu, 2013), investors' risk perception (Campbell et al., 2014), assessment of fundamental risk by analysts (Hope, Hu, & Lu, 2016), and creditor investors (Chiu, Guan, & Kim, 2017). These results suggest that RFDs are informative and are useful in decision making. Whether this usefulness of this information extends to the cost of debt, however, remains an empirical question. Furthermore, studies have used a variety of methods to measure RFDs. Campbell et al. (2014) use total number of words and total number of risk words, while Hope et al. (2016) use the specificity of risk factor words. Herein, I introduce a new measure to capture managers' discretion in reporting RFDs: Abnormal RFD (*ARFD*). This measure is obtained by decomposing RFDs into normal and abnormal components based on the determinants and then examining the effect of managerial discretion in reporting RFDs on the debt market.

The debt market is comprised of the private and public debt markets, and the characteristics of the borrowers and lenders in these two markets differ significantly. Lenders in the private debt market (predominantly banks) have access to private information, are more sophisticated, and are

[16]Large companies are defined as firms with more than $75m in assets.

better able to process information compared to lenders in the public debt market (bondholders). Furthermore, borrowers in the private debt market have lower accounting and disclosure quality compared to public debt borrowers (Bharath, Sundar, & Sunder, 2008; Dhaliwal, Khurana, & Pereira, 2011b). Due to the negative nature of the disclosure, RFDs create an incentive for managers to exercise discretion when reporting to avoid adverse impacts on the managers' reputation and career. Recognizing the likelihood of inaccurate disclosure through discretionary reporting, banks may choose to use other private information at their disposal to estimate firm risks. Bondholders, on the other hand, do not have access to private information and rely solely on public information. Considering the institutional differences between these two markets, how banks and bondholders interpret managerial discretion in reporting RFDs is an empirical question that can be both insightful and useful.

To my knowledge, there is no study that has examined the direct effect of RFDs and the indirect effects of Abnormal Risk Factor Disclosures (*ARFD*) on cost of debt. A related study on the debt market by Chiu et al. (2017) examined how RFDs affect Credit Default Swaps (CDS). While Chiu et al. measured RFD using a dummy variable, my study measures RFD based on the number of risk words. In addition, I focus not only on the direct effect of RFDs in the debt markets, but also on the indirect effect through discretionary reporting of RFDs. In addressing some of the gaps in the literature, this study seeks to provide answers to the following research questions: (1) Do RFDs affect the cost of debt in the private and public debt markets? (2) What is the impact of *ARFD* on the cost of debt in the private and public debt market?

Understanding the impact of RFDs in the debt market is significant for three main reasons. First, debt financing has been observed to be the predominant source of external financing in the United States. Bolton and Scharfstein (1996) report that between 1946 and 1987, 85% of capital

was sourced from the debt market compared to 7% sourced from the equity market. This is also supported by the new securities issue report for U.S. corporations issued by the Federal Reserve Bank which shows that over $1.6 trillion bonds were issued in 2016.[17] Second, private and public lenders are more sophisticated than equity investors. While private lenders are mostly banks, public lenders are mostly institutional investors (Jiang, 2008). Third, the return in the debt market is fixed compared to that in the equity market. As a result, lenders in the debt market face higher downside risk compared to equity investors. Although this downside risk is mitigated through loan covenants and a higher ranking in repayment in cases of bankruptcy, lenders can still lose their investment if there are no significant assets for sharing. Compared to equity investors, lenders do not have the privilege of sharing in the company's profit. For the above reasons, lenders should be interested in information that can be used to assess the riskiness of borrowers.

This study adopts an automated content analysis method to extract and measure RFDs. I use the risk words developed by Campbell et al. (2014) as well as the total number of words in Item 1A to measure RFDs. As an additional test, I also examine whether another disclosure in the annual 10-K report, Item 7-Management Discussion and Analysis (MD&A), contains risk information that is useful in the debt market. The two measures of cost of debt employed in the study are All-in Spread (*AIS*) for the private debt market, and *RATING* for the public debt market. *AIS* is measured as the number of basis points (bps) above LIBOR, as obtained from the DealScan database, while *RATING* is a numeric conversion of the Standard & Poor (S&P) issuer bond rating for the public debt market. *RATING* has been used in similar studies as a measure of cost of debt (Jiang, 2008; Francis, LaFond, Olsson, & Schipper, 2005) and is obtained from the Compustat database.

[17]Data available from the Federal Reserve Bank current releases
https://www.federalreserve.gov/econresdata/releases/corpsecure/current.htm

For both debt markets, managerial discretion in risk factor reporting (*ARFD*) is measured as the residual obtained from the regression of RFDs on its determinants. This measure is further categorized as positive (*PARFD*) or negative (*NARFD*) depending on the sign of the residual. For private debt, the sample size to examine the direct relationship between RFDs and both the cost of debt and managerial discretion in reporting RFDs is 1,326 loan-years after excluding firms with incomplete data. For public debt, the final sample size is 3,007 firm-years. The study period covers 2005 to 2015.

In the private debt market, I find a positive association between RFDs and cost of debt which suggests that RFDs are informative. This association also implies that the information in RFDs is associated with the data used by banks when setting new loans, thereby confirming that RFDs reflect the risk profile of firms. Specifically, the results show that an average increase of 1.1 in the number of financial risk words and 0.8 legal risk words increases cost of debt by 0.04 bps. The results of the effect of managerial discretion on cost of debt show that firms disclosing more risk factors than expected (*PARFD*) have a lower cost of debt. This is consistent with my expectation. However, for firms disclosing less risk information than expected (*NARFD*), the results did not show the assumed higher cost of debt. A likely explanation for this result is that banks already know the risk level of firms and thus reward risky firms for honesty. However, less risky firms are not penalised for lack of transparency since banks already know these firms are less risky.

In the public debt market, similar to the private debt market, I also find positive associations between RFDs and cost of debt. On average, firms in the public debt market have a lower rating for every 1% increase in number of RFD words.[18] In line with the expectation that

[18] This decrease in rating, however, is not large enough to move from one debt rating category to another.

public debt lenders rely on RFDs, the results for the evaluation of the effect of managerial discretion on RFDs reveal higher costs of debt for firms disclosing more risk factors (*PARFD*) and lower cost of debt for firms disclosing less risk factors (*NARFD*). These findings suggest public debt market lenders react to RFDs and likely consider the risk information as representative of firm risk. The results for the supplementary tests using Item 7-MD&A also support the findings for both private and public debt markets that the risk profile of firms are reflected in their cost of debt. The results of the supplementary tests, however, only partly support the effect of managerial discretion in reporting RFDs on cost of debt. Overall, the results confirm that RFDs are reflected in the cost of debt and are useful in the debt market.

The finding of a positive association between RFDs and cost of debt is consistent with Campbell et al. (2014),who argued that firms facing greater risks disclose more risk factors, and also with Graham, Li, and Qiu (2008) who found that banks use tighter loan contract terms, such as higher spread, to overcome borrower risk. Furthermore, this study makes five main contributions to the literature. Primarily, to my knowledge, this is one of the first studies to examine RFDs in the debt market, and the only study to examine the association between RFDs and cost of debt in the private and public debt market. RFDs are important because of the effect of risk on cost of debt. Uncertainties in the business environment and the fact that Item 1A-Risk factor disclosure is a relatively recent disclosure makes understanding the nature and usefulness of this section a significant aspect in the evaluation of the overall usefulness of the annual report. Studying the relationship between RFD and cost of debt contributes directly to the disclosure and debt contracting streams of literature.

Second, this study introduces *ARFD* as a measure of risk information. Compared to RFD, *ARFD* captures managerial discretion in disclosing risk information. This measure enables us to

examine the level of transparency managers are using in reporting risk disclosures and the subsequent effect on cost of debt. Considering the negative nature of RFDs, this study provides an interesting opportunity to observe the positive effect of increased disclosure versus the negative effect of disclosing higher risk within the same setting.

Third, this study extends and complements prior research by documenting a relationship between disclosure quality and the cost of debt. Sengupta (1998), Dhaliwal, Hogan, Trezevant, and Wilkins (2011a), and Chen and Yi-Ping (2015) used disclosure quality ratings, internal control disclosures, and segment disclosure quality, respectively, as proxies of disclosure quality to examine this relationship. By demonstrating a relationship between RFDs and cost of debt, the current study supports the importance of disclosure quality in formulating debt contracts.

Fourth, this study provides empirical evidence underpinning the SEC's call for information regarding the type of investors or audience that are most likely to value Item 1A-Risk factor disclosure. Providing evidence of the usefulness of this disclosure in both debt markets contributes to the understanding of the differences in these markets and shows that RFDs are not only important to equity investors but also to stakeholders in debt markets.

Finally, through the objectives of this study, I offer valuable insights to debt providers on the usefulness of financial disclosures, thereby responding to Li's (2010) call for further research integrating large-sample textual disclosures with debt contracting and also to the call by Kravet and Muslu (2013) for research on how debt markets or credit rating agencies respond to risk disclosures.

The remainder of this paper is organized as follows. Section 3.1 develops the *ARFD* measure; section 3.2 discusses the background literature; section 3.3 presents the hypotheses;

section 3.4 discusses the research design; section 3.5 presents the results; and section 3.6 presents the robustness tests. Section 3.7 concludes the discussion.

3.1. Risk Factor Disclosure Measures

3.1.1 Risk Factor Disclosure Measures in the Literature

Literature on RFDs has used manual or automated content analysis to extract and derive a measure of risk disclosure. A common measure is the count of the risk words developed by Campbell et al. (2014). Other measures that have been used in the literature include specificity of the words in RFDs (Hope et al., 2016), readability of risk disclosure (Nelson & Pritchard, 2014; Riley & Taylor, 2014), and an indicator variable representing firms that are required by the SEC to report Item 1A-RFD (Chiu et al., 2017). These various measures aim to capture the information content in RFDs to establish whether or not the disclosures are boilerplate. Contrary to the expectation that RFDs are uninformative, these studies actually find that RFDs provide useful information about firm risk.

To extend the literature in this field, I develop a new measure, referred to as Abnormal Risk Factor Disclosure (*ARFD*), that captures managerial discretion in risk reporting and is discussed further below.

3.1.2 New Measurement of Risk: Abnormal Risk Factor Disclosure

ARFD is analogous to discretionary accruals or abnormal returns and is measured as the residual from the regression of the determinants of risk disclosure on RFD. Studies that have used a similar approach in the accounting literature focus on a variety of topics, including: abnormal audit fees measured as the residual of the regression of audit fees on audit fee determinants (Asthana & Boone, 2012; Blankley, Hurtt, & MacGregor, 2012); abnormal loan loss provision measured as the

residual from the regression of loan loss provision on the determinants (Kanagaretnam, Krishnan, & Lobo, 2010); abnormal positive tone measured as the residual from the regression of the measure of tone in earnings press releases against tone determinants as established in the literature (Huang, Teoh, & Zhang, Tone Management, 2014); and abnormal Corporate Social Responsibility (CSR) disclosure measured as residual from the regression of CSR disclosure measure against factors determining CSR activities (Cahan, De Villers, Jeter, Naiker, & Van Staden, 2015). *ARFD* captures managerial discretion in RFDs by decomposing this disclosure into a normal component based on the determinants of RFDs and an abnormal component, thus representing the discretionary part of the disclosure. This abnormal component is the residual from the regression of the actual RFDs on the determinants. *ARFD* is useful in understanding how the debt markets interpret the managers' choice to disclose more or less risk information than expected.

To derive this measure, I first extract Item 1A-Risk factor disclosures from the annual 10-K filing and measure the actual RFDs. I discuss the details of this extraction process in section 3.4. Then, I derive the determinants of RFDs from the findings of three papers that review the topics and contents of RFDs. The first paper, Campbell et al. (2014), identified five major categories of risk. The second paper, Bao and Datta (2012), identified 29 risk topics, while the third paper, Huang and Li (2011), identified 25 risk topics. In Chapter 2 of this dissertation, I discuss these papers and present a manual matching of the risk topics across the three papers. This matching process enables the compression of all identified RFD topics into six major categories of risk: regulatory or legal; financial; tax; litigation; macroeconomic; and idiosyncratic or operational.[19] Regulatory risk refers to the exposure of firms to laws and regulations. Financial risk includes liquidity, leverage, share-price drop, takeover possibilities, credit, and other securities risk. Tax

[19]In identifying the major risk groups, I allocate the different risk categories into a general risk area. Although this is a subjective process, I endeavour to match similar risks to the most closely related category.

risk measures exposure to tax liability, and litigation risk covers risk of lawsuits from business operations. Macroeconomic risk captures risks such as currency risk, political risk, economic downturn, natural disasters, and wars, while idiosyncratic (operational) risk is firm specific risk, including other risks associated with the firm's operations.

These six categories are my determinants of RFDs and I expect RFDs will not vary significantly from these determinants. To develop *ARFD*, I assign proxies to each of the determinants based on measures established within the literature. Relying on Watts and Zimmerman (1986), I use firm size (*SIZE*) as a proxy for regulatory risk measured as the log of equity market value. It is expected that larger firms are exposed to more regulatory scrutiny and as such face higher regulatory and legal risk. For financial risk, I use the proxy of leverage (*LEV*) which is measured as the book value of debt divided by total assets. This proxy was identified by Campbell et al. (2014) to have the largest coefficient and statistical significance for all disclosures related to financial risk. For tax risk, the proxy used is effective tax rate (*ETR*). Similar to Campbell et al. (2014) and Campbell, Cecchini, Cianci, Ehinger, and Werner (2016), this variable is measured as total tax expense divided by pre-tax income. The proxy for litigation risk *(LIT*) follows Hope et al. (2016). I assign a code of 1 to firms that are within the SIC codes 2833-2836, 3570-3577, 3600-3676, 5200-5961, 7370-7374 and 8731-8734,or zero otherwise, based on the evidence that firms within these SIC codes are prone to litigation.[20] The proxy for macroeconomic risk is the monthly rate of change in Consumer Price Index (*CPIChange*) obtained from CRSP Treasury and Inflation index. Finally, as a proxy for idiosyncratic risk, I use the standard deviation

[20] The SIC Codes are as follows: 2833-2836 – Medical/Pharmaceutical; 3570-3577 – Computers/I.T.; 3600-3676 – Electrical/Electronics; 5200-5961 – Retail; 7370-7374 – Services (I.T.); 8731-8734 – Services (Biological research). Details available at https://www.sec.gov/info/edgar/siccodes.htm.

of quarterly firm earnings (*SD_EARN*) over the last three years where quarterly earnings data is earnings before interest, obtained from Compustat.

ARFD is represented by the expression below. In addition to the determinants of RFD, I control for disclosure comprehensiveness using the total number of words in the annual 10-K (*FILE_TW*):

$$ARFD_t = RFD_t - [\alpha_0 + \alpha_1 SIZE_t + \alpha_2 LEV_t + \alpha_3 ETR_t + \alpha_4 LIT_t + \alpha_5 CPIChange_t + \alpha_6 SD\_EARN_t + \alpha_7 FILE\_TW_t + \alpha_8 YEAR + \alpha_9 INDUSTRY] \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

For the private debt market, I use a lag model to derive a measure of *ARFD* such that the discretion in reporting RFD will precede the effect on cost of debt. This will limit endogeneity in the model. The lag model takes the following form:

$$ARFD_{t-1} = RFD_{t-1} - [\alpha_0 + \alpha_1 SIZE_{t-1} + \alpha_2 LEV_{t-1} + \alpha_3 ETR_{t-1} + \alpha_4 LIT_{t-1} + \alpha_5 CPIChange_{t-1} + \alpha_6 SD\_EARN_{t-1} + \alpha_7 FILE\_TW_{t-1} + \alpha_8 YEAR + \alpha_9 INDUSTRY] \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

3.2. Background Literature

3.2.1 Debt Market

Heflin, Moon, and Wallace (2016) noted two main differences between lenders and stockholders. First, lenders only face downside risk and do not benefit from increased liquidity. This is because buying and selling of debt occurs less frequently than equity. Second, the return in the debt market is fixed hence lenders have more at stake compared to stockholders. Jiang (2008) also showed that bondholders are mostly institutional investors, more sophisticated than other investors, and have access to firm specific information. In the debt market, financing can be obtained from the private market, which is dominated by banks, or from the public market which is mainly the bond market.

These two markets differ in terms of the characteristics of the participants and are further discussed below.

3.2.2 Private debt versus public debt market

Extant research reveals some unique characteristics of private and public debt market borrowers. Bharath et al. (2008) observed that private debt market borrowers have low accounting quality compared to the borrowers in the public debt market. Dhaliwal et al. (2011a) also found that borrowers from the private debt market have low disclosure quality compared to those in the public debt market. Denis and Mihov (2003) observed that the decision to borrow from the private or public debt market is influenced by the borrower's credit quality and default risk. In addition, the authors found that public debt market borrowers are larger, more profitable, and have higher credit ratings than private borrowers. These results corroborate the findings in Diamond (1991) that private debt market borrowers are mostly firms that are trying to establish financial credit and are usually young, less successful, and have a high probability of default.

A recent paper by Morellec, Valta, and Zhdanov (2015) developed and tested a model of financing and investing decisions which allows firms to choose both the amount and the type of debt to issue. The findings in the study show that firms with more growth options, higher bargaining power of shareholders, and those operating in a more competitive product market or facing lower credit supply are more likely to issue bonds. Their findings also support Lin, Ma, Mlatesta, and Xuan (2013) whose results suggest that firms with divergence between controlling shareholders' cash-flow rights and control rights tend to rely more on public than private debt financing. These findings indicate that firms controlled by large shareholders tend to choose public debt over bank debt to avoid scrutiny.

Overall, the above characteristics of borrowers in both debt markets suggest that public debt market borrowers will be more transparent in their disclosure as they are relatively successful and are better able to absorb the likely reaction from disclosing negative information. Borrowers in the private debt market, however, are still trying to establish a reputation and will likely manage the risk information they disclose to avoid tighter loan covenants.

Furthermore, research findings reveal the advantage banks have in gathering and processing information and incorporating this information into loan contracts (Diamond, 1991). Banks are more efficient at monitoring debt than bondholders as bondholders are relatively unsophisticated and do not have the resources to commit to debt monitoring due to free-rider problems (Bharath et al., 2008). Banks also use a combination of priced and non-priced terms to design loan contracts compared to bondholders that mainly use only priced terms. The combination of possession of superior information by banks, coupled with low accounting and disclosure quality noted for private debt borrowers, suggest that banks will rely less on public disclosures in designing loan contracts. However, banks can use public disclosures to validate the information they possess in cases where lenders are not truthful and withhold information that can affect their default risk (Mazumdar & Sengupta, 2005).

Overall, previous research suggest that public debt borrowers are larger, more successful, and have better accounting and disclosure quality than private debt borrowers. In addition, they have higher credit ratings, are controlled by larger shareholders, and have more growth options (Bharath et al., 2008; Dhaliwal et al., 2011b; Diamond, 1991; Lin et al., 2013; Morellec et al., 2015). Private lenders on the other hand are more sophisticated, have access to private information, and are better at information gathering and processing, and debt monitoring compared to public lenders (Bharath et al., 2008; Diamond, 1991).

3.3. Hypotheses development

3.3.1 Risk factor disclosure and cost of debt

Recent research on RFDs provides evidence that risk factor disclosures are informative (Campbell et al. 2014; Campbell et al. 2016; Chiu et al. 2017; Hope et al. 2016). Campbell et al. (2014) showed that riskier firms disclose more risks and that the type of risk a firm is exposed to determines how much of the disclosure is devoted to that risk. These findings suggest RFDs reflect the risk profile of borrowers and are informative in the equity market.

In the private debt market, RFDs may not be informative because borrowers in this market have lower accounting and disclosure quality, are smaller in size, and are less profitable compared to public debt borrowers (Bharath et al., 2008; Dhaliwal et al., 2011b). Furthermore, banks may use both price and non-price terms in defining loan terms. For example, firms that are considered risky may attract tighter loan covenants, such as collateral or shorter maturity, to compensate for the additional risk. Thus, the riskiness of firms may be reflected in both the cost of debt and the loan terms. Graham et al. (2008) show that loans initiated after restatements have high loan spreads, shorter maturities, higher likelihood of being secured, and more covenant restrictions. Furthermore, private debt lenders may consider other factors, such as reputation and relationship, in loan decisions.

On the other hand, previous studies have established an association between disclosure and the debt market (Mazumdar & Sengupta, 2005; Sengupta, 1998). Recent evidence by Campbell et al. (2014) and Chiu et al. (2017) indicate that RFDs are informative to both equity investors and debt providers, suggesting that RFDs are useful to diverse stakeholders. In line with these recent findings, I expect that information in RFDs will be associated with the private information used by

banks in loan contracts. Thus, a positive association is expected between RFDs and cost of debt. The following hypothesis is proposed for the private debt market:

H1a: There is a positive association between RFDs and cost of debt in the private debt market.

Compared to private debt lenders, bondholders do not have access to private information and are considered less sophisticated than banks. Also, bondholders cannot afford to incur costs in monitoring debt due to free-rider problems (Bharath et al., 2008). The lack of access to private information gathering and processing resources and the inability to monitor debt suggests bondholders will rely more on public disclosures than private lenders. Furthermore, since borrowers in the public debt market have better accounting and disclosure quality (Bharath et al., 2008; Dhaliwal et al., 2011b), I expect that the RFDs of public debt borrowers will adequately reflect the level of firm risk.

Similar to the literature on private debt, there is evidence of an association between disclosure and public debt markets. Using bond yields and interest cost to proxy for borrowing cost, Sengupta (1998) found that a firm's disclosure quality is useful to lenders and underwriters in estimating a firm's default risk. Overall, I expect RFDs will also be important in the public debt market and the cost of debt will reflect the risk profile of the borrowers. As a result, I expect a positive association between RFD and cost of public debt. The hypothesis below is thus proposed:

H1b: There is a positive association between RFDs and cost of debt in the public debt market.

3.3.2 Abnormal Risk Disclosure and Cost of Debt

Signalling theory predicts that managers use the disclosure of information to communicate the quality of management. This signal can demonstrate transparency and strong management practices that differentiate firms from their competitors. Considering the negative nature of RFDs, managers can also choose to provide limited risk information in an attempt to mislead the market

or protect their careers. The disclosure literature predicts that more disclosure should reduce information asymmetry and consequently reduce the cost of capital (Verrecchia, 1983). Following from this literature, we would expect that more risk factor disclosure should result in lower cost of debt. However, considering RFDs provide negative information, the effect of disclosing more or less risk information may not necessarily translate to cost of debt benefits.

My measure of managers' discretion to disclose more or less risk factors than expected (*ARFD*) is further split into positive (*PARFD)* and negative (*NARFD)* to observe the varying effects of positive versus negative deviations. Given the expected level of firm risk factor disclosure based on its determinants, when actual RFDs exceed this expected level *ARFD* is positive and referred to as *PARFD*. When actual RFD is less than the expected level, RFD is negative and referred to as *NARFD*.

Financial reporting transparency reflects the extent to which financial reports reveal a firm's underlying economics which includes the entity's resources, cash flows, and the risk it faces (Barth & Schipper, 2008). Managers can choose to bias reports in order to manipulate the market's valuation of the firm for some expected benefits (Fischer & Verrecchia, 2000). Bias in reporting affects firm transparency which can subsequently have an impact on cost of capital through the effect of information asymmetry (Easley & O'Hara, 2004; Verrecchia, 2001). In the private debt market, the choice to disclose more or less risk factors should not influence loan contracts since banks have access to reliable private information and can evaluate a firm's risk level. However, public disclosures can save banks the cost of searching for information and can be used to confirm private information. Furthermore, Fischer and Verrecchia (2000) show that despite the market's rational expectation that managers will be biased when reporting, managers may be better off to bias reports when the market cannot perfectly adjust for this bias. This observation suggests that

while banks can evaluate firm level of risk, they may not be able to perfectly adjust for the bias in the loan pricing terms since banks do not know the intention of the reporting bias. Therefore, transparency in reporting RFDs should be useful to banks.

The choice of reporting more or less than what is expected does not have the same consequences for firms. Specifically, when a firm discloses more than the expected level, it reveals to the market that its level of risk is high, which can have a negative impact on its market value. Since it is costly for the firm to disclose more risk, banks are likely to recognize that the firm is honest and that increased disclosure reduces the information asymmetry that banks face. In such a case, banks are likely to reward such behaviour by reducing the interest rate. However, when a firm discloses less than what is expected, the firm does not bear additional cost and banks may view this disclosure as dishonest. Consequently, in such a case, banks could penalize such behaviour by increasing the interest rate. This leads to the following hypothesis:

H2a: There is a negative (positive) association between PARFD (NARFD) and cost of debt for firms in the private debt market.

Compared to banks, bondholders rely more on public disclosures to inform lending decisions, and there is no incentive for the bondholder to incur costs to search for information on public debt borrowers. A reason for this is the diffuse ownership of public debt and the associated free-rider problems, thus making it ineffective to incur monitoring cost (Diamond, 1991). Furthermore, bondholders are less sophisticated than banks and may lack the necessary skills to process RFDs in order to identify the true level of firm risk. An implication of the naivety of bondholders is that in the absence of contrary information and ability to process the disclosure information, RFDs may be considered as the true level of firm risk. Therefore, I expect that controlling for the level of firm risk, firms disclosing more risk information (*PARFD*) will be

considered higher risk and incur greater cost of debt, while firms with less risk disclosure (*NARFD*) will incur lower cost of debt as they are considered to be less risky. The hypothesis below is thus proposed:

H2b: There is a positive (negative) association between PARFD (NARFD) and cost of debt for firms in the public debt market.

3.4. Research Design

3.4.1. Sample Selection

The initial sample for private debt was all loan facilities issued between 2005 and 2015 in the DealScan database. A total of 106,183 facilities were identified. For firms with multiple facilities within the same year, I used the sum of all facilities per year to calculate the weighted average of the *AIS* (spread) and the loan maturity to form panel data. Non-U.S. firms, firms with negative *AIS*, and firms classified as private in DealScan were excluded from the sample, resulting in 8,543 loan-year observations. After excluding observations with no EDGAR or Compustat data and with less than 30 words in Item 1A-RFD, the final sample includes 1,326 loan-year observations.

To obtain the sample for public debt, all firms with S&P issuer debt ratings from 2005 to 2015 were obtained from Compustat resulting in 205,191 monthly ratings data. The Compustat data was matched to the ratings data by date corresponding to three months after the fiscal year, yielding 15,187 observations. Similar to the private debt sample, I excluded firms with Item 1A of less than 30 words to be sure that the firms actually discussed risk as opposed to general statements pointing to other sections in the annual 10-K that discuss risk information (Filzen,

2005; Hu, Johnson, & Liu 2017).[21] The final data for the public debt sample was 3,007 loan-year observations. The sample summary for private and public debt is presented in Table 1.

3.4.2. Method

To develop the RFD measure, which is the independent variable of interest for H1a and H1b and the first stage dependent variable for H2a and H2b, I rely on the risk words developed by Campbell et al. (2014) in addition to the total number of words in Item 1A. Campbell et al. identified five categories of risk words including financial risk, other idiosyncratic risks, other systematic risks, legal risks, and tax risks. I amended some of the risk words to avoid duplication in the word count.[22] The six measures of RFDs in this study are the total number of words in Item1A, the total number of risk words, and risk words from four of the five risk categories based on Campbell et al. Compared to the determinants of RFDs identified earlier, financial, idiosyncratic, and tax risk are common to both Campbell et al. (2014) and my study. These risk words are presented in Appendix 1 with the amended words identified with an asterisk.[23]

The risk words were extracted from the annual 10-K filing using content analysis software. First, I extracted the links to the 10-K filling from EDGAR database form Z. Then, I downloaded the actual files from EDGAR using both file transfer protocol (ftp) and WGET software.[24] I then processed the files through the content analysis software to extract the total number of words and

[21]Filzen (2015) excluded less than 200 words while Hu et al. (2017) excluded less than 30 words. I follow Hu et al. 2017 to limit further data loss.

[22] The software is not designed to disallow suffix or prefix in words. Some words such as 'operating' can therefore be counted as both 'operating' and 'rating'. In such instances, I use a phrase such as 'operating loss' rather than a single word.

[23] I exclude the tax risk words as I was losing large amounts of data when forming a final sample. For example, in the private debt sample, data with zero tax words are 1,474 loan-years. Also, the tax words are not very robust. Campbell et al. (2016) added many more words to this category to study tax risk. Including the tax risk has no significant effect on the results.

[24] I used Windows FTP to download the 10-K files. However, effective Dec. 31, 2016 FTP was disabled on EDGAR.

the number of risk words for the private and public debt sample. To test the software, I randomly selected 100 files from the full data set to confirm the correct section was extracted and manually tested 10 files for accuracy of the risk word count using the financial risk word list. This test yielded an accuracy level of 70% for the extracted sections and 100% for the risk word count.[25] The details of this software are presented in Appendix 2.

To test H1a and H1b, I used six measures of RFDs as follows: the natural log of (1) the total number of words; (2) the number of all risk words; (3) the number of financial risk words; (4) the number of idiosyncratic risk words; (5) the number of systematic risk words; and (6) the number of legal risk words. As earlier discussed, these risk words are based on Campbell et al. (2014).

For public debt, I used ordered probit regressions since *RATING* is a categorical variable ranging from 1 to 22. Details of the variables are presented in Table 2 and the regression models are presented below.

$$AIS_t = \alpha_0 + \alpha_1 Risk\ Disclosure_t + \alpha_2 FACAMT_t + \alpha_3 MAT_t + \alpha_4 SEC_t + \alpha_5 REV_t + \alpha_6 RES_t + \alpha_7 FILE\_TW_t + \alpha_8 LASSET_t + \alpha_9 BTM_t + \alpha_{10} ROA_t + \alpha_{11} LOSS_t + \alpha_{12} BIGN_t + \alpha_{13} oZ\_SCORE_t + \alpha_{14} TIE_t + \alpha_{15} YEAR + \alpha_{16} INDUSTRY + \varepsilon_{it} \quad (3)$$

$$RATING_t = \alpha_1 Risk\ Disclosure_t + \alpha_2 FILE\_TW_t + \alpha_3 LASSET_t + \alpha_4 BTM_t + \alpha_5 ROA_t + \alpha_6 LOSS_t + \alpha_7 BIGN_t + \alpha_8 oZ\_SCORE_t + \alpha_9 TIE_t + \alpha_{10} YEAR + \alpha_{11} INDUSTRY + \varepsilon_{it} \quad (4)$$

[25] The 70% accuracy in identifying the correct section is lower than Campbell et al.'s (2014) 98% accuracy, but the accuracy of the risk word count, which is the variable of interest, is higher than Filzen's (2015) reported correlation of 0.97.

For the private debt market, cost of debt is measured as All-in drawn spread (*AIS)* which is the number of basis points above LIBOR (available in the DealScan database). Risk disclosure is the log of one of the six measures of RFD: the total number of words in Item 1A (*1A_TW*); the total number of risk words in Item 1A (*1A_CRW*); the number of financial risk words in Item 1A (*1A_CFRW*); the number of idiosyncratic risk words in Item 1A (*1A_CIRW*); the number of systematic risk words in Item 1A (*1A_CSRW*); and the number of legal risk words in Item 1A (*1A_CLRW*). The control variables include loan and firm characteristics. The loan characteristics are: *FACAMT* which is the sum of all borrowings in the year measured in $millions; *MAT* controls for loan maturity and is measured in months; *SEC* is a dummy variable for whether the loan is secured or not; *RES* is the control for loan purpose and is a dummy variable which takes the value of 1 for restructure loans, which are loans designated as CP back up, corporate purposes, and working capital, otherwise it takes a value of zero; and *REV* is the control for loan type and is also a dummy variable which takes the value of 1 for revolving loans or zero otherwise. *FILE_TW* is total words in the 10-K and controls for disclosure comprehensiveness. *FILE_TW* should be positively associated with RFD as larger 10-K files should have longer Item 1A-RFD (Dyer, Lang, & Stice-Lawrence, 2016). I expect loan maturity (*MAT*) and secured loan (*SEC*) to have a positive association with cost of debt, while facility amount (*FACAMT*) should have a negative association with cost of debt (Costello & Wittenberg-Moerman, 2011; Sengupta, 1998). I do not predict a direction for revolving loans and restructuring loans as the effect on cost of debt is not clear for RFDs compared to corporate risk disclosures.

The controls for firm characteristics include *LASSET* measured as the natural log of total asset, *BTM* as the book value of equity to market value of equity ratio, and *ROA* is return on asset. Other controls include *LOSS* which takes a value of 1 if earnings before interest and taxes are

negative, *BIGN* which takes a value of 1 for firms audited by large auditors, and *oZ_SCORE* is the orthogonal value of Z_score based on Altman (1968) after removing the impact of *SIZE, BTM, ROA, LASSET,* and *LOSS*. The control for firm liquidity is Times Interest Earned (*TIE*) measured as the ratio of interest paid to earnings before interest.[26] *LASSET* and *BTM* control for firm size and growth opportunities respectively, *ROA* and *LOSS* both control for firm profitability, while *TIE* controls for firm liquidity. *BIGN* is the control for audit quality and *oZ_SCORE* is the control for bankruptcy risk. Previous findings have shown that these variables are associated with risk disclosure. Khlif and Hussainey (2014) showed that risk reporting is positively associated with size, leverage, profitability, and risk factor (Beta, probability of bankruptcy). Watts and Zimmerman (1986) predicted that larger companies disclose more information and are more susceptible to regulatory scrutiny. Therefore, I expect large firms, profit making firms, firms with lower risk of bankruptcy, and firms audited by large auditors to have increased scrutiny over the reporting process and have more transparent disclosure. On the other hand, loss making firms may attempt to hide risk information to avoid further losses and are likely to have less transparent RFDs. Thus, I expect all the control variables except *LOSS* to be positively associated with discretionary reporting in RFDs.

I further control for industry effects based on Fama-French 12-industry classification and time effects by including a dummy variable for each year. The t-statistics presented in the regressions are calculated using standard errors that are clustered by firm to control for serial correlation. I evaluate the effect of multicollinearity using variance inflation factor (VIF).

For the public debt market, the dependent variable is the credit rating based on Standard & Poor's long-term issuer credit rating of three months after the fiscal year end. *RATING* takes a

[26] The objective of using the orthogonal value of Z_SCORE is to capture the potential effect of Z_SCORE after excluding the effect of other predictors in the regression model that may be collinear with Z_SCORE.

value from 1 to 22 ranging from best to worst. For example, a debt rating of AAA takes the value of 1, AA+ takes the value of 2, and on the other end of the spectrum, an SD rating has a value of 22. This rating makes it easier to interpret the results as a direct relationship since a poorer *RATING* value implies higher cost of debt. Control variables for public debt regression are the same as those for private firms excluding the controls for loan characteristics. *FILE_TW* is also included to control for disclosure comprehensiveness of the annual 10-K.

To test H2a and H2b, a two-stage regression was conducted. The first stage is the regression of RFD on its determinants to derive the Abnormal Risk Factor Disclosure Measure (*ARFD*) and the second stage is the regression of cost of debt (*AIS* or *RATING*) on the absolute value of the residual from the first stage (*ARFD*) after separating by the sign of the coefficient (*PARFD* and *NARFD*). Separating into *PARFD* and *NARFD* enables us to observe the different effects for disclosing more or less risk factors based on an expected risk level. For the private debt sample in H2a, I use a lagged model to derive the measure of managerial discretion in risk factor disclosure (*PARFD* or *NARFD*). Using the lagged variable is important to observe the reaction of banks to transparency of RFDs as banks already have information on firm risk and use public disclosure to confirm their information. The lagged model therefore tests whether the information used in the RFD is correlated with the information used by banks. In line with the same reasoning, the accounting variables in the second stage are also lagged to examine H2a. The cost of debt measure for public debt (*RATING*) is measured three months after the fiscal year end, hence a lagged model is used to test H2b as the RFD already precedes the cost of debt effect. This model further ensures that the risk of endogeneity is minimized.

The regression for the second stage takes the form below for the private debt and the public debt, respectively:

$$AIS_t = \beta_0 + \beta_1 PARFD(NARFD)_{t-1} + \beta_2 FACAMT + \beta_3 MAT + \beta_4 SEC + \beta_5 REV + \beta_6 RES + \beta_7 FILE\_TW_{t-1} + \beta_8 LASSET_{t-1} + \beta_9 BTM_{t-1} + \beta_{10} ROA_{t-1} + \beta_{11} LOSS_{t-1} + \beta_{12} BIGN_{t-1} + \beta_{13} oZ\_SCORE_{t-1} + \beta_{14} TIE_{t-1} + \beta_{15} YEAR + \beta_{16} INDUSTRY + \mu_{it} \ldots \ldots (5)$$

$$RATING_t = \beta_1 PARFD(NARFD)_t + \beta_2 FILE\_TW_t + \beta_3 LASSET_t + \beta_4 BTM_t + \beta_5 ROA_t + \beta_6 LOSS_t + \beta_7 BIGN_t + \beta_8 oZ\_SCORE_t + \beta_9 TIE_t + \beta_{10} YEAR + \beta_{11} INDUSTRY + \mu_{it} \ldots (6)$$

All variables are as described above. Similar to the private debt sample, the continuous variables are winsorized at 2% and 98% to reduce the effect of outliers, standard errors are clustered by firms, and VIFs are used to evaluate the influence of multicollinearity.

3.5 Results

3.5.1 Descriptive statistics

Tables 3a and 3b present a general overview of the descriptive statistics for the private and public debt sample, respectively. The average cost of debt (*AIS*) for the private debt sample in Table 3a is roughly 181bps. The median is 160bps, while the lower and upper quartiles are 112bps and 225bps, respectively. The lower quartile facility amount (*FACAMT*) is \$200m while the upper quartile is \$1.25b with a mean of \$1.17b. The firms in this sample are large firms since RFDs are only mandatory for firms with over \$75m in assets. To appreciate the importance of loans, I compute the ratio of average facility amount to average total firm asset (AT). The calculation shows that, on average, loans represent almost 12% of total assets.[27] The average maturity (*MAT*) of private loans is 51 months with a standard deviation of 17 months. Less than half of the loans

[27] Average total assets is \$10.145b.

are secured (*SEC*), while restructuring loans (*RES*) constitute more than half of the loans. Most of the firms are profitable (*ROA*), generally audited by large audit firms (*BIGN*), and have a low risk of bankruptcy as indicated by the average *Z_SCORE* of 4.0.[28] Compared to studies on debt contracting, the statistics are similar to Bharath et al. (2008) and Kim, Song, and Zhang (2011), whose results showed a mean *AIS* of 185.5 and 186.4 and mean loan maturity of 41 and 53 months, respectively. The mean facility amount of $1.17b, however, differs from Bharath et al. (2008) and Kim et al. (2011) who found mean facility amounts of $246 m and $478m, respectively. This difference can be attributed to the current study sample as it includes firms disclosing risk factors, which is only mandatory for large firms.

In terms of the independent variables of interest, the average number of words in Item 1A is 15,028 words, while the means of the number of risk words are 760, 115, 248, 292, and 80 for total risk words, financial, systematic, idiosyncratic, and legal risk words, respectively.[29] Compared to Campbell et al. (2014), there is a significant difference between the results for the average number of risk words in the current study. Campbell et al. reported the number of words in Item 1A as 4,902 with averages of 293, 36, 101, 103, and 45 for the total risk words, financial, systematic, idiosyncratic, and legal risk words, respectively.[30] The sample in my study is made up of firms with debt while Campbell et al. examine the entire population of firms reporting RFDs. Also, the average firm size (*SIZE*) measured as log of market value of equity in my sample is 7.77 compared to the average *SIZE* in Campbell et al.'s study of 6.46.

[28] The orthogonal value of this measure is used in the regressions.
[29] Compared to the other tables in the paper, the risk words in Tables 3a and 3b are the raw measures.
[30] The software did not accurately identify some Item-1As due to the different formats of reporting the 10-K. Some of the files included other sections as part of Item 1A. The test on 10 random files reveals 70% accuracy in section extraction but 100% accuracy in the risk word count.

Table 3b presents the descriptive statistics for the public debt sample. The average debt rating for the public debt sample is 10.28, which is between a BBB- and BB+ rating and close to the 50th percentile of 10 which is BBB-. Compared to the private firms, the public debt firms are larger, as measured by *SIZE* of $8.29b, which is similar to previous findings by Dhaliwal et al. (2011b) and Bharath et al. (2008), and more firms are audited by large audit firms (mean of 0.97).

Despite these differences, the statistics for the independent variables of interest are similar to that of the private debt sample. The mean of aggregate, financial, systematic, idiosyncratic, and legal risk words are 827, 123, 287, 301, and 87, respectively, while the mean of the total number of words in Item 1A is 16,762 words.

3.5.2. Univariate analyses

Table 4a presents the correlation analysis for private firms. Consistent with H1a, *AIS* is positively correlated with total number of risk words (*1A_CRW*) and financial risk words (*IA_CFRW*). However, *AIS* is not significantly correlated with the other four RFD measures (1A_TW, *1A_CIRW*, *1A_CSRW*, and *1A_CIRW*). The positive correlation between *AIS* and risk words provides preliminary evidence that *AIS* contains risk information that is similar to the content of RFDs. The negative correlation between earnings volatility (*SD-EARN*) and *AIS* is surprising as firms with volatile earnings should have higher cost of debt to compensate for the level of risk. *AIS* is positively correlated with macroeconomic risk proxy (*CPIChange*), leverage (*LEV*), secured loans (*SEC*), revolving loans (REV), and negative earnings (*LOSS*) in line with the expectation that non-profitable firms, and highly levered firms, attract higher cost of debt to compensate for the additional risk. High-risk firms are also offered secured loans to mitigate risk of default. Understandably, firms that are profitable (*ROA*) and large (*SIZE & LASSET*) attract lower cost of debt. Similarly, firms with high facility amounts (*FACAMT*), those audited by large audit firms

(*BIGN*), those with a higher interest coverage ratio (*TIE*), and those with low risk of bankruptcy (o*Z_SCORE*) also attract lower cost of debt. Firms with longer maturity (*MAT*) attract higher cost of debt because of their greater risk exposure. Revolving loans (*REV*) are positively correlated with *AIS* while restructuring loans (*RES*) are negatively correlated with *AIS*. As expected, all the measures of risk disclosure and the proxy for disclosure comprehensiveness (*FILE_TW*) are positively correlated with one another and are significant at 5% or better.

Table 4b presents the correlation for public firms. The correlation between debt ratings and the various measures of risk disclosure is positive and significant for all risk factor disclosure measures except legal risk words (*1A_CLRW*) providing initial evidence in support of H1b. *RATING* has a negative correlation with the total number of words in the annual 10-K (*FILE_TW*), suggesting that there are capital market benefits from comprehensive disclosures. Also, larger firms (*SIZE* and *LASSET*), more profitable firms (*ROA*), firms audited by large auditors (*BIGN*), firms with low risk of bankruptcy (*oZ_SCORE*), and firms with high interest coverage ratio (*TIE*) are correlated with lower cost of debt, while high leverage (*LEV*) and loss (*LOSS*) firms have higher cost of debt, as expected. Control for earnings volatility (*SD_EARN*) is also negatively correlated with *RATING*. All risk factor disclosure measures are positively correlated to one another.

3.5.3. Multivariate analyses

Table 5 presents the results for the test of H1a on the association between RFDs and cost of debt for the private debt market. The results reveal significant positive associations between cost of debt (*AIS*) and two RFD measures: financial risk words (*1A_CFRW*) and legal risk words (*1A_CLRW*). This result confirms H1a that RFDs are associated with banks' access to private information. The results are also consistent with the findings of a positive association between

changes in the spread of credit default swaps and changes in the number of RFDs by Chiu et al. (2017). For financial and legal risk words that are significant, the economic implication is quite limited as disclosing an additional 1.1 financial or 0.8 legal risk words, on average, increases cost of debt by 0.04 bps.[31] In addition to confirming that the risk profile of firms is associated with their cost of debt, the significant results also support the argument presented in previous studies that RFDs are informative. Current literature on corporate disclosure and cost of debt has mostly reported negative associations between disclosure and cost of debt (Mazumdar & Sengupta, 2005; Sengupta, 1998). However, these studies focus on general corporate disclosures which are considerably different from RFDs, not only because RFDs are mandatory, but also because they are negative in nature and can have adverse effects on the firm.

The results for the control variables show that *AIS* increases with maturity *(MAT)*, secured loans (*SEC*), and disclosure comprehensiveness (*FILE_TW*), as expected. Revolving loans (*REV*) are negatively associated with *AIS*, while restructuring loans (*RES*) have a positive association with *AIS*. Since banks can employ other non-price factors, loans requiring collateral (*SEC*) likely incur higher cost of debt since such firms may have higher probability of default. In the case of restructuring loans (*RES*), firms may incur lower cost of debt because such loans are massive and often supported by a range of banks or investment firms. For example, some of the comments in the data for restructuring loans discuss lead banks, joint lead arrangers, and the possibility of increasing loan amount based on specific criteria. The positive association between *AIS* and *FILE_TW* suggests some large files actually contain relevant information. Contrary to what was expected, the proxy for size (*LASSET*), growth firms (*BTM*), and bankruptcy risk (*oZ_SCORE*) are negatively associated with *AIS*. This may be because large firms are better able to negotiate deals

[31] Since RFD is a log measure, an additional 1% of RFD is calculated as 1% of average number of financial risk words (115) and legal risk words (79) which are 1.1 and 0.8 risk words, respectively.

with the banks as they likely have other options of obtaining finance due to their size. Firms may also choose to disclose less risk information to avoid revealing sensitive, negative information publicly. Surprisingly, the control for profitability (*ROA*), loss firms (*LOSS*), and liquidity risk (*TIE*) are not significantly associated with cost of debt. The average R^2 for the test of H1a in this study is 0.53 which is similar to the adjusted R^2 range of 0.50 to 0.66 reported in similar studies on disclosure and cost of debt (Mazumdar & Sengupta, 2005; Sengupta, 1998).

For the public debt market, the results for H1b assessing the association between RFDs and cost of debt are presented in Table 6. All risk disclosure measures have a strong positive association with *RATING* at 1% significance. This provides evidence for H1b that RFDs are important in the public debt market. Economically, the results show that, on average, firms that disclose an additional 1% RFDs have significantly less favourable debt rating and, consequently, significantly higher cost of debt. Although this deterioration in *RATING* is not large enough to move firms from one bond rating category to another, the results show more significant associations between RFDs and cost of debt as compared to the private debt market. The direction of the effects for some of the control variables are the same as that of the private debt market. Specifically, the control for firm size (*LASSET*) and risk of bankruptcy (*oZ-SCORE*) have negative associations with *RATING*, while audit quality control (*BIGN*) and control for firm liquidity (*TIE*) are not significant. Contrary to the private debt sample, however, disclosure comprehensiveness (*FILE_TW*) is not significant in the public debt sample, while the control for profitability (*ROA*) and *LOSS* are significant for public debt although not in the expected direction. The control for growth firms (*BTM*) is significantly positive as expected. In the case of disclosure comprehensiveness, the result is contrary to expectation as borrowers in the public debt market are assumed to have better disclosure quality. Ruling out the possibility of the irrelevance of the

information in the annual 10-K,[32] the other explanation for this result is that most of the information in theses firms' annual 10-K focuses on other issues not important to the debt market. The McFadden's Pseudo R^2 is around 0.15, and this value is comparable to that obtained from studies that have used bond ratings as a measure of cost of debt. For example, Bharath et al. (2008) reported Pseudo R^2 between 0.05 and 0.33, while Jiang (2008) reported generalized R^2 of 0.11 to 0.18 in some regressions.[33] In summary, the results fully support H1b that RFDs are useful to bondholders. This is in line with the assumption that bondholders do not have access to private information and will rely on public disclosures. The results also suggest RFDs reflect the risk profile of firms thereby supporting the findings in other papers that RFDs are informative and not boilerplate (Campbell et al., 2014; Chiu et al., 2017; Hope et al., 2016)

The results to test H2a for the private debt market are presented in Tables 7a to 7c. Table 7a reports the results of the first stage regression of RFDs on the determinants for the private debt sample. The residual from this regression forms the dependent variable for the second stage regression which is the main test of H2a. Table 7a shows regressions of the six determinants of RFDs. I expect a positive association between these determinants and RFDs since these variables determine the content of RFDs. The results show that the proxy for financial risk (*LEV*) is positive and significant for financial risk words (*1A_CFRW*), further highlighting the importance of financial risk in debt contracts (Chiu et al., 2017). *SIZE* and *SD_EARN*, the proxies for regulatory and idiosyncratic risks, respectively, have negative associations which are contrary to expectation. Specifically, *SIZE* is negatively associated with financial risk words (*1A_CFRW*), while *SD_EARN* is negatively associated with all risk words except financial risk words (*1A_CFRW*). The litigation risk proxy (*LIT)* is not significant for any of the measures. A possible explanation for the lack of

[32] Research using various types of information in the 10-K is vast and not limited to only Item 1A-RFDs.
[33] Although, the variables of interest differ from those in my study, the information is provided for comparison.

significant results for these measures is that they capture many dimensions of firm risk which may not be directly reflected in the cost of debt. The R^2 for the regressions vary between 0.09 and 0.20 which is comparable to similar literature on determinants of textual data with R^2 ranging from 4.41% in Huang et al. (2014) to 36% in Cahan et al. (2015).

Table 7b presents the results of the regression of *AIS* against the positive residuals from the stage 1 regression (*PARFD*) and the control variables. Consistent with H2a, the results show that *PARFD* is negatively associated with *AIS* for total number of risk words (*1A_CRW*) and financial risk words (*1A_CFRW*). Specifically, *PARFD* firms have on average lower cost of debt by 0.07 bps. Based on the cost of information hypothesis, a possible reason for this result is that public disclosure can save banks the cost of information acquisition (Mazumdar & Sengupta, 2005). The results suggest that banks recognize the firms as honest and reward them for being transparent since the disclosure can reduce the bank's risk and monitoring costs. The results for the control variables are similar to that obtained in H1a. Loan maturity (*MAT*), secured loans (*SEC*), revolving loans (*REV*), facility amount (*FACAMT*), control for loss firms (*LOSS*), audit quality (*BIGN*), and disclosure comprehensiveness (*FILE_TW*) are positively associated with *AIS*, while restructuring loans (*RES*), large firms(*LASSET*), control for profitability(*ROA*), and bankruptcy risk (*oZ_SCORE*) are negatively associated with *AIS*. The control for growth firms (*BTM*) and liquidity risk (*TIE*) are not significantly associated with *AIS* for positive residual (*PARFD*) firms. Since *PARFD* firms disclose more risks than expected, banks may impose tighter loan covenants such as the need to provide collateral. The average R^2 is around 0.59 and is consistent with the R^2 of similar papers in the range of 13% to 54% (Cahan et al. 2015; Huang et al. 2014).

Table 7c presents the results of the regression of *AIS* against the negative residuals (*NARFD*) and the control variables from the stage 1 regression. Contrary to the prediction in H2a,

the results show negative associations between *AIS* and *NARFD* for all the risk word measures. Specifically, *NARFD* firms have on average lower cost of debt of 0.11bps. Since *NARFD* firms under report risk factors, it is possible that banks disregard the lack of transparency knowing that these firms are less risky and hence have no further need to adjust cost of debt. The negative relationship with *AIS*, therefore, reflects the lower levels of risk exposure. The association between the control variables and *AIS* are in similar directions to *PARFD* firms with the exception of the proxies for losses (*LOSS*), audit quality (*BIGN*), and disclosure comprehensiveness (*FILE_TW*) that are not significant for *NARFD* but significant for *PARFD.* The R^2 is around 0.49 and is comparable to the R^2 in the literature discussed above.

Tables 8a to 8c present the results for the test of H2b.The results for the first stage regressions are presented in Table 8a. Similar to the private debt sample, and contrary to expectation, the regulatory risk proxy (*SIZE)* is negatively associated with RFDs. This negative correlation can be the effect of proprietary cost of information. It is possible these firms disclose just enough information to comply with regulations and avoid regulatory scrutiny. The financial risk proxy (*LEV*) is significant for financial risk words (*1A_CFRW*) and legal risk words (*1A_CLRW*). This result also underscores the importance of financial risks in debt contracts. Tax risk proxy (*ETR)* is negative for all RFDs except financial risk words (*1A_CFRW*). This result is not surprising as RFDs rarely focus on tax issues except in uncommon cases of changes in tax law and regulations that may affect their businesses. Litigation risk proxy (*LIT*) and macroeconomic risk proxy (*CPIChange*) are not significant. Operational risk proxy (*SD_EARN*) is negatively associated with RFDs which is contrary to the expectation that firms with high volatility in earnings will be riskier and hence have more RFDs. Similar to the R^2 of the private debt market, the R^2 for the public debt market is also between 0.08 and 0.19.

Tables 8b and 8c present the results for *PARFD* and *NARFD* firms respectively for the public debt sample. In Table 8b for *PARFD*, legal risk words (*1A_CLRW)* have a significantly positive association with *RATING*, in support of H2b. This result is consistent with the expectation that more disclosure implies higher risk especially since lenders in the public market may not be sophisticated enough to see through this disclosure. As expected, loss firms (*LOSS*) have higher cost of debt. Large (*LASSET*), profitable (*ROA*), and low bankruptcy risk firms (*oZ_SCORE*) have lower cost of debt as they are considered less risky. Table 8c presents the results for the negative residual firms (NARFD). In line with H2b, the results reveal significant negative associations between *RATING* and *NARFD* for all RFDs. This supports the argument that for public debt lenders, less risk disclosure is interpreted as lower actual risk by bondholders. In line with expectations and similar to the results for PARFD firms, *LOSS* and *FILE_TW* have positive associations with *RATING*, while *LASSET, ROA,* and *oZ_SCORE* are negatively associated with *RATING*.

Overall, the results for the private debt market partly support H2a that *PARFD* is negatively associated with the cost of debt as a reward for transparency. However, *NARFD* is negatively associated with *AIS* which contradicts the expectation of a higher cost of debt as penalty for the lack of transparency. In the case of *NARFD* firms, banks already know these firms are less risky, so there is no need to increase the cost of debt. The public debt market results support H2b as firms with more risk disclosure (*PARFD*) have higher cost of debt, while firms with less risk disclosure (*NARFD*) have lower cost of debt. These results suggest bondholders take RFDs as representative of the actual firm risk and react accordingly.

3.6. Robustness test

3.6.1 Risk Words in Item 7-MD&A

In the annual 10-K report, Item 7-Management Discussion and Analysis (MD&A) also contains comments on several issues affecting businesses including the firms' exposure to risk. In this section, I examine the research questions by applying the same set of risk words discussed above to Item 7-MD&A. The objective of this test is to understand whether other disclosures in the annual 10-K can substitute for Item 1A-RFDs.

Untabulated results support H1a by showing a positive association between cost of debt (*AIS*) and RFDs for financial risk words *(1A_CFRW)*, while other risk words are not significant. Similar to the result for Item 1A, H1b is also supported for Item 7-MD&A for public debt. All risk factor disclosure measures have a significantly positive association with *RATING*. These results imply that the information in Item7also includes risk disclosures that are informative to the debt market.

The results for H2a for the private debt market show negative associations for both *PARFD* and *NARFD* firms. This is the same as the findings for Item 1A-RFDs but contrary to the expectation of a positive association for *NARFD* firms. Therefore, the hypothesis that banks will penalize *NARFD* firms with higher cost of debt (H2a) is only partly supported. The results for the public debt market, however, support H2b. For the *PARFD* sample, all RFD measures are positive and significant. Similarly, *NARFD* results show significant negative associations between cost of debt (*RATING*) and RFDs for risk all risk factor measures.

Overall, the results support H1a, H1b, H2b, and partly support H2a, and suggest that similar to Item 1A, Item 7-MD&A also contains useful information about firm risk.

A question that comes to mind is that if more risk disclosure attracts higher cost of debt, what is the incentive for honesty in disclosure? A possible answer to this question is the potential reward for disclosure transparency in the private debt market. Since most firms have both private and public debt, the expectation of reward in the private debt market creates an incentive for increased transparency in disclosure at the expense of punishment in the public debt market.[34] These firms may be hopeful that the capital market benefits of disclosure transparency will exceed the adverse outcome of higher risk. Furthermore, the reward for transparency extends beyond the debt market. Firms can also be rewarded for disclosure transparency in the equity market and in the level of accuracy of analyst forecasts (Leuz & Verrecchia, 2000).

3.7. Conclusion

This chapter examines the informativeness and usefulness of risk factor disclosures in the annual 10-K report. The first test examines the direct association between RFDs and cost of debt in the private and public debt market, while the second test examines the effect of managerial discretion in reporting more or less risk information on cost of debt in the two debt markets. In the private debt market, the results show that higher risk disclosures are associated with higher cost of debt in support of H1a. The results partly support H2a that banks will reward transparency with lower cost of debt and penalize firms that lack transparency. As expected, the results show that firms disclosing more risk (*PARFD*) have lower cost of debt. However, contrary to expectation, firms disclosing less risk (*NARFD*) also have lower cost of debt.

The public debt market results also show a positive association between RFDs and cost of debt in support of H1b. The findings further support H2b that public debt lenders rely on public

[34] I test H2a and H2b using a sub-sample of firms with both private and public debts. The result did not show any significant result for *PARFD* in the public debt markets. Thus, these firms can disclose more as they will be rewarded with lower cost of debts in the private debt markets.

disclosures. The results show that disclosing more risk (*PARFD*) than the expected level results in higher cost of debt. Similarly, RFDs below the expected level (*NARFD*) result in lower cost of debt. The results for the public debt market suggest bondholders take RFDs as representative of firm risk.

In addition to confirming the informativeness of RFDs, the results reveal two important observations. First, institutional differences in the two debt markets matter when considering the usefulness of RFDs. Second, financial risk has more effect on cost of debt than other risk factor categories. The role of financial risk in debt contracting is supported by the findings in Chiu et al. (2017) on the importance of financial risk to creditors. Furthermore, when the risk words are applied to Item 7-MD&A, the findings are consistent for H1a and H1b suggesting that this section of the 10-K is also informative about firm risk.

A limitation in this study is the loss of data from the data extraction software due to the format of the 10-K files. This data loss significantly reduced the sample size of this study. Improving the data extraction software can increase the sample size which can improve the ability to generalize the results of this study.

This study contributes to the literature on informativeness of RFDs and to the literature on textual disclosures and debt contracting. It is not only the first study to examine the association between RFDs and cost of debt, but also the first study on the determinants of RFDs. Future studies can examine RFDs and other compensating or debt contracts. The analysis can also be extended to understanding the role of corporate governance in the relationship between RFDs and cost of debt. The results discussed herein provide some valuable insights to debt providers and regulators on the usefulness of RFDs.

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Appendices

Appendix 1: Risk words list

Financial	Other Idiosyncratic	Legal and Regulatory	Other systematic	Tax
Anti-takeover provision	Acquisition	Adverse judgement	Economic uncertainties*(excluded)	Uncertain tax position
Bank debt	Adequate staffing	Anti-trust	Economy	VAT*(excluded)
Capital expenditure	Advertising	Casualty	Electricity	Value Added Tax
Capital lease	Asset impairment(s)*	Charged	Energy	Aggressive tax position(s)*
chapter 11	Asset securitization(s)*	Class action	EU*(excluded)	Back taxes
chapter 7	Assimilation	Compliance	E.U*(excluded)	Deferred tax asset
chapter 9	Backlog	Comply	Euro	Deferred tax liability
collateral	Brand	Conflict of interest(s)*	European Union	Excise tax
concentrated ownership	Brand recognition	Contamination	Exchange rate(s)	FIN 48
covenant	California power crisis	Defendant	Financial Crisis	Internal Revenue Service
credit facility	Certification	Deregulation	Fiscal Policy	IRS*(excluded)
credit rating	Clinical trial(s)*	Effects of implementing new standard(s)*	Foreign currency	I.R.S*(excluded)
Credit risk	Commercialize	Effects of implementing new method(s)*	Afghanistan	IRS audit
Debt burden	Concentration	IFRS*International Financial Reporting Standard	Aggregate demand	IRS judgment
Decline in stock price	Consolidation	Infringe	Asian crisis	Loss carryback
Default	Construction	Injury	Business condition(s)*	Loss carryforward
Defined benefit	Contract(s)*	Inquir(ies)*	Call*(deleted)	Property tax(es)*

Financial	Other Idiosyncratic	Legal and Regulatory	Other systematic	Tax
Dilution	Copyright(s)*	Inquir(y)*	Capacity	Provision for income tax
Dividend(s)*	Corporate culture	Intellectual property	Foreign exchange	State tax
Downgrade	Cost control	Investigation	Forward(s)*	Tax audit*(excluded)
Family	Customer concentration	Legislation	Fuel	Tax authorit*(excluded)
Financial condition	Customer service	Litigation	Future	Tax liability*(excluded)
Financing cost(s)*	Delivery	Pay damages	Gas	Tax penalt*(excluded)
Funded status	Distribution(s)*	Penalt(*)	Gasoline	Taxable
Illiquid market	Distributor(s)*	Enforceability of judgement(s)*	GDP*(Gross Domestic Product)	Taxes
Improvement(s)*	Downsizing	Enforcement	G.D.P*(excluded)	
Indebtedness	Economies of scale	Environment	GNP*(Gross National Product)	
Insider sale(s)*	Embargo	FDA approval	G.N.P*(excluded)	
Reserves	Enron	Federal	General business risk(s)*	
Revolver	Expand(s)*	Fines	General condition(s)*	
Sale of productive asset(s)*	Expand(ing)*	Fraud	General economic conditions*(excluded)	
Stock market listing	Expansion	Government investigation	Gold	
Stock price drop	Export(s)*	Government policy	Growth rate(s)*	
Stock price volatility	Facilities*Facility/Facilities	Government approval	Hedg(e)*	
Underfunded pension(s)*	Franchise	Hazardous	Hedg(ing)*	
Underwriting	Franchis(ee)*	Pending lawsuit(*)	Housing	
Volatility of operating result(s)*	Goodwill*(excluded)	Plaintiff	Housing starts	
Volatility of revenue(s)*	Goodwill impairment	Possibility of restatement(s)*	Industry condition(s)*	

Financial	Other Idiosyncratic	Legal and Regulatory	Other systematic	Tax
Volatility of sale(s)*	Impairment*(excluded)	Potential lawsuit(*)	Industry environment	
Working capital	Intangible	Product liability	Inflation	
Investment in equipment	Integrat(e)*	Regulation(s)*	Iraq	
Investment in plant	Integrat(ing)*	Regulatory	Coal	
lease*(excluded)	Integrat(ion)*	Regulatory approval	Commodit(y/ies)*	
leasing	Intellectual	Regulatory change	Competition	
Lease commitment	Internal control(s)	Regulatory compliance	Competitor(s)*	
Leverage	Internet	Regulatory environment	Complement	
Leveraged lease(s)*	Investment in subsidiary(y/ies)	Related part(y)/part(ies)	Concentration	
Limited trading	IT* (Information technology)	Remediation	Consumer confidence	
Liquidity	I.T.*(excluded)	Restatement(s)	Consumer spending	
Loan	Joint venture	Safety	Consumption	
Locked-in lease(s)*	keep and retain top management	Superfund	Currency collapse	
Mandatory contribution	key personnel	Uncertainties regarding accounting estimates	Currency fluctuation(s)*	
Maturity	Labor cost(s)*		Cyclical	
Negative operating cash flow	Labor relations		Demand	
New financing	Labor union(s)*		Derivative(s)*	
Obligations	license(es)*		Discounting	
OPEB *(Excluded)	Limited operating history		Economic	
O.P.E.B*(Other post employment benefit)	Maintenance		Economic condition*(excluded)	
Operating loss(es)*	Management retention		Economic downturn*(excluded)	
Penny stock	Market acceptance		Economic growth* (excluded)	
Postretirement	Marketing		Petroleum	
Rating*(Debt rating)	Information technology		Political climate	

Financial	Other Idiosyncratic	Legal and Regulatory	Other systematic	Tax
Refinance*(refinance)	Innovation		Political instability	
Refinancing*(refinance)	Insurance coverage		Pound	
Reinsurance	Secret(s)*		Market(s)*	
Renegotiation	Security		Market demand	
Reorganization	Shortages		Market supply	
	Single customer		Marketplace	
	single supplier		Materials	
	software		Metal(s)*	
	sole supplier(s)*		Middle East	
	SPE*(excluded)		mineral	
	S.P.E*(excluded)		Mining	
	Special purpose entity		Monetary policy	
	strike		Mortgage	
	supplier		Natural gas	
	supply chain		Obsolescence	
	synergy(ies)*		Oil	
	systems		Operating environment	
	tariff(s)*		Option	
	technological obsolescence		Ore*(excluded)	
	technologies		Overstocked	
	technology		Peso	
	trade		Price pressure	
	Material weakness(es)*		Prices	
	MBS*(excluded)		Pricing Power	
	M.B.S*(excluded)		Raw material(s)*	
	Merger		Real*(excluded)	
	Mortgage backed securities		Real estate investment trust	
	Mortgage servicing rights		Recession	
	MSR*(excluded)		REIT*(excluded)	
	M.S.R*(excluded)		R.E.I.T*(excluded)	
	Natural disasters		Renmenbi	
	New construction		RMB*(excluded)	
	New product acceptance		Ruble	

Financial	Other Idiosyncratic	Legal and Regulatory	Other systematic	Tax
	New product development		Rupee	
	No current operation		saving	
	Online		seasonal	
	Orders		September 11	
	Patent		Short*(excluded)	
	Personnel		Silver	
	Preclinical		Steel	
	Product(s)*		Substitute	
	Product development		swap	
	Product mix		Terrorism	
	Product performance		U.S. dollar	
	Production		Underlying	
	Trademark(s)*		Unsalable Inventory	
	Training		war*(excluded)	
	Union election		Yen	
	Variable interest entity		Yuan	
	Vendor			
	VIE*(excluded)			
	V.I.E*(excluded)			
	Weather			
	Web security			
	website(s)*			
	Proprietary			
	Publicity			
	Redundancy			
	Reliance on key customer(s)*			
	Reliance on key supplier(s)*			
	Reporting controls			
	Research and development			
	Restructuring			
	Restructuring implementation			
	Sarbanes-Oxley			
	SARS*(Suspicious Activity Report)			

Appendix 2: Software description

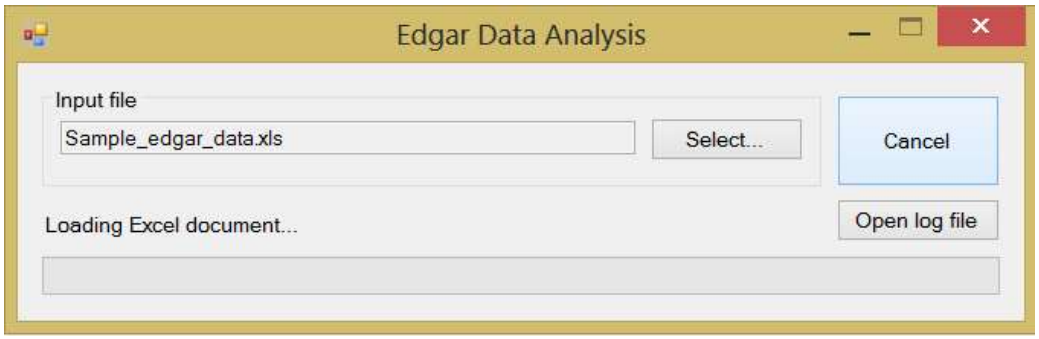
Requirements

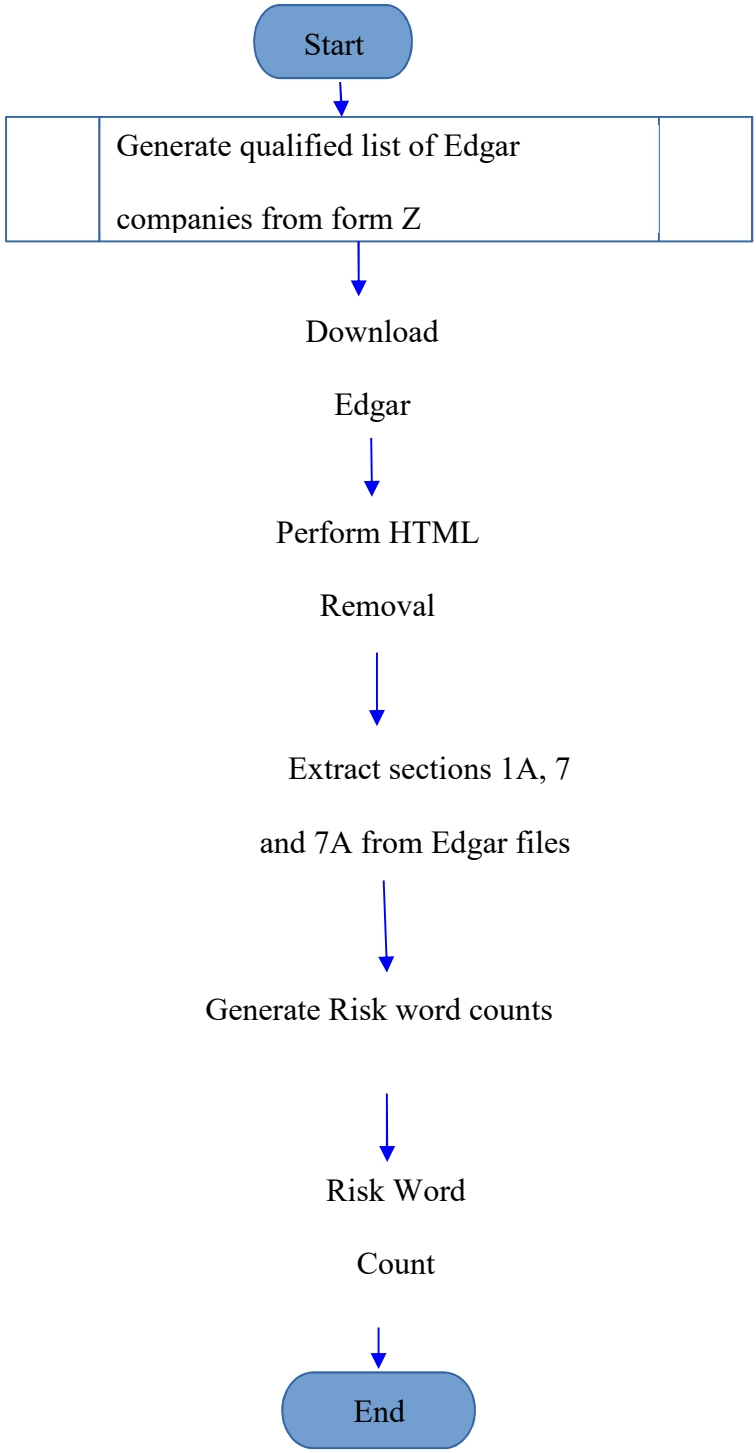
- Obtain a list of public companies from Edgar's Form Z (available online at www.sec.gov/edgar).
- Generate a short list of qualified companies (criteria: Firms with private and public debt)
- Use the CIK numbers for the qualified companies to generate a comprehensive 10-K filing listing with the following header:
  - Form Type
  - Company Name
  - CIK
  - Date Filed
  - File Name
- Download all qualified 10-K filing data from Edgar
- Create a software module to perform "HTML tag removal" on the downloaded Edgar 10-K files. This is necessary for reliable word counts.
- Create a software module to extract item sections named:
  - "Item 1A" (Risk Factors)
  - "Item 7" (Market Risk)
  - "Item 7A" (Management Discussion & Analysis)
- For each qualified company, generate the following result:
  - Total Words
  - Risk Words
  - 1A Total Words
  - 1A Risk Words
  - 7 Total Words
  - 7 Risk Words
  - 7A Total Words
  - 7A Risk Words
- Repeat the process for years 2005 – 2015

Sample Report:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Company Name	CIK	Date Filed	Fiscal Year	Quarte	File Name	Total Wo	Risk Wo	1A Total Wo	1A Risk W	7 Total W	7 Risk W	7A Total W	7A Risk Words	Report Peri
2	DYNACQ HEALT	890908	2013-03-22	2013	Q2	0001193125-13-121932.txt	52150	47	4655	8	10192	8	10	0	20120831
3	NGP Capital Res	1297704	2013-03-12	2013	Q2	0001144204-13-014308.txt	70098	282	12573	68	13509	63	961	6	20121231
4	USA Compressio	1522727	2013-03-28	2013	Q2	0001104659-13-025456.txt	70676	142	13289	28	9741	36	289	1	20121231

User Interface:





Tables

Table 1: Sample Selection

	Private Debt	**Public Debt**
All facilities from 2005 to 2015/ All S&P ratings data from 2005 to 2015	106,183	205,191
Loan-year observations after forming panel data	8,543	15,187
No EDGAR data	(2,064)	(3,504)
Exclude data with less than 30 words in Item 1A	(2,085)	(3,921)
Exclude firms with incomplete data	(3,068)	(4,755)
Final data	1,326	3,007

Table 2: Description of Variables

	Variable	Proxies
1	*AIS*	Log of weighted average of AIS: All-In-Drawn spread
2	*RATING*	S&P debt issuer rating. RATING takes values from 1 to 22 from the best to the worst: AAA=1, AA+=2, AA=3, AA- =4, A+=5, A=6, A- =7, BBB+=8, BBB=9, BBB- =10, BB+=11, BB=12, BB- =13, B+=14, B=15, B-=16, CCC+=17, CCC=18, CCC-=19, CC=20, D=21, SD=22.
3	*1A_TW*	Log of total number of words that appear in the firm's 10-K disclosure item IA + 1
4	*1A_CRW*	Log of total number of risk words that appear in the firm's 10-K disclosure item IA + 1 based on Campbell et al. (2014)
5	*1A_CFRW*	Log of total number of financial risk words that appear in the firm's 10-K disclosure item 1A + 1 based on Campbell et al. (2014)
6	*1A_CIRW*	Log of total number of idiosyncratic risk words that appear in the firm's 10-K disclosure item 1A + 1 based on Campbell et al. (2014)
7	*1A_CSRW*	Log of total number of systematic risk words that appear in the firm's 10-K disclosure item 1A + 1 based on Campbell et al. (2014)
8	*1A_CLRW*	Log of total number of legal risk words that appear in the firm's 10-K disclosure item 1A + 1 based on Campbell et al. (2014)
9	*PARFD*	Equals raw value of positive residual from the regression of risk disclosure on its determinants if residual is greater than zero
10	*NARFD*	Equals raw value of negative residual from the regression of risk disclosure on its determinants if residual is less than zero
11	*FILE_TW*	Log of total number of words in 10-K
12	*LEV*	Book value of debt divided by total assets
13	*LIT*	Litigation =1 for firms within SIC code 2833-2836, 3570-3577, 3600-3676, 5200-5961, 7370-7374, and 8731-8734
14	*SIZE*	Market value of equity
15	*ETR*	Total tax expense divided by pre-tax income
16	*CPIChange*	Change in CPI (Inflation) from CRSP Treasury and Inflation Index
17	*MAT*	Natural log of loan maturity in months
18	*FACAMT*	Sum of all borrowings for the year per firm in $m
19	*SEC*	Dummy variable = 1 for secured loans

	Variable	Proxies
20	*BTM*	Book value of equity divided by market value of equity
21	*REV*	Dummy variable= 1 for revolving loans
22	*RES*	Dummy variable =1 for loans classified as CP back up, corporate purposes, and working capital purpose
23	*BIGN*	Dummy variable=1 for BIGN auditor. AU data in Compustat of auditor code. Auditors coded 1-8 are classified as BIGN
24	*LOSS*	Dummy variable=1 if firm has negative earnings, i.e. earnings before interest and tax is less than zero
25	*oZ_SCORE (Altman)*	Orthogonized Z-score= 1.2 * (working capital/total assets) +1.4*(Retained earnings) +3.3*(earnings before interest and tax/total assets) +0.6*(market value of equity/total liability) +0.999*(Sales/total asset)
26	*SD_EARN*	Standard deviation of quarterly earnings over the past three years starting from the current quarter
27	*LASSET*	Log of total assets
28	*TIE*	Times Interest earned = tax expense divided by income before taxes
29	*ROA*	Return in asset measured as net income divided by total assets
30	*INDUSTRY*	Fama-French 12-industry classification
31	*YEAR*	Control for year effects

Table 3a: Descriptive Statistics for Private Debt Sample
(N=1,326)

	Mean	Median	Standard Deviation	Lower Quartile	Upper Quartile
AIS	181.37	160.00	109.96	112.50	225.00
1A_TW	15,028.06	6,779.00	20,160.71	3,765.00	20,809.00
1A_CRW	759.90	461.50	905.18	274.00	980.00
1A_CFRW	114.70	54.00	355.26	24.00	155.00
1A_CSRW	247.63	133.00	333.67	77.00	303.00
1A_CIRW	292.27	186.00	287.29	102.00	395.00
1A_CLRW	79.85	60.00	69.58	35.00	106.00
FILE_TW	266,684.20	244,119.50	242,741.40	67,650.00	400,588.00
SD_EARN	107.09	20.85	407.91	7.00	72.89
CPIChange	0.00	0.00	0.00	0.00	0.00
ETR	0.49	0.31	8.97	0.19	0.37
LEV	0.26	0.25	0.17	0.15	0.35
SIZE	7.77	7.78	1.78	6.73	8.96
LIT	0.21	0.00	0.41	0.00	0.00
FACAMT	1,172.16	500.00	2,382.93	200.00	1,250.00
MAT	51.30	60.00	16.50	41.00	60.00
SEC	0.40	0.00	0.49	0.00	1.00
RES	0.66	1.00	0.48	0.00	1.00
REV	0.21	0.00	0.41	0.00	0.00
LASSET	7.96	7.92	1.60	6.87	9.01
BTM	0.48	0.45	2.21	0.27	0.71
ROA	0.04	0.05	0.14	0.02	0.08
LOSS	0.07	0.00	0.25	0.00	0.00
BIGN	0.91	1.00	0.28	1.00	1.00
Z_SCORE	4.52	4.01	2.90	2.62	5.75
TIE	11.09	4.70	45.37	2.07	10.23

Table 3b: Descriptive Statistics for Public Debt Sample

(N=3,007)

	Mean	Median	Standard Deviation	Lower Quartile	Upper Quartile
RATING	10.28	10.00	3.31	8.00	13.00
FILE_TW	244,019.20	161,115.00	228,195.10	67,479.00	385,213.00
1A-TW	16,762.64	6,737.00	21,306.10	3,783.00	26,033.00
1A_CRW	827.54	466.00	923.87	263.00	1,132.00
1A-CFRW	123.25	58.00	267.97	24.00	177.00
1A_CSRW	286.80	137.00	389.15	77.00	348.00
1A_CIRW	301.25	181.00	304.55	92.00	420.00
1A_CLRW	86.98	62.00	83.59	35.00	111.00
SD_EARN	162.18	40.94	562.68	15.13	114.58
CPIChange	0.00	0.00	0.00	0.00	0.00
ETR	0.41	0.32	7.93	0.20	0.37
LEV	0.30	0.27	0.18	0.19	0.38
SIZE	8.29	8.25	1.65	7.21	9.35
LIT	0.20	0.00	0.40	0.00	0.00
LASSET	8.58	8.45	1.33	7.65	9.45
BTM	39.88	0.44	1,614.16	0.26	0.68
ROA	0.04	0.05	0.10	0.02	0.08
LOSS	0.05	0.00	0.23	0.00	0.00
BIGN	0.97	1.00	0.18	1.00	1.00
Z_SCORE	3.96	3.61	2.31	2.30	4.97
TIE	10.42	3.86	65.72	1.83	7.93

Tables 3a and 3b report descriptive statistics for all variables included in the analyses. Statistics presented include the number of observations (N), mean, median, standard deviation, lower quartile and upper quartile. All the variables are defined in table 2 AIS is the weighted average All-in-Drawn. *RATING* is the numerical value of S&P debt issuer rating. *1A_TW* is the total number of words in Item- 1A. *1A_CRW* is total number of risk words in Item-1A. *1A_CFRW* is total number of financial risk words in Item-1A. *1A_CIRW* is total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is total number of systematic risk words in Item-1A. *1A_CLRW* is total number of legal risk words in Item-1A. *FILE_TW* is total number of words in annual 10-K report. *SD_EARN* is standard deviation of quarterly earnings over 3 years. *CPIChange* is the proxy for economic risk. *ETR* is the proxy for tax risk. *LEV* is firm leverage. *SIZE* is log of market value of equity. LIT is the proxy for litigation risk. *FACAMT* is the facility amount in $'m. *MAT* is the proxy for loan maturity. *SEC* is the dummy for secured loans. *RES* is the proxy for restructuring loans. *REV* is the proxy for revolving loans. *LASSET* is the log of total assets. *BTM* is book value of equity to market value of equity. *ROA* is return on assets. *LOSS* is the dummy for firms with negative earnings. *BIGN* is the dummy for large auditors. *Z_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio.

Table 4a: Correlation for Private Debt Sample

	AIS	*1A_TW*	*CRW*	*CFRW*	*CIRW*	*CSRW*	*CLRW*	*FILE_TW*	*SD*	*CPI*	*ETR*	*LEV*	*SIZE*
AIS	1												
1A_TW	0.05	1											
1A_CRW	**0.06**	**0.96**	1										
1A_CFRW	**0.19**	**0.89**	**0.89**	1									
1A_CIRW	0.04	**0.92**	**0.93**	**0.77**	1								
1A_CSRW	0.03	**0.86**	**0.93**	**0.82**	**0.76**	1							
1A_CLRW	0.05	**0.74**	**0.8**	**0.66**	**0.71**	**0.7**	1						
FILE_TW	0.01	**0.15**	**0.2**	**0.14**	**0.19**	**0.17**	**0.29**	1					
SD_EARN	**-0.10**	-0.05	-0.04	**-0.06**	**-0.07**	-0.02	0.00	**0.15**	1				
CPIChange	**0.06**	0.01	-0.02	0.00	0.02	-0.05	**-0.09**	**-0.07**	-0.02	1			
ETR	0.00	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	0.02	-0.01	0.00	1		
LEV	**0.21**	-0.01	0.02	**0.11**	-0.04	0.03	0.05	**0.13**	0.03	**-0.09**	0.02	1	
SIZE	**-0.48**	0.00	0.04	**-0.09**	0.04	0.05	**0.16**	**0.41**	**0.31**	**-0.08**	0.02	0.02	1
LIT	0.01	0.05	0.02	-0.02	**0.13**	**-0.09**	-0.02	0.01	0.04	**0.15**	-0.02	**-0.07**	**0.08**
FACAMT	**-0.13**	0.01	0.02	-0.03	0.01	0.01	**0.08**	**0.21**	**0.38**	**-0.08**	-0.01	**0.13**	**0.48**
MAT	**0.09**	0.04	0.04	**0.07**	**0.05**	0.01	**0.06**	**0.13**	-0.02	0.00	0.01	**0.11**	0.00
SEC	**0.46**	**0.10**	**0.08**	**0.16**	**0.07**	0.05	0.00	**-0.18**	**-0.09**	**0.10**	0.02	**0.10**	**-0.47**
RES	**-0.12**	-0.04	-0.03	-0.04	-0.04	-0.02	0.00	**0.14**	**0.08**	0.02	-0.04	0.01	**0.13**
REV	**0.12**	0.02	0.01	0.05	0.02	-0.02	0.03	-0.05	0.02	-0.05	-0.01	**0.20**	-0.03
LASSET	**-0.35**	0.02	**0.07**	-0.01	0.01	**0.10**	**0.19**	**0.42**	**0.37**	**-0.11**	0.02	**0.16**	**0.89**
BTM	-0.03	-0.04	-0.05	-0.04	-0.05	-0.03	**-0.06**	**-0.09**	-0.02	0.02	0.00	**-0.11**	-0.04
ROA	**-0.20**	-0.02	-0.03	**-0.06**	-0.02	-0.03	0.01	**0.08**	-0.01	0.04	0.00	**-0.13**	**0.32**
LOSS	**0.21**	0.03	0.05	**0.06**	0.01	**0.07**	0.00	**-0.10**	-0.01	0.00	-0.01	0.04	**-0.30**
BIGN	**-0.19**	0.04	**0.06**	-0.01	**0.07**	**0.06**	**0.12**	**0.21**	**0.08**	-0.05	0.01	**0.07**	**0.41**
Z_SCORE	**-0.14**	-0.04	**-0.09**	**-0.13**	0.01	**-0.15**	**-0.13**	**-0.13**	**-0.09**	**0.12**	-0.03	**-0.44**	-0.03
TIE	**-0.10**	0.00	-0.01	-0.05	0.02	-0.02	-0.02	0.02	-0.02	-0.01	0.00	**-0.21**	**0.12**

Panel B: Table 4a (Continued)

	LIT	*FAC*	*MAT*	*SEC*	*RES*	*REV*	*LASSET*	*BTM*	*ROA*	*LOSS*	*BIGN*	*Z_SCORE*	*TIE*
LIT	1												
FACAMT	0.05	1											
MAT	-0.02	**-0.14**	1										
SEC	0.03	**-0.16**	**0.11**	1									
RES	0.01	-0.02	**0.10**	**-0.17**	1								
REV	-0.03	**0.09**	**-0.06**	**0.13**	**-0.11**	1							
LASSET	-0.01	**0.53**	-0.02	**-0.40**	**0.13**	0.03	1						
BTM	-0.01	**-0.02**	0.03	-0.01	0.02	0.01	**-0.05**	1					
ROA	0.00	0.03	**0.07**	**-0.20**	0.05	**-0.07**	**0.17**	0.01	1				
LOSS	0.04	**-0.08**	**-0.16**	**0.21**	-0.03	-0.01	**-0.22**	-0.02	**-0.47**	1			
BIGN	0.00	**0.13**	**0.11**	**-0.23**	**0.09**	0.00	**0.42**	**-0.06**	**0.11**	**-0.11**	1		
Z_SCORE	**0.22**	**-0.14**	0.02	0.01	-0.01	**-0.10**	**-0.26**	-0.01	**0.23**	**-0.13**	**-0.07**	1	
TIE	0.06	-0.03	0.04	**-0.11**	0.05	**-0.07**	-0.02	-0.04	**0.31**	**-0.21**	-0.02	**0.37**	1

Table 4b: Correlation for Public Debt Sample

	RATING	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*	*FILE_TW*	*SD_EARN*	*CPI*
RATING	1									
1A_TW	**0.08**	1								
1A_CRW	**0.09**	**0.96**	1							
1A_CFRW	**0.25**	**0.9**	**0.89**	1						
1A_CIRW	**0.05**	**0.92**	**0.93**	**0.79**	1					
1A_CSRW	**0.07**	**0.87**	**0.94**	**0.83**	**0.78**	1				
1A_CLRW	0.03	**0.79**	**0.84**	**0.7**	**0.75**	**0.75**	1			
FILE_TW	**-0.11**	**0.10**	**0.15**	**0.10**	**0.14**	**0.14**	**0.22**	1		
SD_EARN	**-0.12**	**-0.07**	**-0.06**	**-0.07**	**-0.06**	-0.03	**-0.06**	**0.09**	1	
CPIChange	-0.01	0.00	-0.03	-0.03	0.02	**-0.06**	**-0.07**	**-0.07**	-0.01	1
ETR	-0.01	-0.03	-0.03	-0.02	-0.02	-0.02	-0.03	0.00	0.00	-0.03
LEV	**0.44**	**0.04**	**0.04**	**0.15**	0.00	0.03	**0.07**	0.03	**-0.04**	**-0.09**
SIZE	**-0.72**	**-0.06**	**-0.04**	**-0.20**	0.00	-0.03	0.01	**0.26**	**0.26**	**0.04**
LIT	**-0.07**	-0.01	**-0.05**	**-0.09**	**0.07**	**-0.14**	**-0.11**	**-0.03**	**0.04**	**0.23**
LASSET	**-0.55**	**-0.05**	-0.03	**-0.14**	-0.03	0.00	0.03	0.29	**0.36**	**-0.04**
BTM	0.03	-0.02	-0.02	**-0.04**	-0.02	-0.02	0.00	-0.02	-0.01	0.01
ROA	**-0.38**	-0.03	**-0.05**	**-0.11**	-0.01	**-0.06**	**-0.04**	0.02	**0.04**	**0.09**
LOSS	**0.31**	0.00	0.02	**0.05**	-0.03	**0.05**	-0.01	**-0.05**	**0.06**	-0.02
BIGN	**-0.14**	0.00	-0.01	**-0.05**	0.00	0.00	**0.04**	0.01	**0.04**	0.03
Z_SCORE	**-0.18**	**-0.06**	**-0.11**	**-0.16**	0.01	**-0.18**	**-0.16**	**-0.12**	**-0.05**	**0.18**
TIE	**-0.11**	-0.03	-0.03	**-0.06**	-0.01	**-0.04**	**-0.05**	**-0.01**	0.02	**0.05**

Panel B: Table 4b (Continued)

	ETR	*LEV*	*SIZE*	*LIT*	*LASSET*	*BTM*	*ROA*	*LOSS*	*BIGN*	*Z_SCORE*	*TIE*
ETR	1										
LEV	0.00	1									
SIZE	0.01	**-0.34**	1								
LIT	0.00	**-0.12**	**0.16**	1							
LASSET	0.02	**-0.19**	**0.85**	**0.11**	1						
BTM	0.00	0.03	**-0.18**	0.00	0.00	1					
ROA	-0.01	**-0.23**	**0.34**	**0.07**	**0.13**	-0.01	1				
LOSS	-0.01	**0.10**	**-0.20**	0.01	**-0.11**	-0.01	**-0.37**	1			
BIGN	0.00	**-0.08**	**0.20**	0.03	**0.21**	0.00	**0.10**	-0.03	1		
Z_SCORE	-0.02	**-0.35**	**0.17**	**0.30**	**-0.07**	-0.03	**0.33**	**-0.18**	**0.06**	1	
TIE	0.00	**-0.16**	**0.11**	**0.12**	**0.04**	0.00	**0.14**	**-0.05**	0.02	**0.21**	1

Tables 4a and 4b present Pearson correlation matrix for private debt. Variables significant at 5% and below are in bold. All the variables are defined in table 2. *AIS* is log of weighted average All-in-Drawn. *RATING* is the numerical value of S&P debt issuer rating. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *FILE_TW* is the log of total number of words in annual 10-K report. *SD_EARN* is standard deviation of quarterly earnings over 3 years. CPIChange is the proxy for economic risk. ETR is the proxy for tax risk. *LEV* is firm leverage. SIZE is market value of equity. LIT is the proxy for litigation risk. *FACAMT* is the facility amount in $'m. *MAT* is the proxy for loan maturity. *SEC* is the dummy for secured loans. *RES* is the proxy for restructuring loans. *REV* is the proxy for revolving loans. *LASSET* is the log of total assets. *BTM* is book value of equity to market value of equity. *ROA* is return on assets. *LOSS* is the dummy for firms with negative earnings. *BIGN* is the dummy for large auditors. *Z_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio.

Table 5: H1a for Private Debt Market

	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
Dependent Variable				*AIS*			
Risk Disclosure	+	0.01	0.03	0.05***	0.02	0.01	0.04*
		(0.91)	(1.36)	(3.39)	(1.00)	(0.74)	(1.73)
FACAMT	-	0.00	0.00	0.00	0.00	0.00	0.00
		(1.44)	(1.46)	(1.50)	(1.45)	(1.44)	(1.49)
MAT	+	0.00**	0.00**	0.00**	0.00**	0.00**	0.00**
		(2.29)	(2.30)	(2.23)	(2.30)	(2.30)	(2.26)
SEC	+	0.40***	0.40***	0.38***	0.40***	0.40***	0.39***
		(12.25)	(12.22)	(11.85)	(12.23)	(12.34)	(12.17)
REV	?	0.17***	0.17***	0.16***	0.17***	0.17***	0.17***
		(3.20)	(3.19)	(3.13)	(3.20)	(3.20)	(3.20)
RES	?	-0.12***	-0.12***	-0.12***	-0.12***	-0.12***	-0.12***
		(-3.85)	(-3.83)	(-3.82)	(-3.83)	(-3.85)	(-3.82)
FILE_TW	+	0.05*	0.05*	0.04	0.05*	0.05*	0.05*
		(1.93)	(1.86)	(1.61)	(1.93)	(1.92)	(1.86)
LASSET	+	-0.13***	-0.13***	-0.13***	-0.13***	-0.13***	-0.13***
		(-6.09)	(-6.12)	(-6.06)	(-6.07)	(-6.15)	(-6.26)
BTM	+	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***	-0.01***
		(-4.34)	(-4.32)	(-4.24)	(-4.34)	(-4.34)	(-4.21)
ROA	+	-0.26	-0.26	-0.26	-0.26	-0.26	-0.26
		(-1.49)	(-1.48)	(-1.49)	(-1.47)	(-1.49)	(-1.46)
LOSS	-	0.09	0.08	0.09	0.09	0.09	0.08
		(1.16)	(1.14)	(1.17)	(1.16)	(1.15)	(1.14)
BIGN	+	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
		(-0.54)	(-0.57)	(-0.55)	(-0.57)	(-0.55)	(-0.59)
oZ_SCORE	+	-0.70***	-0.70***	-0.67***	-0.70***	-0.70***	-0.71***
		(-3.23)	(-3.25)	(-3.25)	(-3.22)	(-3.27)	(-3.32)
TIE	+	0.00	0.00	0.00	0.00	0.00	0.00
		(-0.33)	(-0.33)	(-0.30)	(-0.34)	(-0.32)	(-0.28)
Constant		4.32***	4.30***	4.34***	4.35***	4.38***	4.35***
		(14.11)	(14.21)	(14.22)	(14.45)	(14.56)	(14.05)
Observations		1,326	1,326	1,326	1,326	1,326	1,326
R-squared		0.52	0.52	0.53	0.52	0.52	0.52
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

This table presents coefficient estimates from the regression of AIS on risk disclosure measures and the control variables. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are

winsorized at 2% and 98%. All the variables are defined in table 2. AIS is log of weighted average All-in-Drawn. Risk disclosure is one of 1A_TW, 1A_CRW, 1A_CFRW, 1A_CIRW, 1A_CSRW, and 1A_CLRW. 1A_TW is the log of total number of words in Item- 1A. 1A_CRW is log of total number of risk words in Item-1A. 1A_CFRW is the log of total number of financial risk words in Item -1A. 1A_CIRW is the log of total number of idiosyncratic risk words in Item-1A. 1A_CSRW is the log of total number of systematic risk words in Item-1A. 1A_CLRW is the log of total number of legal risk words in Item-1A. FACAMT is the facility amount in $'m. MAT is the proxy for loan maturity. SEC is the dummy for secured loans. REV is the proxy for revolving loans. RES is the proxy for restructuring loans. FILE_TW is the log of total number of words in annual 10-K report. *LASSET* is the log of total assets. *SD_EARN* is standard deviation of quarterly earnings over 3 years. *BTM* is book value of equity to market value of equity. *LEV* is firm leverage. *ROA* is return on assets. *LOSS* is the dummy for firms with negative earnings. BIGN is the dummy for large auditors. o*Z_SCORE* is bankruptcy score based on Altman (1968). TIE is times interest earned ratio.

Table 6: H1b for Public Debt

		1A_TW	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
Dependent Variable	Sign	*RATING*					
Risk Disclosure	+	0.08***	0.13***	0.18***	0.08***	0.12***	0.13***
		(5.04)	(6.49)	(12.09)	(4.04)	(6.50)	(6.10)
FILE_TW	+	0.03	0.02	0.01	0.03	0.02	0.02
		(0.81)	(0.62)	(0.22)	(0.91)	(0.64)	(0.67)
LASSET	+	-0.61***	-0.61***	-0.59***	-0.61***	-0.61***	-0.61***
		(-33.70)	(-33.79)	(-32.82)	(-33.80)	(-34.05)	(-34.02)
BTM	+	0.00**	0.00**	0.00***	0.00**	0.00**	0.00**
		(2.19)	(2.20)	(2.62)	(2.15)	(2.17)	(2.10)
ROA	+	-2.75***	-2.74***	-2.72***	-2.74***	-2.75***	-2.74***
		(-12.82)	(-12.78)	(-12.67)	(-12.77)	(-12.80)	(-12.73)
LOSS	-	0.75***	0.74***	0.75***	0.75***	0.73***	0.75***
		(8.10)	(8.07)	(8.19)	(8.11)	(7.97)	(8.10)
BIGN	+	0.15	0.15	0.17	0.16	0.15	0.13
		(1.43)	(1.42)	(1.54)	(1.49)	(1.37)	(1.19)
oZ_SCORE	+	-0.38***	-0.38***	-0.37***	-0.38***	-0.38***	-0.38***
		(-15.07)	(-15.09)	(-14.60)	(-15.13)	(-15.00)	(-14.97)
TIE	+	0.00	0.00	0.00	0.00	0.00	0.00
		(-0.66)	(-0.62)	(-0.40)	(-0.68)	(-0.68)	(-0.58)
Observations		3,007	3,007	3,007	3,007	3,007	3,007
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2		0.15	0.15	0.16	0.15	0.15	0.15

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

This table presents coefficient estimates from the regression of *RATING* on risk disclosure measures and the control variables. z-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2. *RATING* is the numerical value of S&P debt issuer rating. Risk disclosure is one of *1A_TW, 1A_CRW, 1A_CFRW, 1A_CIRW, 1A_CSRW,* and *1A_CLRW*. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *FILE_TW* is the log of total number of words in annual 10-K report. *LASSET* is the log of total assets. *SD_EARN* is standard deviation of quarterly earnings over 3 years. *BTM* is book value of equity to market value of equity. *LEV* is firm leverage. *ROA* is return on assets. *LOSS* is the dummy for firms with negative earnings. *BIGN* is the dummy for large auditors. *oZ_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio.

Table 7a: Stage 1 H2 for Private Debt

	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
SIZE	+	-0.05*	-0.03	-0.13***	-0.03	-0.01	0.02
		(-1.92)	(-1.31)	(-4.34)	(-1.32)	(-0.34)	(0.90)
FILE_TW	+	0.28***	0.25***	0.34***	0.25***	0.25***	0.22***
		(4.82)	(4.82)	(5.18)	(4.47)	(4.71)	(4.52)
LEV	+	-0.11	-0.02	0.76***	-0.24	-0.03	0.01
		(-0.49)	(-0.11)	(2.90)	(-1.24)	(-0.17)	(0.05)
ETR	+	0.00	0.00	0.00	0.00	0.00	-0.00***
		(0.42)	(-0.15)	(0.55)	(0.58)	(-0.34)	(-3.39)
LIT	+	0.04	-0.02	-0.06	0.06	-0.06	-0.13
		(0.28)	(-0.16)	(-0.39)	(0.59)	(-0.55)	(-1.38)
CPIChange	+	-10.98	-8.06	-22.84*	-5.75	-5.15	-10.13
		(-0.98)	(-0.86)	(-1.77)	(-0.61)	(-0.53)	(-1.02)
SD_EARN	+	-0.00**	-0.00**	0.00	-0.00**	-0.00**	-0.00**
		(-2.14)	(-2.30)	(-1.43)	(-2.53)	(-1.97)	(-2.51)
Constant		6.31***	3.75***	0.97	3.07***	2.29***	1.40**
		(8.51)	(5.67)	(1.19)	(4.30)	(3.44)	(2.31)
Observations		1,326	1,326	1,326	1,326	1,326	1,326
R-squared		0.09	0.11	0.12	0.13	0.17	0.20
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 7a present coefficient estimates from the regression of RFDs on the determinants for the private debt sample. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are lagged and winsorized at 2% and 98%. All the variables are defined in table 2. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *SIZE* is the proxy for regulatory risk and measured as the market value of equity. *FILE_TW* is the log of total number of words in annual 10-K report. *LEV* is firm leverage. *ETR* is the proxy for tax risk. *LIT* is the proxy for litigation risk. *CPIChange* is the proxy for economic risk. *SD_EARN* is the proxy for idiosyncratic risk and is measured as the standard deviation of quarterly earnings over 3 years.

Table 7b: Stage 2 H2 for Positive Residuals Private Debt

AIS	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
PARFD	-	-0.05	-0.07*	-0.07**	-0.05	-0.04	0.01
		(-1.36)	(-1.96)	(-2.26)	(-1.29)	(-1.10)	(0.25)
FACAMT	+	0.00	0.00	0.00*	0.00	0.00*	0.00
		(1.21)	(1.55)	(1.84)	(1.59)	(1.72)	(0.98)
MAT	+	0.00*	0.00	0.00*	0.00**	0.00***	0.00*
		(1.93)	(1.62)	(1.80)	(2.12)	(2.82)	(1.81)
SEC	+	0.40***	0.40***	0.37***	0.39***	0.40***	0.37***
		(8.32)	(8.80)	(8.67)	(8.61)	(8.99)	(9.09)
REV	?	0.20***	0.21***	0.24***	0.19***	0.20***	0.16***
		(3.82)	(4.35)	(5.17)	(4.01)	(4.08)	(3.52)
RES	?	-0.11***	-0.11**	-0.11***	-0.12***	-0.14***	-0.12***
		(-2.59)	(-2.57)	(-2.73)	(-2.90)	(-3.48)	(-3.09)
FILE_TW	+	0.09***	0.10***	0.10***	0.10***	0.11***	0.09***
		(2.89)	(3.20)	(3.38)	(3.25)	(3.76)	(2.96)
LASSET	-	-0.15***	-0.15***	-0.13***	-0.16***	-0.16***	-0.14***
		(-7.42)	(-7.68)	(-6.88)	(-8.34)	(-8.08)	(-7.95)
BTM	-	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02
		(-0.55)	(-0.26)	(-0.52)	(-0.61)	(-0.71)	(-0.84)
ROA	-	-0.71***	-0.14	-0.75***	-0.80***	-0.16	-0.15
		(-2.60)	(-0.80)	(-2.78)	(-3.17)	(-0.96)	(-0.91)
LOSS	+	0.16*	0.23***	0.09	0.15*	0.25***	0.25***
		(1.75)	(2.72)	(1.01)	(1.67)	(3.00)	(3.08)
BIGN	-	0.05	0.03	0.02	0.05	0.02	0.12*
		(0.61)	(0.41)	(0.27)	(0.69)	(0.21)	(1.68)
oZ_SCORE	-	-0.44***	-0.47***	-0.50***	-0.43***	-0.35***	-0.54***
		(-2.99)	(-3.38)	(-3.47)	(-3.35)	(-2.82)	(-4.16)
TIE	+	0.00	0.00	0.00	0.00	0.00	0.00
		(-0.29)	(0.01)	(-0.01)	(0.12)	(-0.37)	(0.68)
Constant		4.03***	4.03***	3.93***	4.07***	3.70***	4.00***
		(9.91)	(10.21)	(10.05)	(10.20)	(9.40)	(10.28)
Observations		554	616	636	649	614	708
R-squared		0.61	0.59	0.58	0.60	0.59	0.56
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 7b present coefficient estimates from the regression of *AIS* on the positive residuals from Table 7a including the control variables for the private debt sample. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2. *PARFD* is the positive

residuals from stage 1 regression *AIS* is log of weighted average All-in-Drawn. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *FACAMT* is the facility amount in $'m. *MAT* is the proxy for loan maturity. *SEC* is the dummy for secured loans. *REV* is the proxy for revolving loans. *RES* is the proxy for restructuring loans. *FILE_TW* is the log of total number of words in annual 10-K report. *LASSET* is the lag of log of total assets. *BTM* is the lagged book value of equity to market value of equity. *ROA* is lagged return on assets. *LOSS* is the lag value of dummy for firms with negative earnings. *BIGN* is the lagged dummy for large auditors. *oZ_SCORE* is lagged bankruptcy score based on Altman (1968). *TIE* is lagged times interest earned ratio.

Table 7c: Stage 2 H2 for Negative Residuals Private Debt

AIS	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
NARFD	+	-0.14***	-0.12***	-0.17***	-0.07**	-0.10***	-0.08**
		(4.03)	(3.23)	(6.44)	(2.18)	(2.94)	(2.35)
FACAMT	+	0.00**	0.00**	0.00**	0.00*	0.00**	0.00**
		(2.57)	(2.29)	(2.45)	(1.91)	(2.07)	(2.18)
MAT	+	0.00***	0.00***	0.00**	0.00***	0.00*	0.00***
		(2.70)	(2.84)	(2.24)	(2.69)	(1.91)	(2.73)
SEC	+	0.34***	0.34***	0.36***	0.36***	0.35***	0.35***
		(7.91)	(7.54)	(7.73)	(7.70)	(7.73)	(6.81)
REV	?	0.14***	0.13***	0.09*	0.14***	0.13***	0.17***
		(3.22)	(2.77)	(1.88)	(3.00)	(2.92)	(3.39)
RES	?	-0.12***	-0.14***	-0.12***	-0.12***	-0.10**	-0.12***
		(-3.07)	(-3.27)	(-2.81)	(-2.79)	(-2.54)	(-2.77)
FILE_TW	+	0.05	0.04	0.03	0.03	0.00	0.03
		(1.55)	(1.10)	(0.89)	(0.97)	(0.15)	(0.99)
LASSET	-	-0.15***	-0.14***	-0.16***	-0.13***	-0.14***	-0.14***
		(-8.67)	(-7.84)	(-9.27)	(-7.38)	(-7.88)	(-7.25)
BTM	-	0.04	-0.01	0.02	0.05	0.02	0.05
		(0.97)	(-0.13)	(0.58)	(1.12)	(0.42)	(1.13)
ROA	-	-0.31*	-1.39***	-0.26	-0.26	-1.29***	-1.55***
		(-1.67)	(-4.07)	(-1.40)	(-1.31)	(-3.77)	(-3.88)
LOSS	+	0.04	-0.08	0.09	0.05	-0.12	-0.14
		(0.44)	(-0.87)	(0.97)	(0.52)	(-1.24)	(-1.32)
BIGN	-	-0.05	-0.05	-0.02	-0.02	-0.02	-0.10
		(-0.68)	(-0.64)	(-0.33)	(-0.26)	(-0.26)	(-1.25)
oZ_SCORE	-	-0.67***	-0.66***	-0.57***	-0.77***	-0.88***	-0.59***
		(-5.08)	(-4.68)	(-4.40)	(-4.93)	(-5.43)	(-3.85)
TIE	+	0.00	0.00	0.00	0.00	0.00*	0.00
		(1.14)	(1.28)	(1.06)	(1.15)	(1.82)	(1.18)
Constant		4.76***	4.90***	5.13***	4.65***	5.38***	4.94***
		(11.30)	(11.15)	(11.88)	(10.65)	(12.27)	(10.74)
Observations		772	710	690	677	712	618
R-squared		0.48	0.49	0.52	0.46	0.50	0.51
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 6c present coefficient estimates from the regression of *AIS* on the negative residuals from Table 7a including the control variables for the private debt sample. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2. *NARFD* is the negative

residuals from stage 1 regression *AIS* is log of weighted average All-in-Drawn. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *FACAMT* is the facility amount in $'m. *MAT* is the proxy for loan maturity. *SEC* is the dummy for secured loans. *REV* is the proxy for revolving loans. *RES* is the proxy for restructuring loans. *FILE_TW* is the log of total number of words in annual 10-K report. *LASSET* is the lag of log of total assets. *BTM* is the lagged book value of equity to market value of equity. *ROA* is lagged return on assets. *LOSS* is the lag value of dummy for firms with negative earnings. *BIGN* is the lagged dummy for large auditors. *oZ_SCORE* is lagged bankruptcy score based on Altman (1968). *TIE* is lagged times interest earned ratio.

Table 8a: Stage 1 H2 for Public Debt

	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
SIZE	+	-0.06**	-0.03	-0.15***	-0.03	-0.01	0.00
		(-2.24)	(-1.57)	(-4.89)	(-1.50)	(-0.48)	(-0.05)
FILE_TW	+	0.21***	0.19***	0.22***	0.19***	0.20***	0.19***
		(4.32)	(4.37)	(4.22)	(4.06)	(4.40)	(4.32)
LEV	+	0.06	0.17	0.63***	-0.01	0.18	0.30*
		(0.29)	(0.96)	(2.79)	(-0.08)	(0.89)	(1.81)
ETR	+	-0.00***	-0.00***	0.00*	-0.00***	-0.00***	-0.00***
		(-3.57)	(-4.01)	(-1.41)	(-3.26)	(-3.79)	(-4.30)
LIT	+	0.11	0.05	-0.07	0.11	0.04	-0.16
		(0.96)	(0.48)	(-0.45)	(1.10)	(0.37)	(-1.64)
CPIChange	+	10.30	9.63	3.57	11.07	10.72	6.54
		(1.15)	(1.24)	(0.34)	(1.31)	(1.28)	(0.92)
SD_EARN	+	-0.00**	-0.00**	0.00	-0.00**	-0.00*	-0.00**
		(-2.22)	(-2.13)	(-1.31)	(-2.40)	(-1.67)	(-2.26)
Constant		7.35***	4.58***	2.63***	3.95***	2.96***	1.91***
		(11.43)	(8.00)	(3.93)	(6.54)	(5.01)	(3.32)
Observations		3,007	3,007	3,007	3,007	3,007	3,007
R-squared		0.08	0.10	0.14	0.10	0.19	0.16
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 8a present coefficient estimates from the regression of RFDs on the determinants for the public debt sample. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *SIZE* is the proxy for regulatory risk and measured as the market value of equity. *FILE_TW* is the log of total number of words in annual 10-K report. *LEV* is firm leverage. *ETR* is the proxy for tax risk. *LIT* is the proxy for litigation risk. *CPIChange* is the proxy for economic risk. *SD_EARN* is the proxy for idiosyncratic risk and is measured as the standard deviation of quarterly earnings over 3 years.

Table 8b: Stage 2 H2 for Positive Residuals Public Debt

RATING	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
PARFD	+	0.01	0.08	-0.06	0.06	0.01	0.12**
		(0.16)	(1.53)	(-1.31)	(1.23)	(0.11)	(2.18)
FILE_TW	+	0.09*	0.04	0.03	0.06	0.00	0.08**
		(1.81)	(0.81)	(0.75)	(1.38)	(0.37)	(1.69)
LASSET	-	-0.63***	-0.66***	-0.56***	-0.68***	-0.61***	-0.66***
		(-22.79)	(-24.23)	(-21.25)	(-25.35)	(-22.34)	(-25.74)
BTM	-	0.00	0.00	0.00	0.00	0.00	0.00
		(1.14)	(1.25)	(0.96)	(1.35)	(1.3)	(1.33)
ROA	-	-3.10***	-3.25***	-2.52***	-3.56***	-1.98***	-3.39***
		(-9.24)	(-9.71)	(-8.27)	(-10.89)	(-7.32)	(-10.46)
LOSS	+	0.51***	0.47***	0.53***	0.53***	0.69***	0.52***
		(3.74)	(3.52)	(4.23)	(3.90)	(5.52)	(4.17)
BIGN	-	0.11	-0.01	0.11	0.08	-0.22	-0.19
		(0.70)	(-0.09)	(0.69)	(0.55)	(-1.37)	(-1.15)
oZ_SCORE	-	-0.33***	-0.34***	-0.36***	-0.33***	-0.33***	-0.33***
		(-9.05)	(-9.44)	(-10.02)	(-9.48)	(-9.07)	(-9.48)
TIE	+	-0.00***	-0.00***	-0.00***	-0.00**	-0.00***	-0.00***
		(-3.19)	(-3.21)	(-3.22)	(-2.05)	(-3.37)	(-2.77)
Observations		1,284	1,360	1,435	1,447	986	1,565
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2		0.16	0.16	0.13	0.17	0.15	0.16

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 8b present coefficient estimates from the regression of *RATING* on the positive residuals (*PARFD*) from Table 8a including the control variables for the public debt sample. z-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *LOSS* is the dummy for firms with negative earnings. *LASSET* is the log of total assets. *BIGN* is the dummy for large auditors. *ROA* is return on assets. *BTM* is book value of equity to market value of equity. *oZ_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio. *FILE_TW* is the log of total number of words in annual 10-K report.

Table 8c: Stage 2 H2 for Negative Residuals Public Debt

RATING	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
NARFD	-	-0.45***	-0.37***	-0.42***	-0.19***	-0.32***	-0.15***
		(9.07)	(7.63)	(11.36)	(4.34)	(7.40)	(3.75)
FILE_TW	+	0.05	0.08*	0.09*	0.04	0.12**	0.03
		(0.99)	(1.65)	(1.77)	(0.87)	(2.49)	(0.61)
LASSET	-	-0.63***	-0.60***	-0.70***	-0.57***	-0.63***	-0.59***
		(-25.84)	(-24.12)	(-27.03)	(-22.76)	(-25.30)	(-22.66)
BTM	-	0.00**	0.00**	0.00***	0.00*	0.00*	0.00
		(2.44)	(2.00)	(3.72)	(1.79)	(1.83)	(1.36)
ROA	-	-2.47***	-2.31***	-2.78***	-2.16***	-4.30***	-2.12***
		(-8.65)	(-8.09)	(-8.95)	(-7.43)	(-11.63)	(-7.24)
LOSS	+	0.91***	0.95***	0.93***	0.90***	0.79***	0.96***
		(7.24)	(7.40)	(6.76)	(7.10)	(5.75)	(6.91)
BIGN	-	0.22	0.34**	0.31**	0.26	0.49***	0.36**
		(1.42)	(2.21)	(1.98)	(1.61)	(3.21)	(2.39)
oZ_SCORE	-	-0.45***	-0.44***	-0.39***	-0.46***	-0.42***	-0.46***
		(-12.55)	(-12.11)	(-10.58)	(-12.16)	(-11.65)	(-12.10)
TIE	+	0.00	0.00	0.00	0.00	0.00	0.00
		(0.54)	(0.46)	(0.37)	(0.30)	(0.66)	(0.56)
Observations		1,723	1,647	1,572	1,560	1,639	1,442
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2		0.17	0.15	0.19	0.15	0.16	0.15

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 8c present coefficient estimates from the regression of *RATING* on the negative residuals (*NARFD*) from Table 8a including the control variables for the public debt sample. z-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2. *RATING* is the numerical value of S&P debt issuer rating. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *LOSS* is the dummy for firms with negative earnings. *LASSET* is the log of total assets. *BIGN* is the dummy for large auditors. *ROA* is return on assets. *BTM* is book value of equity to market value of equity. *oZ_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio. *FILE_TW* is the log of total number of words in annual 10-K report.

Chapter 4: Essay Three

Risk Factor Disclosures, Debt, and Corporate Governance

Abstract

This chapter examines the effect of corporate governance on managerial discretion in reporting Risk Factor Disclosures (RFDs) and the subsequent effect on cost of debt in the public debt market. Managerial discretion in reporting RFD, which I call Abnormal Risk Factor Disclosure (*ARFD*), is measured as the residual from the regression of RFDs on its determinants. In the previous chapter, I find that for public debt, cost of debt is positively associated with Positive Abnormal Risk Factor Disclosure (*PARFD*) and negatively associated with Negative Abnormal Risk Factor Disclosure (*NARFD*). To examine the effect of strong versus weak corporate governance on cost of debt, I focus on those firms that pay a price for perceived higher risk, i.e., the *PARFD* firms. I expect the presence of strong corporate governance will mitigate the expected higher cost of debt for these firms. Cost of debt is measured using S&P debt issuer rating (*RATING*) while corporate governance (*GOV*) is measured as the composite score of three corporate governance measures (Independent Directors – *IND*, Expert Directors – *EXPERT*, and Board Maturity – *BMAT*). The results reveal positive associations between *GOV* and *ARFD* which is consistent with the expectation that corporate governance will promote more transparent reporting. However, there is no cost of debt mitigating effect for riskier firms (*PARFD*) with strong corporate governance. As expected, *PARFD* firms with weak corporate governance have higher cost of debt. The findings are useful to regulators in setting mandatory disclosure requirements and to management in implementing corporate governance structures in the organization.

4. Introduction

Corporate governance mechanisms can mitigate agency conflicts and reduce information asymmetry between stakeholders and managers (Jensen, 1993). Strong corporate governance can serve as a means of managing opportunist and self-seeking behaviour by managers, thereby reducing the variability in cash flow and subsequently reducing default risk (Sengupta, 1998). Extant literature has established a positive association between some corporate governance characteristics and corporate risk disclosure (Beasley, Clune, & Hermason, 2005; Lajili, 2009). However, there are currently no studies on the direct or indirect effect of corporate governance on the mandatory Item 1A-Risk Factor Disclosure by the Securities and Exchange Commission (SEC). Compared to similar studies that have focused on levels of disclosure, this study explores managerial discretion in disclosure by first examining whether corporate governance promotes transparency in reporting RFDs and then assessing whether strong corporate governance mitigates cost of debt for firms that are considered risky (Positive Abnormal Risk Factor Disclosure – *PARFD*) in the public debt market. In the previous chapter, I find that *PARFD* is positively associated with cost of debt while Negative Abnormal Risk Factor Disclosure (*NARFD*) is negatively associated with cost of debt. This suggests that *PARFD* firms suffer a penalty for perceived higher risk although it appears that *NARFD* firms are rewarded for less risk. If strong corporate governance has a risk mitigation effect, then I expect risky firms (*PARFD*) with strong corporate governance have lower cost of debt.

In this chapter, I examine whether strong corporate governance mitigates the negative effect on the cost of debt when firms are perceived as risky. Addressing these objectives will provide insights into the following research questions:

RQ 1) Does corporate governance affect managerial discretion in risk factor disclosures?

RQ 2) Does strong corporate governance have a mitigating effect on cost of debt?

Similar to Chapter 3 of this dissertation, managerial discretion in reporting RFDs, Abnormal Risk Factor Disclosure (*ARFD*), is measured as the residual from the regression of RFD on its determinants. These determinants are discussed in the previous chapter and based on the literature examining the contents of RFDs (financial risk, idiosyncratic risk, systematic risk, macroeconomic risk, tax risk, and legal risk). Corporate governance (*GOV*) is assessed using the composite score of three corporate governance mechanisms: the proportion of independent directors (*IND*); the number of expert directors on the board (*EXPERT*); and the average age of directors, or board maturity (*BMAT*). Cost of debt is measured as the categorical value of S&P issuer debt rating (*RATING*).

The results of the first part of the study examining the effect of corporate governance on managerial discretion in RFDs indicate that there is a positive association between corporate governance (*GOV*) and discretionary reporting of RFDs (*ARFD*). This result suggests corporate governance improves transparency in reporting RFDs. However, the results of the second part of the study assessing the mitigating effect of strong corporate governance on cost of debt for risky firms (*PARFD*) with strong corporate governance did not show a mitigating effect on cost of debt. Meanwhile, as expected, *PARFD* firms with weak corporate governance have a high cost of debt.

This study makes three main contributions to the existing literature. It is the first study to examine the effect of corporate governance on Item 1A-Risk factor disclosure. While previous studies have examined the role of corporate governance on corporate risk disclosures, there is no known study on corporate governance and RFDs. Compared to corporate risk disclosures, RFDs are unique because they are a mandatory requirement to disclose sensitive, negative information. This study also contributes to the literature on capital market implications of disclosure and

corporate governance by examining the effect of corporate governance on cost of debt when managers exercise discretion in reporting risk information. Therefore, this study provides new evidence on the importance of RFDs in the debt market and the impact of strong corporate governance on the credibility of disclosures. Finally, my research contributes to the literature on mandatory disclosure policies, including the implications and usefulness of such disclosures. Examining RFDs within the context of corporate governance provides insight into the usefulness of RFDs when corporate governance is considered strong or weak.

The findings from this study are useful to organizations implementing corporate governance structures and to regulators setting mandatory disclosure requirements. The remainder of the chapter is organized as follows. The next section presents the background literature relating to corporate governance, RFDs, and cost of debt. The following sections present the theories and hypotheses, a discussion of the research design, the results, the robustness tests, and a final conclusion.

4.1. Background Literature

4.1.1 Corporate Governance

Broadly defined, corporate governance encompasses the rules, practices, and processes by which a company is governed and directed, and responsibility for corporate governance in an organization rests mainly with the board of directors. Corporate governance is multidimensional and has been widely studied within and outside the field of management. It is important in all organizations and has been identified as one of the key channels through which accounting information affects economic performance (Bushman & Smith, 2003). Mechanisms of corporate governance are both external and internal; external mechanisms include the external auditor, the market for control, the role of regulators, and the role of the media, while internal mechanisms include board

characteristics, such as board size, percentage of independent directors, CEO role duality, and board busyness (Brown & Caylor, 2004; McNulty, Florackis,& Ormrod, 2012). Some studies have also classified corporate governance based on board structure, which can be further categorized as board structural characteristics, director-specific characteristics, and board processes (McNulty et al., 2012; McNulty, Florackis & Ormrod, 2013). This study focuses on internal mechanisms related to three corporate governance characteristics: board independence (*IND*), board expertise (*EXPERT*), and board maturity (*BMAT*).

Corporate governance studies have relied mostly on agency theory which predicts that managers are likely to shirk their duties and divert the firms' resources to enjoy perquisites (Jensen & Meckling, 1976). This theory suggests that managers are likely to take risks that are not beneficial to the stakeholders. To prevent agency conflicts between shareholders and management, corporate governance measures are used to align the goals of the shareholders and managers. These measures include having more independent directors on the board, avoiding CEO duality, tying managerial incentives to future firm performance, and ensuring board diversity in terms of ethnicity and gender.

While the literature on corporate governance and firm attributes or characteristics is vast, very little has been done on corporate governance and risk disclosures, especially in North America. The next sub-section discusses the current state of research relating to corporate governance and risk disclosure.

4.1.2 Risk Disclosures and Corporate Governance

Extant literature has established a relationship between corporate governance and risk. Abraham and Cox (2007), for example, show that risk information has only partial association with a non-executive board. Lajili (2009) examined the relationship between corporate governance

mechanisms and risk disclosure in Canadian firms and found that board size and percentage of non-executive directors are positively associated with risk disclosure. Lajili also found that a fraction of the controlling vote is negatively associated with risk disclosure, while CEO incentive compensation did not present a consistent result. Elzahar and Hussainey (2012) examined the relationship between corporate risk disclosure and both firm characteristics and corporate governance measures. The corporate governance measures they examined include institutional ownership, board size, role duality, board independence, and presence of audit committee. Surprisingly, their results did not show any relationship between these characteristics and risk disclosure.

In an international setting, Ntim, Lindop, and Thomas (2013) examined the relationship between the quality and extent of corporate risk disclosure for firms in South Africa. The corporate governance mechanisms were split into corporate ownership mechanisms (government ownership, block ownership, and institutional ownership) and corporate board characteristics (board diversity, board size, independent non-executive directors, and dual board leadership). The results showed a negative association between the extent of corporate risk disclosure and both block and institutional ownership and a positive association for board diversity, board size, and independent non-executive directors. Similarly, investigating the impact of corporate governance mechanisms on the level of risk disclosure in Kuwait, Al-Shammari (2014) found that corporate risk disclosure has a positive association with board size, a negative association with role duality, and no association with the proportion of non-executive directors, directors on audit committee, or having family members on the board. Contrary to the negative association between risk disclosure and non-executive directors reported in Ntim et al. (2013), Beasley et al. (2005) provide evidence of a positive association between risk disclosure and both non-executive directors and role duality. The

different results in these papers may be because Beasley et al. (2005) focused on the implementation of enterprise risk management system while Ntim et al. (2013) studied corporate risk disclosure.

Empirical evidence has also shown that corporate governance has a mitigating effect on risk. Anderson, Mansi, and Reeb (2004) demonstrated that the presence of large diverse boards with more independent directors, higher amounts of board busyness, greater numbers of busy and experienced directors, and lower directorship ownership results in lower costs of loans and less intense covenants. The results from Francis, Hasan, and Koetter (2012) also provide supporting evidence that board monitoring mitigates information risk ex ante and controls agency risk ex post. The findings are further reinforced by McNulty et al. (2012) who find that financial risk is lower in boards that are smaller, with fewer than eight directors, while corporate risk is lower when tenure and remuneration of the executive director is greater than that of the non-executive director.

In summary, there is evidence of a positive association between risk disclosure and board size, board duality, and percentage of non-executive directors and a negative association with institutional ownership. Yet the relationship between risk disclosure and role duality is unclear. There is also evidence that corporate governance mitigates risk; however, whether this effect extends to managerial discretion in reporting RFDs is an empirical question.

4.1.3. Debt Contracting and Corporate Governance

Greater levels of corporate governance can mitigate agency conflict among managers and other stakeholders (Jensen & Meckling, 1976). Studies have shown that strong corporate governance has a mitigating effect on cost of debt by reducing information risk which subsequently reduces the cost of debt (Ashbaugh-Skaife, Collins, & La Fond, 2006; Sengupta, 1998). Strong corporate governance, therefore, provides a platform for adequate supervision of actions and decisions taken

by management that can increase the default risk if not controlled. Armstrong, Guay, and Weber (2010) reviewed the literature on the role of information and financial reporting in corporate governance and debt contracting and also discussed how governance mechanisms are used by creditors to reduce agency cost and the associated cost of default.

In addition to default risk, information risk is another determinant of cost of debt that can be influenced by the quality of corporate governance. This influence can be through the quality of accounting information provided (Bushman & Smith, 2003) or through the timely disclosure of information (Sengupta, 1998). Studies on corporate boards have examined the role of boards in bank loan contracts (Francis et al., 2012), the effect of internal control weaknesses (Kim, Song, & Zhang, 2011), corporate misreporting (Graham, Li, & Qiu, 2008), Sarbanes Oxley Act (Pae, 2010), and board characteristics (Bhojraj & Sengupta, 2003). Bhojraj and Sengupta (2003) found that institutional ownership and greater outside control are associated with a higher bond rating and lower spread. Anderson et al. (2004) argued that board independence and audit committee size are negatively associated with cost of debt in the public debt market, while Francis et al. (2012) found that higher quality boards have lower interest rates, more favourable loan terms, and more lenders participating in syndicated loans. Furthermore, the board can influence bank contracting terms through the monitoring of management activity and ensuring that proper internal controls are in place. Pae (2010) demonstrated evidence of a reduction in private cost of debt following the implementation of the Sarbanes Oxley Act (SOX), while Kim et al. (2011) showed that loan spread is higher for firms with Internal Control Weaknesses. These results align with the findings of Graham et al. (2008) who argued that companies initiating loans after a restatement have higher spreads.

The above research findings suggest that strong corporate governance can reduce information and default risk and that the benefits of strong corporate governance are recognized in the debt markets through more favourable loan terms.

4.2. Theories and Hypotheses

4.2.1 Abnormal Risk Factor Disclosure and Corporate Governance

While most studies on corporate governance are based on agency theory, some studies also rely on signalling theory to explain the role of strong corporate governance in disclosure quality and quantity. While agency theory predicts that providing reliable information about risk decreases information asymmetry between investors and debt holders, signalling theory predicts that disclosure of adequate information in the financial reports can be a sign of management quality. Both theories, however, suggest that providing reliable information is beneficial to investors, creditors, and management.

Another benefit of strong corporate governance is that it enhances the financial reporting process by influencing management to make more accurate disclosure. Since a primary duty of boards of directors is monitoring the financial reporting process, the board structure is important in ensuring that financial statements are credible and relevant, and the credibility of financial information is critical in evaluating the default risk of debts. Furthermore, corporate governance can minimize opportunistic disclosure as an outcome of the discretion allowed in financial reporting. Corporate governance mechanisms that limit opportunistic management behaviour will, therefore, benefit all stakeholders. Prior studies have discussed an association between corporate governance and risk disclosure. For example, there is evidence of a positive association between risk disclosure and dual listing (Abraham & Cox, 2007), board size and percentage of non-executive directors (Lajili, 2009), and board diversity and board size (Ntim et al., 2013).

Furthermore, agency theory suggests that corporate governance mechanisms, such as outside directors, play a significant role in aligning the interests of managers and owners (Jensen & Meckling, 1976). This is because firms with strong corporate governance are better able to monitor management and prevent managerial self-interest behaviour which reduces information asymmetry between management and owners. Therefore, governance mechanisms that mitigate self-interest behaviour will improve risk disclosure transparency and subsequently mitigate information asymmetry in firms.

Based on the above discussion, I expect corporate governance will have a direct impact on managerial discretion in reporting RFDs by promoting transparency in disclosures and signalling the credibility of disclosures. This argument leads to the following hypothesis:

H1: There is a positive association between discretions in reporting RFDs (ARFD) and corporate governance.

4.2.2 Cost of Debt, Corporate Governance, and Abnormal Risk Factor Disclosure

Chapter 3 of this dissertation provides empirical evidence that RFDs reflect actual firm risk and that managerial discretion in RFDs (*ARFD*) affects the cost of debt. The results from the previous chapter also reveal higher cost of debt for firms that are perceived as riskier (*PARFD*) in the public debt market. The higher cost of debt effect suggests public debt lenders take disclosed RFDs as representative of firm risk. Furthermore, the results show that firms with RFDs below the expected level (*NARFD*) attract lower cost of debt possibly as a reward for lower risk. Research findings also reveal capital market benefits of strong corporate governance. There is evidence that corporate governance can reduce the cost of debt through the effect on default and information risk (Sengupta, 1998) and that the quality of corporate governance can influence information risk through the quality of accounting information (Bushman &Smith, 2003). Prior research has also

established an association between corporate governance and cost of debt (Anderson et al. 2004; Bhojraj & Sengupta, 2003) and also between corporate governance and risk disclosure (Lajili, 2009; Ntim et al. 2013). These findings suggest that corporate governance plays a role in the relationship between risk disclosure and cost of debt.

I evaluate the influence of strong corporate governance on discretionary reporting of RFDs for firms that that are perceived as risky (*PARFD*). Focusing only on *PARFD* firms makes it possible to examine the effect of corporate governance in mitigating the higher cost of debt effect observed for *PARFD* firms in Chapter 3. Since strong corporate governance adds credibility to disclosures, I expect *PARFD* firms with strong corporate governance to have a lower cost of debt based on the predictions from theory and evidence from the current literature. Similarly, risky firms (*PARFD*) with weak corporate governance should have a higher cost of debt because the weak governance structure in these firms further underscores the riskiness of the firms.

Based on the above discussion, I propose the following hypotheses.

H2a: The association between cost of debt and positive abnormal risk factor disclosure (PARFD) is negative when corporate governance is strong.

H2b: The association between cost of debt and positive abnormal risk factor disclosure (PARFD) is positive when corporate governance is weak.

4.3. Research Design

4.3.1 Sample Selection

The sample consists of public debt firms as outlined in Chapter 3 with complete data for the corporate governance variables. The final sample is 2,149 loan-year observations after excluding firms with incomplete data and those with RFDs of less than 30 words. The data is summarized in Table 1.

4.3.2 Method

The first stage regression to derive the measure of managerial discretion in RFDs (*ARFD*) is presented below.

$$ARFD_t = RFD_t - \left[\begin{matrix}\propto_0 + \propto_1 SIZE_t + \propto_2 LEV_t + \propto_3 ETR_t + \propto_4 LIT_t + \propto_5 CPIChange_t \\ + \propto_6 SD\_EARN_t + \propto_7 FILE\_TW_t\end{matrix}\right] \ldots. (1)$$

ARFD is derived as the residual from the regression of RFDs on the determinants. As explained in Chapter 3, these determinants are based on previous studies that have examined the topics disclosed in RFDs (Bao & Datta, 2012; Campbell, Chen, Dhaliwal, Lu, & Steele, 2014; Huang & Li, 2011). From these, I identified six major categories of risk, as follows: financial risk, idiosyncratic or operational risk, litigation risk, regulatory or legal risk, tax risk, and macroeconomic risk. Similar to Chapter 3, *LEV* is firm leverage measured as the book value of debt divided by total assets and is a proxy for financial risk. *SD_EARN* is the standard deviation of quarterly firm earnings over the previous three years and is the proxy for idiosyncratic risk. *LIT* is the proxy for litigation risk and is a dummy that equals one for firms with SIC codes 2833-2836, 3570-3577, 3600-3676, 5200-5961, 7370-7374, and 8731-8734, or zero otherwise. *SIZE* is measured as log value of market equity value and is the proxy for regulatory risk. *ETR* is expected tax rate measured as total tax expense divided by pre-tax income and is the proxy for tax risk. *CPIChange* is the monthly rate of change in Consumer Price and is the proxy for macroeconomic risk. I expect all determinants are positively associated with RFDs.

The regression to test H1 on the association between managerial discretion in RFDs (*ARFD*) and corporate governance is presented below.

$$ARFD_t = \beta_0 + \beta_1 GOV_t + \beta_2 LASSET_t + \beta_3 LEV_t + \beta_4 BTM_t + \beta_5 ROA_t + \beta_6 LOSS_t +$$

$$\beta_7 BIGN_t + \beta_8\, oZ\_SCORE_t + \beta_9 TIE_t + \beta_{10} FILE\_TW_t + \beta_{11} YEAR + \beta_{12} INDUSTRY + \varepsilon_0 \ldots (2)$$

ARFD is measured as the absolute value of the residual from the regression of RFD on its determinants, where RFD is measured as the total number of words in Item 1A-RFD and the risk word categories from Item 1A-RFD, based on Campbell et al. (2014). *GOV* is the composite score of three corporate governance mechanisms (*IND*, *EXPERT*, and *BMAT*). The coefficient of interest is β1 which captures the relationship between corporate governance and discretion in reporting RFDs (*ARFD*). I expect β1 to be positive in support of transparency and credibility effect of corporate governance.

The first stage regression to examine H2 is the same as equation (1). The regression equation for the second stage is presented below. As explained earlier, this regression is conducted only for *PARFD* firms to examine the effect of strong corporate governance on the relationship between positive managerial discretions in RFDs (*PARFD*) and cost of debt (*RATING*). This regression is conditioned on a dummy variable of corporate governance (*CGOV*) which takes the value of 1 for firms with strong corporate governance and zero otherwise. This variable is further explained in the next subsection.

$$RATING_t = \beta_0 + \beta_1 PARFD_t + \beta_2 LASSET_t + \beta_3 BTM_t + \beta_4 LEV_t + \beta_5 ROA_t + \beta_6 LOSS_t + \beta_7 BIGN_t + \beta_8 oZ\_SCORE_t + \beta_9 TIE_t + \beta_{10} FILE\_TW_t + \beta_{11} YEAR + \beta_{12} INDUSTRY + \varepsilon_0 \; if \; CGOV = 1 \; (0) \quad (3)$$

The coefficient of interest is β1. I expect β1 to have a negative sign for strong governance firms and a positive sign for weak governance firms. This follows from the argument that strong corporate governance has a risk mitigating effect on cost of debt. *PARFD* firms with strong corporate governance should be rewarded with lower cost of debt, while *PARFD* firms with weak governance should be penalized with higher cost of debt.

4.3.3 Description of variables

Cost of debt is the categorical score of S&P debt issuer rating (*RATING*). Corporate governance (*GOV*) is the composite measure of: (1) the proportion of independent directors on the board (*IND*); (2) the log of the number of directors employed in the fields of academia, accounting, law, consulting, financial services, investing, and medicine (*EXPERT*);[35] and (3) the log of average age of directors (*BMAT*). The evidence in the literature linking these variables to corporate governance are discussed below.

Armstrong et al. (2010) explains that a board consisting of only internal directors may not be effective because of managerial entrenchment. On the other hand, boards consisting of only external directors may not be effective because of limited experience. Research, however, supports the view that a greater number of non-executive directors should improve the control and strategic function of the company and reduce excessive risk-taking by executives (Coles, McWilliams, & Sen, 2001). Elhazer and Hussainey (2012) find that the proportion of non-executive directors explains most of the variation in corporate risk disclosures. Furthermore, based on agency theory, having a larger number of independent directors can mitigate agency problems as independent directors can monitor opportunistic behaviour by executives. Independent directors are therefore able to monitor, discipline, and influence management. As such, the presence of more independent board members (*IND*) suggests stronger corporate governance.

Financial literacy is essential in any board (Jensen, 1993). I expect that boards with expert directors will make decisions that are beneficial to the firm as they understand the financial implications of their actions. Armstrong et al. (2010) also support the view that financial expert directors will be better at monitoring and advising on financial reporting and disclosure issues

[35] This classification builds on Defond, Hann, and Hu's (2005) classification of director's expertise based on financial and non-financial education and experience.

compared to non-financial expert directors. Therefore, a larger number of *EXPERT* directors implies stronger corporate governance. Board maturity (*BMAT*) measures the average age of directors and is synonymous with more business experience which is a positive attribute. Similar to *EXPERT*, higher values of *BMAT* indicate stronger corporate governance.

To derive this composite score, I create a dummy variable for each governance mechanism (*IND, EXPERT*, and *BMAT*) based on the sample median. Observations with values greater than the sample median are assigned a score of 1 or zero otherwise. Thus, the highest value for *GOV* is three for firms with strong governance relating to *IND*, *EXPERT*, and *MAT* while the lowest value is zero for weak governance relating to the three measures.

As explained in the previous section, the determinants of RFDs are *SIZE, LEV, ETR, LIT*, *CPIChange*, and *SD_EARN.* I expect all determinants will be positively associated with RFDs.

The control variables in this study are log of total assets (*LASSET*), book to market ratio (*BTM*), return on assets (*ROA*), dummy for negative earnings (*LOSS*), audit quality (*BIGN*), *oZ_SCORE* for bankruptcy prediction, times interest earned (*TIE*), industry and year fixed effects. Extant research has shown that these variables are associated with risk disclosure. For example, Khlif and Hussainey (2014) showed that risk reporting has a positive association with size, leverage, profitability, and risk factor (Beta, probability of bankruptcy). In addition to these control variables, I also control for disclosure comprehensiveness, using the variable *FILE_TW* measured as total number of words in the annual 10-K report. Relying on Watts and Zimmerman's (1986) prediction that larger companies disclose more information and are more susceptible to regulatory scrutiny, I expect large firms, profit making firms, firms with lower risk of bankruptcy, and firms audited by large auditors to have more scrutiny over the reporting process and more transparent disclosure. Loss making firms may attempt to hide risk information to avoid further losses and are

likely to have less transparent RFDs. Consistent with prior literature I expect all control variables, except *LOSS*, to be negatively associated with discretionary reporting in RFDs.

The continuous variables are winsorized at 2% and 98% and the regressions are clustered by firms. The details of the variables are presented in Table 2.

4.4. Results

4.4.1 Descriptive analysis

Table 3a presents a general overview of descriptive statistics for the governance measures, RFD measures and its determinants, cost of debt, and control variables. The corporate governance measures (*GOV* and *CGOV*) have mean values of 1.44 and 0.46, respectively, suggesting corporate governance for the sample is slightly below average. However, the median value gives more insight on the distribution of the data. *GOV* and *CGOV* have median values of 1 and zero respectively. These values imply that most of the firms in the sample have strong corporate governance. The average number of words in the 10-K file (*FILE_TW*) is 263,769, while the mean total number of words in Item 1A (*1A_TW*) is 16,418. The mean of total number of risk words (*1A_CRW*) is 813, financial risk words (*1A_CFRW*) is 116, systematic risk words *(1A_CSRW*) is 285, idiosyncratic risk words (*1A_CIRW*) is 299, and the mean of the number of legal risk words (*1A_CLRW*) is 85.

The average *RATING* is 9 which translates into a BBB debt rating. The borrower characteristics indicate average firm size of $19 billion.[36] As explained in Chapter 3, most of the firms in this study are large firms because Item 1A disclosure is only mandatory for firms with more than $75 million in assets. The control for firm leverage (*LEV*) has a mean of 0.26 implying that most of the firms have low solvency risk. The mean of the control for audit quality (*BIGN*) is

[36]The value in the descriptive table is the log value.

0.99 meaning that most of the firms are audited by large audit firms. In addition, average *ROA* is 0.05 indicating the average firm is profitable, and most of the firms have low risk of bankruptcy as indicated by the average *Z_SCORE* of 4.11.

4.4.2 Univariate analysis

The correlation matrix is presented in Table 3b. Cost of debt (*RATING*) is negatively correlated with the corporate governance measures (*GOV&CGOV)* providing initial evidence that firms with strong corporate governance may have a lower cost of debt. *RATING* is positively correlated with all RFD measures. These positive correlations support the findings in Chapter 3 that the risk profiles of firms are reflected in their cost of debt. The disclosure comprehensiveness proxy (*FILE_TW*) is negatively correlated with *RATING*, suggesting that more comprehensive disclosures may have cost of debt benefits. As expected, *RATING* is positively associated with leverage (*LEV*), book to market ratio (*BTM*), and loss firms (*LOSS*), suggesting firms with high leverage, long maturity period, secured loans, growth firms, and firms reporting losses have higher cost of debt. Also, *RATING* is negatively correlated with standard deviation of earnings (*SD_EARN*), firm size (*SIZE*), and the proxy for large firms (*LASSET*). *RATING* is also negatively associated with profitable firms (*ROA*), firms audited by large auditors (*BIGN*), low bankruptcy firms (o*Z_SCORE*), and low liquidity risk (*TIE*). These negative correlations suggest that firms with low volatility in earnings, large and profitable firms, firms audited by large auditors, and firms with low probability of bankruptcy have lower cost of debt. These negative correlations are not surprising as large and profitable firms will have better debt ratings.

As expected, *GOV* and *CGOV* are positively correlated. *GOV* is positively associated with systematic (*1A_CSRW*) and legal (*1A_CLRW*) risk words. This correlation provides preliminary evidence of the influence of corporate governance on disclosure transparency in line with the

prediction of H1. Predictably, *GOV* and *CGOV* are positively correlated with disclosure comprehensiveness (*FILE_TW*) and firm size (*SIZE* and *LASSET*). *GOV* and *CGOV* are also positively associated with volatility of earnings (*SD_EARN*) which contradicts the expectation that strong corporate governance will reduce earning fluctuations. The corporate governance measures (*GOV* and *CGOV)* are negatively associated with the proxy for litigation risk (*LIT*), probability of bankruptcy (*Z_SCORE*), and times interest earned (*TIE*). This negative correlation suggests that firms with strong corporate governance usually have lower litigation risk, lower probability of bankruptcy, and lower liquidity risk.

Furthermore, all the RFD measures are positively correlated with one another, as expected. Financial risk words (*1A_CFRW*) and legal risk (*1A_CLRW*) words are positively correlated with leverage (*LEV*). All risk words, except idiosyncratic risk (*1A_CIRW*), are positively associated with the control for growth firms (*BTM*) and negatively associated with firm profitability (*ROA*). These correlations suggest firms with more risk disclosures are less profitable growth firms.

4.4.3 Multivariate analysis

The results to test H1 for the association between corporate governance and managerial discretion in RFDs are presented in Tables 4a and 4b. Table 4a shows the result of the regression of the six RFD measures on the determinants of RFDs. The residual from this regression is the measure of managerial discretion in RFDs: *ARFD*. Table 4a reveals a significant negative association between *SIZE* and RFD for all risk measures except legal risk words (*1A_CLRW*) suggesting that larger firms have less transparent disclosures. This is contrary to expectation since larger firms generally experience greater exposure and should be more transparent in their risk disclosures. A possible explanation for the negative association is the cost of proprietary information. These firms may be

conservative in disclosing information about the firm's risk to avoid competitors gaining access to sensitive information.

The proxy for disclosure comprehensiveness (*FILE_TW*) shows significant positive results for all the RFD measures, as expected. This is because Item 1A-RFD has been identified as one of the disclosures responsible for the increased size of the 10-K report (Dyer, Lang, & Stice-Lawrence, 2016). Financial risk proxy (*LEV*) is significant for total number of words in Item 1A (*1A_TW*) and idiosyncratic risk words (*1A_CIRW*). Unexpectedly, *ETR* is negatively associated with all the RFD measures except financial risk words (*1A_CFRW*). The proxy for macroeconomic risk (*CPIChange*) and idiosyncratic risk (*SD_EARN)* are not significantly associated with any of the RFDs. A possible explanation for some of the insignificant results is variation in the types of risk words included in the categories. For example, the systematic risk words variable (*1A_CSRW*) contains risk words relating to war, currency fluctuations, and natural disasters, etc. The proxy for macroeconomic risk (*CPIChange*), however, is associated with risks relating to inflation and price changes.

Table 4b presents the results for the main test of the association between corporate governance and managerial discretion in reporting RFDs. In line with H1, Table 4b reveals a positive association between *GOV* and *ARFD* for all determinants. This result supports the expectation that strong corporate governance will enhance transparency in reporting RFDs. For the control variables, *LASSET* is negatively associated with *ARFD* for total words in Item 1A (*1A_TW*), as expected, implying larger firms show less deviation in their risk factor reporting. The negative association between *oZ_SCORE* and *ARFD* for all risk word measures, except financial risk words (*1A_CFRW*) and legal risk words (*1A_CLRW*), was also predicted. These negative associations imply firms with low bankruptcy risk have less deviation in their reporting. Similarly, the proxy

for disclosure comprehensiveness (*FILE_TW*) shows positive association with *ARFD* for systematic risk words (*1A_CSRW*). This is consistent with the assumption that larger files will have more RFDs. On the other hand, leverage (*LEV*) is positively associated with *ARFD*. A possible reason is that high leverage firms disclose less risk to avoid the potential negative effect of disclosing risk information. The controls for loss making firms (*LOSS*) and audit quality (*BIGN*) are negatively associated with *ARFD*, as expected. Surprisingly, the controls for growth firms (*BTM*) and liquidity (*TIE*) are not significant for any of the *ARFD* measures. The overall results support H1 that corporate governance will promote more transparent disclosure.

The results to test H2a and H2b are presented in Tables 5a and 5b. The first stage regression for H2a and H2b is the same for H1 and can be found in Table 4a. Table 5b presents the results for the test of H2a of the association between *PARFD* and the cost of debt for firms with strong corporate governance (*CGOV=1*). Unexpectedly, three measures of *ARFD* (*1A_TW*, *1A_CRW*, and *1A_CSRW*) have positive associations with cost of debt (*RATING*). This result suggests that strong corporate governance is not recognized by public lenders as a credible signal of lower risk. Therefore, the higher cost of debt for these *PARFD* firms observed in Chapter 3 persists in the presence of strong corporate governance. It is possible that public lenders are more concerned about risk and are not sophisticated enough to adjust for the effect of strong corporate governance in evaluating firm risk. As expected, the control for firm size (*LASSET*) and profitability (*ROA*) show a negative correlation with cost of debt. Thus, large and profitable firms with strong corporate governance have lower cost of debt. The control for growth firms (*BTM*), however, shows positive association with *RATING* which contradicts the expected negative correlation. A possible explanation for the higher cost of debt is that growth firms do not yet have the reputation or resources to command more favourable debt ratings. As expected, the control for leverage (*LEV*)

and *LOSS* firms have positive associations with cost of debt. The control variables for audit quality (*BIGN*), bankruptcy risk (*oZ_SCORE*), liquidity (*TIE*), and disclosure comprehensiveness (*FILE_TW*) are not significant for all RFDs measures.

Table 5b presents the result for H2b examining the association between *PARFD* and cost of debt for firms with weak corporate governance (*CGOV=0*). It is expected that these firms will have higher cost of debt as penalty for greater risk which is further underscored by the weak corporate governance structure. The results confirm this expectation as all RFDs, except total number of words (*1A_TW*) and financial risk words (*1A_CFRW*), are positively associated with *RATING*. Similar to the results for strong corporate governance firms, controls for firm size (*LASSET*) and profitability (*RO*A) have negative associations with cost of debt, while leverage (*LEV*) and *LOSS* have positive associations with cost of debt. Consistent with the expectation, the control for disclosure comprehensiveness (*FILE_TW*) shows positive association with *RATING.* The controls for audit quality (*BIGN*), bankruptcy risk (*oZ_SCORE*), liquidity risk (*TIE*), and disclosure comprehensiveness (*FILE_TW*) are not significant.

In summary, the results do not support H2a that strong corporate governance can mitigate cost of debt for public firms but agrees with H2b that risky firms (*PARFD*) with weak corporate governance will still have a higher cost of debt.

4.5 Robustness Test

4.5.1 Individual Corporate Governance Measures

In order to examine the individual effect of corporate governance measures, I examine the hypotheses in this chapter using the three corporate governance variables (*IND*, *EXPERT*, and *MAT)*. Untabulated results for H1 show positive associations between proportion of independent directors (*IND*) and all RFD measures. The results also show significant positive associations

between proportion of expert directors (*EXPERT*) and two RFD measures (*1A_CFRW* and *1A-CSRW*). However, the results are not significant for board maturity (*BMAT*). The overall result is similar to that of the composite measure of governance and also supports H1 that corporate governance promotes transparency in reporting. The results for H2a show significant positive associations between two corporate governance measures (*IND* and *BMAT*) and *RATING* for risky firms (*PARFD*) with strong corporate governance. These results do not support H2a on the role of strong corporate governance in mitigating cost of debt. Similar to the results using the composite measure of corporate governance, the results for the individual corporate governance measures support H2b that risky firms (*PARFD*) with weak corporate governance still have higher cost of debt.

Overall, the results of this test support the main findings in this chapter for H1 and H2b.

4.5.2 Alternate Risk Factor Disclosure Measures

To further examine whether the usefulness of RFDs is only limited to Item1A-RFD, I measure RFDs using Campbell et al.'s (2014) risk words from Item 7-Management Discussion and Analysis (MD&A). Contrary to the results obtained using Item 1A-RFDs, the results show a negative association for legal risk words (*1A_CLRW*). While the results for H2a did not show any significant association for risky firms with strong corporate governance, the results for H2b show positive associations between *PARFD* and *RATING* in support of H2b. This is similar to the result for H2b for using Item 1A-RFD. Overall results using Item 7-MD&A only support H2b.

4.6. Conclusion

This study examines the effect of corporate governance on managerial discretion in reporting RFDs and the subsequent effect on cost of debt in the public debt market. Agency theory predicts that strong corporate governance promotes disclosure transparency. To investigate the effect of

corporate governance on risk disclosure, I first examine the association between the composite score (*GOV*) of three corporate governance measures (independent directors (*IND*), expert directors (*EXPERT*), and board maturity *(BMAT*)) and managerial discretion in RFDs (*ARFD*). Then, I examine the role of strong and weak corporate governance (*CGOV*) on the relationship between cost of debt and *ARFD* for higher risk firms (*PARFD*). I expect riskier firms with strong corporate governance will have lower cost of debt in line with the risk mitigating effect of strong corporate governance. Similarly, I expect riskier firms (*PARFD*) with weak corporate governance to have higher cost of debt.

Using the public debt sample from Chapter 3 of this dissertation, I find positive associations between *GOV* and discretionary reporting of RFDs (*ARFD*) in support of the transparency effect of corporate governance. Unexpectedly, however, I find that risky firms with strong corporate governance still have a high cost of debt. Similarly, risky firms with weak corporate governance have high cost of debt, as predicted. The results suggest public lenders are concerned about firm risk and do not evaluate the effect of corporate governance on risk.

Similar to the findings for the composite corporate governance measure, alternate tests using the individual corporate governance measures (*IND*, *EXPERT*, and *BMAT*) show consistent results. A second alternate test using risk information in Item 7-MD&A disclosure only corroborates the higher cost of debt for risky firms (*PARFD*) with weak corporate governance.

A limitation noted in this study is the weak results for some determinants of RFDs. However, this is the first study to examine the role of corporate governance on discretionary reporting of Item1A-RFD using these determinants. There is opportunity for future studies to develop other proxies for similar research. My study contributes to the mandatory disclosure, corporate governance, and capital market research, and these findings are useful to organizations

implementing corporate governance structures and to regulators recommending mandatory disclosures.

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Tables

Table 1: Data Summary

Public debt with corporate governance variables	6,053
Drop Item 1A <30 words	(1,987)
Incomplete data for all variables	(1,917)
Final data	**2,149**

Table 2: Description of Variables

	Variable	Description
1	*RATING*	S&P debt issuer rating. RATING takes values from 1 to 22 from the best to the worst: AAA=1, AA+=2, AA=3, AA- =4, A+=5, A=6, A- =7, BBB+=8, BBB=9, BBB- =10, BB+=11, BB=12, BB- =13, B+=14, B=15, B-=16, CCC+=17, CCC=18, CCC-=19, CC=20, D=21, SD=22.
2	*IND*	Dummy=1 if IND>median (IND). Where, IND is the proportion of Independent Directors. These Directors are stated as Independent in the data
3	*EXPERT*	Dummy=1 if EXPERT>median (EXPERT). Where, EXPERT is the log of the number of directors employed in academia, accounting, law, consulting, financial services, investing, and medicine
4	*BMAT*	Dummy=1 if MAT<median (MAT). Where, MAT is the log of the average age of directors, or board maturity
5	*GOV*	GOV is the sum of IND+EXPERT+BMAT
6	*CGOV*	CGOV is dummy variable that takes a value of 1 if GOV>median and 0 otherwise
7	*1A_TW*	Log of total number of words that appear in the firm's 10-K disclosure Item IA + 1
8	*1A_CRW*	Log of total number of risk words that appear in the firm's 10-K disclosure Item IA + 1, based on Campbell et al. 2014
9	*1A_CFRW*	Log of total number of financial risk words that appear in the firm's 10-K disclosure Item 1A + 1, based on Campbell et al. 2014
10	*1A_CIRW*	Log of total number of idiosyncratic risk words that appear in the firm's 10-K disclosure Item 1A + 1, based on Campbell et al. 2014
11	*1A_CSRW*	Log of total number of systematic risk words that appear in the firm's 10-K disclosure Item 1A + 1, based on Campbell et al. 2014
12	*1A_CLRW*	Log of total number of legal risk words that appear in the firm's 10-K disclosure Item 1A + 1, based on Campbell et al. 2014
13	*ARFD*	Equals absolute value of residuals from the regression of risk disclosure on its determinants
14	*7_TW*	Log of total number of words that appear in the firm's 10-K disclosure Item 7 + 1
15	*7_CRW*	Log of total number of risk words that appear in the firm's 10-K disclosure Item 7 + 1, based on Campbell et al. 2014
16	*7_CFRW*	Log of total number of financial risk words that appear in the firm's 10-K disclosure Item 7 + 1, based on Campbell et al. 2014
17	*7_CIRW*	Log of total number of idiosyncratic risk words that appear in the firm's 10-K disclosure Item 7 + 1, based on Campbell et al. 2014
18	*7_CSRW*	Log of total number of systematic risk words that appear in the firm's 10-K disclosure Item 7 + 1, based on Campbell et al. 2014
19	*7_CLRW*	Log of total number of legal risk words that appear in the firm's 10-K disclosure Item 7 + 1, based on Campbell et al. 2014
20	*NARFD*	Equals absolute value of negative residual from the regression of risk disclosure on its determinants if residual is less than zero

	Variable	Description
21	*FILE_TW*	Log of total number of words in the 10-K report
22	*LEV*	Book value of debt divided by total assets
23	*LIT*	Litigation =1 for firms within SIC code 2833-2836, 3570-3577, 3600-3676, 5200-5961, 7370-7374, and 8731-8734
24	*SIZE*	Market value of equity
25	*ETR*	Total tax expense divided by pre-tax income
26	*CPIChange*	Change in CPI (Inflation) from CRSP Treasury and Inflation Index
27	*BTM*	Book value of equity divided by market value of equity
28	*BIGN*	Equals 1 for large auditors and zero otherwise. Large auditors are coded 1-8 in Compustat data AU
29	*LOSS*	Equals 1 if firm have negative earnings or zero otherwise
30	*oZ_SCORE* (Altman)	Orthogonized Z_score = 1.2 * (working capital/ total assets) +1.4*(Retained earnings) +3.3*(earnings before interest and tax/total assets) +0.6*(market value of equity/total liability) +0.999*(Sales/total asset)
31	*SD_EARN*	Standard deviation of quarterly earnings over the past three years starting from the current quarter
32	*LASSET*	Log of total assets
33	*TIE*	Times Interest earned is tax expense divided by income before taxes
34	*ROA*	Return on asset measured as net income divided by total assets
35	*INDUSTRY*	Fama French 12-industry classification
36	*YEAR*	Control for year effects

Table 3a: Descriptive Analysis
(N=2,149)

	Mean	Median	Standard Deviation	Lower Quartile	Upper Quartile
RATING	9.31	9.00	2.92	7.00	11.00
GOV	1.44	1.00	0.87	1.00	2.00
CGOV	0.46	0.00	0.50	0.00	1.00
IA_TW	16,417.61	6,373.00	22,182.72	3,501.00	25,660.00
IA_CRW	813.83	448.00	963.01	251.00	1,102.00
IA_CFRW	115.62	46.00	302.46	21.00	165.00
1A_CSRW	284.87	130.00	403.83	75.00	339.00
1A_CIRW	299.43	180.00	306.70	90.00	411.00
1A_CLRW	85.07	61.00	80.92	34.00	108.00
FILE_TW	263,769.20	212,666.00	240,440.10	71,382.00	401,541.00
SD_EARN	181.40	47.70	616.22	17.59	122.73
CPIChange	0.00	0.00	0.00	0.00	0.00
ETR	0.48	0.32	9.33	0.23	0.37
LEV	0.26	0.25	0.14	0.17	0.33
SIZE	8.76	8.67	1.45	7.73	9.74
LIT	0.22	0.00	0.41	0.00	0.00
LASSET	8.89	8.77	1.28	7.97	9.77
BTM	0.49	0.43	0.40	0.27	0.64
ROA	0.05	0.05	0.08	0.03	0.09
LOSS	0.04	0.00	0.19	0.00	0.00
BIGN	0.99	1.00	0.11	1.00	1.00
Z_SCORE	4.11	3.74	2.29	2.45	5.08
TIE	13.10	4.89	77.02	2.43	9.42

Table 3a reports descriptive statistics for all variables included in the analyses. Statistics presented include the number of observations (N), mean, median, standard deviation, lower quartile and upper quartile. All the variables are defined in table 2. *RATING* is the numerical value of S&P issuer debt rating. GOV is the composite score of: *IND* an indicator variable taking the value of 1 for firms with proportion of independent directors greater than the sample median and otherwise zero, *EXPERT* an indicator variable taking the value of 1 for firms with proportion of expert directors greater than the sample median and otherwise zero, and *BMAT* an indicator variable taking the value of 1 for firms with log of directors' age greater than the sample median and otherwise zero. *1A_TW* is the total number of words in Item- 1A. *1A_CRW* is total number of risk words in Item-1A. *1A_CFRW* is total number of financial risk words in Item-1A. *1A_CIRW* is total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is total number of systematic risk words in Item-1A. *1A_CLRW* is total number of legal risk words in Item-1A. *FILE_TW* is total number of words in annual 10-K report. *SD_EARN* is standard deviation of quarterly earnings over 3 years. *CPIChange* is the proxy for economic risk. *ETR* is the proxy for tax risk. *LEV* is firm leverage. *SIZE* is log of market value of equity. *LIT* is the proxy for litigation risk. *FACAMT* is the facility amount in $'m. *MAT* is the proxy for loan maturity. *SEC* is the dummy for secured loans. *RES* is the proxy for restructuring loans. *REV* is the proxy for revolving loans. *LASSET* is the log of total assets. *BTM* is book value of equity to market value of equity. *ROA* is return on assets. *LOSS* is the dummy for firms with negative earnings. *BIGN* is the dummy for large auditors. *Z_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio.

Table 3b: Correlation

	RATING	*GOV*	*CGOV*	*TW*	*CRW*	*CFRW*	*CIRW*	*CSRW*	*CLRW*	*FILE_TW*	*SD*	*CPI*
RATING	1											
GOV	**-0.08**	1										
CGOV	**-0.08**	**0.87**	1									
1A_TW	**0.09**	0.04	0.03	1								
1A_CRW	**0.10**	0.04	0.03	**0.96**	1							
1A_CFRW	**0.24**	0.02	0.01	**0.90**	**0.90**	1						
1A_CIRW	**0.08**	0.01	0.00	**0.92**	**0.93**	**0.78**	1					
1A_CSRW	**0.07**	**0.05**	0.03	**0.87**	**0.94**	**0.84**	**0.78**	1				
1A_CLRW	**0.06**	**0.08**	**0.06**	**0.78**	**0.83**	**0.70**	**0.75**	**0.74**	1			
FILE_TW	**-0.06**	**0.17**	**0.17**	**0.07**	**0.12**	**0.09**	**0.11**	**0.11**	**0.21**	1		
SD_EARN	**-0.14**	**0.07**	**0.09**	**-0.07**	**-0.06**	**-0.08**	**-0.07**	-0.03	**-0.05**	**0.10**	1	
CPIChange	0.00	**-0.04**	-0.04	-0.02	**-0.05**	**-0.04**	0.00	**-0.07**	**-0.09**	**-0.05**	-0.01	1
ETR	0.00	-0.01	0.00	-0.03	-0.03	-0.01	-0.03	-0.03	-0.03	0.00	0.00	-0.03
LEV	**0.36**	0.01	0.01	-0.01	0.00	**0.07**	-0.03	0.00	**0.08**	**0.10**	**-0.05**	**-0.14**
SIZE	**-0.71**	**0.11**	**0.12**	**-0.10**	**-0.09**	**-0.22**	**-0.05**	**-0.09**	-0.03	**0.21**	**0.31**	0.03
LIT	**-0.06**	**-0.08**	**-0.06**	0.00	**-0.05**	**-0.09**	**0.07**	**-0.14**	**-0.10**	**-0.04**	**0.05**	**0.22**
LASSET	**-0.56**	**0.16**	**0.16**	**-0.08**	**-0.06**	**-0.14**	**-0.07**	-0.04	0.01	**0.25**	**0.38**	-0.04
BTM	**0.27**	0.02	0.02	**0.06**	**0.06**	**0.10**	0.01	**0.10**	**0.04**	-0.06	0.07	**-0.07**
ROA	**-0.37**	-0.03	-0.03	**-0.06**	**-0.07**	**-0.14**	-0.02	**-0.09**	**-0.07**	-0.04	0.00	**0.08**
LOSS	**0.26**	0.01	0.03	-0.02	-0.01	0.03	**-0.04**	0.01	-0.03	-0.04	**0.10**	0.00
BIGN	**-0.16**	0.02	0.02	-0.01	-0.01	-0.03	-0.02	0.00	0.03	0.00	0.03	0.02
oZ_SCORE	**-0.17**	**-0.13**	**-0.13**	**-0.07**	**-0.13**	**-0.17**	0.00	**-0.20**	**-0.19**	**-0.15**	**-0.05**	**0.19**
TIE	**-0.10**	**-0.05**	**-0.04**	-0.02	-0.03	**-0.06**	-0.01	-0.04	**-0.05**	-0.02	0.01	**0.06**

Table 3b (continued)

	ETR	*LEV*	*SIZE*	*LIT*	*LASSET*	*BTM*	*ROA*	*LOSS*	*BIGN*	*oZ_SCORE*	*TIE*
ETR	1										
LEV	0.01	1									
SIZE	0.01	**-0.24**	1								
LIT	0.00	**-0.15**	**0.17**	1							
LASSET	0.03	**-0.12**	**0.88**	**0.12**	1						
BTM	0.01	**-0.15**	**-0.33**	**-0.06**	**-0.06**	1					
ROA	-0.01	**-0.27**	**0.32**	**0.08**	**0.09**	**-0.21**	1				
LOSS	-0.01	**0.09**	**-0.15**	0.02	**-0.07**	**0.15**	**-0.4**	1			
BIGN	0.00	**-0.06**	**0.16**	-0.01	**0.14**	**-0.10**	**0.06**	0.00	1		
oZ_SCORE	-0.02	**-0.42**	**0.13**	**0.27**	**-0.12**	**-0.21**	**0.38**	**-0.16**	-0.01	1	
TIE	0.00	**-0.18**	**0.10**	**0.12**	0.03	**-0.07**	**0.15**	**-0.04**	0.02	**0.21**	1

Table 3b presents Pearson correlation matrix for the study sample. Variables significant at 5% and below are in bold. All the variables are defined in table 2. *RATING* is the numerical value of S&P issuer debt rating. GOV is the composite score of: *IND* an indicator variable taking the value of 1 for firms with proportion of independent directors greater than the sample median and otherwise zero, *EXPERT* an indicator variable taking the value of 1 for firms with proportion of expert directors greater than the sample median and otherwise zero, and *BMAT* an indicator variable taking the value of 1 for firms with log of directors' age greater than the sample median and otherwise zero. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *FILE_TW* is the log of total number of words in annual 10-K report. *SD_EARN* is standard deviation of quarterly earnings over 3 years. *CPIChange* is the proxy for economic risk. *ETR* is the proxy for tax risk. *LEV* is firm leverage. *SIZE* is market value of equity. *LIT* is the proxy for litigation risk. *FACAMT* is the facility amount in $'m. *MAT* is the proxy for loan maturity. *SEC* is the dummy for secured loans. *RES* is the proxy for restructuring loans. *REV* is the proxy for revolving loans. *LASSET* is the log of total assets. *BTM* is book value of equity to market value of equity. *ROA* is return on assets. *LOSS* is the dummy for firms with negative earnings. *BIGN* is the dummy for large auditors. *Z_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio.

Table 4a: H1 Stage 1

	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
SIZE	+	-0.11***	-0.08***	-0.20***	-0.08***	-0.07**	-0.03
		(-3.28)	(-3.02)	(-5.38)	(-2.89)	(-2.34)	(-1.11)
FILE_TW	+	0.18***	0.16***	0.21***	0.15***	0.17***	0.17***
		(2.98)	(3.00)	(3.27)	(2.70)	(3.06)	(3.13)
LEV	+	-0.52**	-0.32	0.05	-0.45*	-0.34	0.04
		(-1.98)	(-1.40)	-0.16	(-1.89)	(-1.35)	-0.15
ETR	+	-0.00***	-0.00***	0.00	-0.00***	-0.00***	-0.00***
		(-3.02)	(-3.42)	(-1.04)	(-2.70)	(-3.28)	(-4.54)
1.Lit	+	0.14	0.07	-0.03	0.10	0.11	-0.12
		(1.05)	(0.68)	(-0.17)	(1.01)	(0.92)	(-1.19)
CPIChange	+	-0.79	1.05	-8.54	0.98	5.37	-3.09
		(-0.08)	(0.12)	(-0.68)	(0.10)	(0.56)	(-0.39)
SD_EARN	+	0.00	0.00	0.00	0.00	0.00	0.00
		(-1.11)	(-1.07)	(-0.64)	(-1.29)	(-0.69)	(-1.36)
Constant		8.30***	5.45***	3.37***	4.90***	3.79***	2.47***
		(9.88)	(7.33)	(3.78)	(6.24)	(4.99)	(3.44)
Observations		2,149	2,149	2,149	2,149	2,149	2,149
R-squared		0.10	0.12	0.15	0.12	0.20	0.17
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 4a present coefficient estimates from the regression of RFDs on the determinants for the public debt sample. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2.*1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *SIZE* is the proxy for regulatory risk and measured as the market value of equity. *FILE_TW* is the log of total number of words in annual 10-K report. *LEV* is firm leverage. *ETR* is the proxy for tax risk. *LIT* is the proxy for litigation risk. *CPIChange* is the proxy for economic risk. *SD_EARN* is the proxy for idiosyncratic risk and is measured as the standard deviation of quarterly earnings over 3 years.

Table 4b: H1 Stage 2

	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
GOV	+	0.06***	0.05***	0.07***	0.06***	0.06***	0.04***
		(3.89)	(3.70)	(3.73)	(3.97)	(4.01)	(2.97)
LASSET	-	-0.03**	-0.01	-0.01	0.00	0.00	0.01
		(-2.29)	(-0.81)	(-0.91)	(-0.41)	(-0.19)	(0.48)
BTM	-	-0.03	-0.03	-0.06	0.01	-0.06	-0.04
		(-0.88)	(-0.86)	(-1.34)	(0.24)	(-1.64)	(-1.25)
LEV	+	-0.62***	-0.50***	-0.41***	-0.46***	-0.52***	-0.39***
		(-5.68)	(-4.99)	(-3.06)	(-4.33)	(-4.79)	(-3.52)
ROA	-	0.25	0.15	0.34	0.14	-0.04	0.16
		(1.40)	(0.95)	(1.58)	(0.81)	(-0.24)	(0.90)
LOSS	+	-0.09	-0.05	-0.15*	-0.07	-0.02	-0.06
		(-1.20)	(-0.80)	(-1.68)	(-0.94)	(-0.31)	(-0.84)
BIGN	-	-0.08	-0.07	0.05	-0.10	-0.02	-0.36***
		(-0.76)	(-0.66)	(0.37)	(-0.93)	(-0.22)	(-3.22)
oZ_SCORE	-	-0.08***	-0.06***	-0.03	-0.06***	-0.04*	-0.02
		(-4.03)	(-3.34)	(-1.05)	(-3.12)	(-1.87)	(-0.97)
TIE	+	0.00	0.00	0.00	0.00	0.00	0.00
		(1.59)	(1.42)	(1.46)	(1.10)	(0.61)	(0.22)
FILE_TW	+	0.03	0.02	0.02	0.01	0.04*	-0.03
		(1.34)	(0.89)	(0.61)	(0.36)	(1.74)	(-1.39)
Constant		0.91***	0.73**	0.76*	0.91***	0.47	1.54***
		(2.80)	(2.46)	(1.90)	(2.84)	(1.46)	(4.68)
Observations		2,149	2,149	2,149	2,149	2,149	2,149
R-squared		0.16	0.13	0.10	0.12	0.11	0.08
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 4b present coefficient estimates from the regression of ARFD obtained in Table 4a on the governance including the control variables for the public debt sample. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2. GOV is the composite score of: *IND* an indicator variable taking the value of 1 for firms with proportion of independent directors greater than the sample median and otherwise zero, *EXPERT* an indicator variable taking the value of 1 for firms with proportion of expert directors greater than the sample median and otherwise zero, and *BMAT* an indicator variable taking the value of 1 for firms with log of directors' age greater than the sample median and otherwise zero. 1A_TW is the log of total number of words in Item- 1A. 1A_CRW is log of total number of risk words in Item-1A. 1A_CFRW is the log of total number of financial risk words in Item-1A. 1A_CIRW is the log of total number of idiosyncratic risk words in Item-1A. 1A_CSRW is the log of total number of systematic risk words in Item-1A. 1A_CLRW is the log of total number of legal risk words in Item-1A. LASSET is log of total assets. BTM is the book value of equity to market value of equity. ROA is return on assets. LOSS is the dummy for firms with negative earnings. BIGN is the dummy for large auditors. oZ_SCORE is bankruptcy score based on Altman (1968). TIE is times interest earned ratio.

Table 5a: H2 Stage 2 Strong Governance

RATING	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
PARFD	-	0.15*	0.24***	0.09	0.06	0.20**	0.09
		(1.88)	(2.69)	(1.32)	(0.69)	(2.26)	(0.85)
LASSET	-	-0.67***	-0.65***	-0.62***	-0.66***	-0.67***	-0.70***
		(-13.03)	(-13.49)	(-12.61)	(-13.71)	(-13.43)	(-15.02)
BTM	-	0.80***	0.82***	0.73***	0.79***	0.78***	0.56***
		(5.57)	(5.98)	(5.04)	(5.79)	(5.76)	(3.82)
LEV	+	4.18***	4.23***	4.36***	3.97***	4.01***	3.78***
		(8.34)	(8.73)	(9.03)	(8.43)	(8.19)	(8.14)
ROA	-	-0.69	-0.75	-2.29**	-0.89*	-0.66	-3.88***
		(-1.45)	(-1.62)	(-2.57)	(-1.90)	(-1.41)	(-4.14)
LOSS	+	0.39	0.68**	0.57**	0.51*	0.75***	0.21
		(1.28)	(2.45)	(2.13)	(1.75)	(2.83)	(0.81)
BIGN	-	-7.63	-7.66	-7.57	-7.49	-7.50	-7.07
		(-0.04)	(-0.05)	(-0.05)	(-0.04)	(-0.04)	(-0.05)
oZ_SCORE	-	-0.10	-0.10	-0.09	-0.09	-0.11	-0.10
		(-1.15)	(-1.24)	(-1.10)	(-1.09)	(-1.25)	(-1.18)
TIE	+	0.00	0.00	0.00	0.00	0.00	0.00
		(-1.23)	(-1.23)	(-0.68)	(-1.36)	(-1.36)	(0.07)
FILE_TW	+	0.05	0.01	0.03	0.01	0.04	0.08
		(0.55)	(0.13)	(0.37)	(0.15)	(0.50)	(1.01)
Observations		422	459	467	472	442	525
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2		0.21	0.21	0.20	0.21	0.21	0.21

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 5a presents coefficient estimates from the regression of *RATING* on the positive residuals from Table 4a for strong corporate governance. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2. *PARFD* is the positive residuals from stage 1 regression in Table 5a. *RATING* is the numerical value of S&P issuer debt rating. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *FILE_TW* is the log of total number of words in annual 10-K report. *LASSET* is the log of total assets. *BTM* is the book value of equity to market value of equity. *ROA* is return on assets *LOSS* is the value of dummy for firms with negative earnings. *BIGN* is the dummy for large auditors. *oZ_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio.

Table 5b: H2 Stage 2 Weak Governance

RATING	Sign	*1A_TW*	*1A_CRW*	*1A_CFRW*	*1A_CIRW*	*1A_CSRW*	*1A_CLRW*
PARFD	+	0.10	0.17*	0.06	0.17**	0.31***	0.19**
		(1.19)	(1.81)	(0.92)	(1.99)	(3.46)	(2.06)
LASSET	-	-0.78***	-0.77***	-0.71***	-0.80***	-0.79***	-0.79***
		(-14.88)	(-15.34)	(-14.76)	(-16.42)	(-15.31)	(-16.44)
BTM	-	0.94***	0.95***	1.10***	0.85***	1.07***	0.88***
		(6.22)	(6.67)	(7.25)	(5.99)	(6.99)	(6.59)
LEV	+	3.62***	3.58***	3.65***	3.34***	3.47***	3.33***
		(8.31)	(8.59)	(8.94)	(8.30)	(8.09)	(8.36)
ROA	-	-4.76***	-4.50***	-3.33***	-5.66***	-4.22***	-4.86***
		(-5.19)	(-5.57)	(-3.87)	(-6.67)	(-5.18)	(-6.57)
LOSS	+	0.56**	0.48*	0.56**	0.54*	0.56**	0.65***
		(1.98)	(1.78)	(2.04)	(1.92)	(2.14)	(2.59)
BIGN	-	0.30	0.16	0.20	0.22	0.11	0.06
		(0.81)	(0.46)	(0.54)	(0.66)	(0.32)	(0.19)
oZ_SCORE	-	-0.08	-0.03	-0.09	-0.06	-0.08	-0.08
		(-1.13)	(-0.47)	(-1.34)	(-0.86)	(-1.17)	(-1.24)
TIE	+	0.00	0.00	0.00	0.00	0.00	0.00
		(0.37)	(0.16)	(-0.07)	(1.23)	(0.26)	(1.26)
FILE_TW	+	0.10	0.10	0.07	0.08	0.08	0.14*
		(1.15)	(1.10)	(0.89)	(1.01)	(0.90)	(1.68)
Observations		488	522	554	559	516	608
Year FE		Yes	Yes	Yes	Yes	Yes	Yes
Industry FE		Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2		0.21	0.21	0.19	0.22	0.21	0.20

*** p<0.01, ** p<0.05, * p<0.1(significant variables at two-tailed test)

Table 5a presents coefficient estimates from the regression of *RATING* on the positive residuals from Table 4a for weak corporate governance. t-statistics are reported in parentheses and are calculated using robust standard errors clustered by firm. The variables are winsorized at 2% and 98%. All the variables are defined in table 2 *PARFD* is the positive residuals from stage 1 regression in Table 5a. *RATING* is the numerical value of S&P issuer debt rating. *1A_TW* is the log of total number of words in Item- 1A. *1A_CRW* is log of total number of risk words in Item-1A. *1A_CFRW* is the log of total number of financial risk words in Item-1A. *1A_CIRW* is the log of total number of idiosyncratic risk words in Item-1A. *1A_CSRW* is the log of total number of systematic risk words in Item-1A. *1A_CLRW* is the log of total number of legal risk words in Item-1A. *FILE_TW* is the log of total number of words in annual 10-K report. *LASSET* is the log of total assets. *BTM* is the book value of equity to market value of equity. *ROA* is return on assets *LOSS* is the value of dummy for firms with negative earnings. *BIGN* is the dummy for large auditors. *oZ_SCORE* is bankruptcy score based on Altman (1968). *TIE* is times interest earned ratio.

Chapter 5: Summary

In light of recent discussions on the boilerplate nature of RFDs and the SEC's concern about how to improve this disclosure, this dissertation examines the topics and contents of RFDs and empirically investigates the usefulness of this disclosure in the private and public debt markets. In addition, I examine the effect of strong corporate governance on managerial discretions in disclosing risk factors including the impact on cost of debt for risky firms in the public debt market.

In the first essay, I provide directions for future research relating to the content of RFDs, its usefulness to investors and for debt and compensation contracts, as well as its usefulness to other market participants. The literature review and the proposed research topics from this dissertation provide a platform for future research on RFDs. The findings can be used by regulators in setting mandatory disclosure requirements, by debt providers in evaluating firm risk, and by management in implementing corporate governance structures. Further research on debt and contracting usefulness of RFDs can provide insight to the SEC on other stakeholders that are most likely to value RFDs. Similarly, future research examining the length of RFDs using different lexical quality proxies can provide information to the SEC on investor's ability to understand lengthy RFDs.

In the second essay, I use content analysis to show that the risk profile of firms is reflected in the cost of debt. I also find evidence that in the private debt market firms with RFDs above and below expectation have lower cost of debt. However, in the public debt market, my results show that disclosing higher risk than that expected is associated with higher cost of debt while disclosing lower risk below expectation is associated with a lower cost of debt. Considering current evidence on the usefulness of RFDs in the equity market, providing similar evidence on the usefulness of

this disclosure in the debt market closes out discussion on whether RFDs are boilerplate or not. The SEC can subsequently focus on improving the disclosure by providing mandate on what is disclosed and asking companies to provide information on how the disclosed risks will be addressed. Furthermore, providing evidence on institutional differences between the private and public debt market can provide guidance to the SEC on the targeted audience for future disclosure regulations.

In the third essay, I provide evidence that strong corporate governance promotes greater transparency in reporting RFDs in the public debt market. I find that risky firms with weak corporate governance have a higher cost of debt. There is however no cost of debt mitigating effect for risky firms with strong corporate governance. Strong corporate governance aligns the interest of shareholders and managers and also enhances transparency in disclosures. Examining the influence of strong corporate governance on RFDs provide more information to the SEC that can guide future regulations that promote transparency and accountability.

Although, RFDs are only mandatory for large firms in the US, the Canadian Securities Administrators can also extend this disclosure to Canadian firms. Such disclosure will aid investors and other capital market participants in evaluating firm risk and making appropriate investing and financing decisions.

Limitations of this study are the loss of data through the data extraction software due to the format of the 10-K files and the weak results for some RFD determinants. It is possible that there are some other determinants of RFDs that are not captured in my manual matching of RFD topics.