Essays on Investor Relation and Stakeholder Communication in Corporate Finance

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ABSTRACT

Essays on Investor Relation and Stakeholder Communication in Corporate Finance

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This dissertation examines the role of corporate communication as a governance mechanism and investigates its impact on the cost of new financing. Both corporate communications and the cost of capital have been concerns for scholars, policymakers, and practitioners.

The first essay examines whether corporate communication is a stand-alone governance mechanism. Corporate communication is measured by length, dictionary, and communication index. Using content analysis techniques, we find two major properties for firms' communication that together assert the governing power of corporate communications. The first property is the positive correlation between negative deviation from the expected transparency and negative changes in Tobin's Q, confirming the disciplinary role of corporate communications. And second, the substitution-complementary relationship between corporate communication and other board attributes such as board size, independence, education, expertise, CEO duality, frequency of board meetings, gender diversity, institutional ownership, and product market competition. We also find that communication has a non-linear association with Tobin's Q and firm's risk, pointing to the existence of an optimum level for communications. The results are robust when controlling for major corporate events such as mergers and acquisitions, spin-offs, financial distress and bankruptcy, and major lawsuits.

The second essay examines whether firms' engagement in communication activities, more specifically in investor relations and stakeholder communications (IRSC), reduces the cost of information asymmetry at the time of external financing. The measures of IRSC initiatives are frequency of press releases, frequency of events (meetings, conferences, industry gatherings, and investment bank seminars), the ratio of question and answer to the length of events, the average length of answers, and the frequency of slides used in events. We find that the frequency of press release and the portion of question and answer to the length of meetings have a significant and

positive relationship with the cost of financing, which points to the noisy nature of press releases (as a one-way communication channel), the amount of uncertainty around the financing decisions, and the stakeholders' attempt to clarifying the ambiguity. In contrast, event frequency and the average length of answers have negative associations with the cost of financing, which points to the value of meetings (as a two-way communication channel), firms' efforts to remove the ambiguity, and market's appreciation of transparency. Multivariate multiple regression analyses (seemingly unrelated regression models) show that these findings are more pronounced for less transparent firms that plan to issue equity compared to transparent firms who wish to finance through debts instruments.

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Contributions of Authors

Parts of this thesis are coauthored works with Azadeh Babaghaderi, Harjeet Bhabra, and Rahul Ravi, and currently are under review.

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Chapter 1: Introduction

My dissertation consists of two essays on the role of corporate communications with stakeholders in corporate finance, covering topics such as a) corporate communication as a governance mechanism, and b) the impact of Investor Relations and Stakeholders Communications (IRSC) on the cost of information asymmetry, evidence from cost of new financing.

The first essay examines whether corporate communication has a culture and act as a stand-alone governance mechanism and investigates whether the impact of communication on firms are monotone. This essay investigates the relationship between communication and other governance mechanisms and tests the existence of diminishing marginal benefits for communication.

The literature of corporate communication and transparency is built on the premise that corporate communications with stakeholders are formed dynamically by regulations and board efforts towards transparency. We believe that the existing communication culture is a third element that influences daily communication practices in a firm. In other words, the expected level of transparency has an impact on the actual practice of communication. The underlying reason is the motivation of the top management team who oversee the day to day communication decisions.

Managerial care for reputation is a known fact, as it is shown that it directly affects career opportunities and compensation benefits (Milbourn, 2003). We also know that market does not appreciate inconsistent communication practices and views any temporary fluctuations in communication as market manipulation (Mark H. Lang & Lundholm, 2000). Therefore, top managers' reputational concerns, personal interests to be perceived as transparent leaders, hesitation to be labelled and punished as market manipulators, all feed into the monitoring and controlling powers of communication culture. This study is the first to focus on the disciplinary role of corporate communication and consider it as a stand-alone governance mechanism.

In order to examine the disciplinary role, we test the impact of deviations from the expected transparency on deviations from the firm value measured by *Tobin's Q*, controlling for firm risk, management quality, capital structure, firm size, firm age, CEO ownership, year and industry fixed effects. In addition, we borrow from "Bundles of Corporate Governance Theory" the expectation that if communication has a governance attribute it should have substitution and complementary relationship with other governance attributes, as the efficiency and effectiveness of one governance

mechanism depends on the existence and level of other mechanisms in a bundle (García-Castro, Aguilera, & Ariño, 2013; Oh, Chang, & Kim, 2018; Schiehll, Ahmadjian, & Filatotchev, 2014; Ward, Brown, & Rodriguez, 2009; Yoshikawa, Zhu, & Wang, 2014). These interactions are tested in models with two main properties: first, application of two outcome variables such as Tobin's Q and Risk ratio, and second, the inclusion of squared terms for non-linearity of the effect of information disclosure on output variables. We used a two-stage least square approach to address the endogeneity concerns. Communication measures are based on the content analysis of more than 150,000 press releases and filings directly published by a sample of 96 Canadian firms listed on the TSX/S&P Composite Index from 1999 to 2014 (sixteen years).

Our findings assert the governing attribute of corporate communication, providing strong evidence for the substitution-complementary effect with board size, board independence, board education, board expertise, CEO duality, frequency of board meetings, board gender diversity, institutional ownership, and product market competition. The results consistently show a U-shaped association between communication and the firm's risk and an inverted U-shaped relationship between communication and the firm's value.

In summary, this essay provides evidence that corporate communication has a culture and that act as a stand-alone governance mechanism; that the effectiveness of this governance mechanism depends on the level and effectiveness of other governance mechanisms; that there is an optimal point above which marginal costs of information dissemination is more than its marginal benefits, signifying the importance of cost-benefit analysis in determining the level of optimum communication.

Complementary to the previous essay, the second essay takes a short-term look at the firm's communication phenomena. In the first essay, we show that communication has a culture (long-run level of transparency – expected transparency) and that firms hesitate to deviate from that culture because of its reputational costs. Here, in the second essay, we are trying to understand the reasons behind occasional deviations from that long-run level of transparency. This deviation takes place through engagement in Investor Relations and Stakeholder Communications (IRSC) activities. One may argue, and rightly so, that the informational benefits must have overcome the reputational costs that the firm has decided to temporary deviates from its long-run level of transparency. We are trying to understand those informational benefits that are generated by IRSC

efforts by investigating its impact on the cost of information asymmetry at the time of external financing.

We know that the cost of information asymmetry is an integral part of the required rate of returns. We also know that external financing is a frequent decision in all types of firms and any attempt in lowering the cost of this transaction is valuable for shareholders. Therefore, the importance of IRSC can be illustrated by its ability to reduce the cost of capital. We expect that tailored IRSC activities based on the existing level of transparency significantly lower the cost of financing. Communication activities happen either in interactive settings such as conference calls, private meetings, press conferences, and industry gatherings or via one-way communication practices such as press releases, presentation slides and annual reports on companies' websites. Each of these activities serves a purpose and targets a group of investors and stakeholders. Interactive communication forums illustrate a complete picture of managers' commitment to transparency as they expose themselves to unexpected questions and interactions.

To conduct an in-depth analysis of the content of such meetings, we examine the ratio of questions and answers (Q&A) to the whole event, the average length of an answer for each question, and the frequency of presentation slides in the meetings. In order to measure the cost of information asymmetry, we utilize the cost of external financing using two measures for the cost of debt and five measures for the cost of equity issues. Our proxies for firm transparency are based on the bid-ask spread and analyst coverage.

Using a sample of 1,190 firms listed on the S&P1500 Index from 1999 to 2018, we show that, in general, IRSC activities significantly affect the cost of financing. Such impact is either positive or negative depending on the specific IRSC activity, type of financing (debt versus equity), and the existing level of firm's transparency. Specifically, findings show that higher frequencies of press releases and larger portions of Q&A in meetings are positively associated with the cost of financing when firms are less transparent and intend to issue equity. On the contrary, we find that more frequent meetings and longer answers to analysts' questions are negatively associated with the cost of financing for low-transparent, equity-issuing firms. With regards to the role of presentation slides, only in debt issues, the higher number of presentation slides significantly lowers the cost of financing for firms that suffer from high levels of information asymmetry. We tested the above findings in different settings, using variety of model specification, and alternative measures of cost of information asymmetry. We also considered the

interdependency of costs of equity and debt by employing simultaneous systems of equations. We believe that simultaneously examining the two external financing options provides a better reflection of what managers face when they are contemplating financing decisions.

This study shows that when benefits overcome the costs, firms deviate from their communication culture by engaging in IRSC activities to reduce the amount of information asymmetry. The value of communication is more when the need for transparency is higher. In other words, the benefits of temporary engagement in IRSC activities are larger in informationally sensitive situations (such as raising capital through equity vs debt) and for firms that are characterized as less transparent.

Chapter 2: Corporate Communication as a Governance Mechanism

2.1 Introduction

This study examines whether corporate communication is a stand-alone governance mechanism and investigates its impact on the firm's value and risk.

Higher transparency mitigates the agency problem, and therefore significantly improves firm's value and firm's risk (Agarwal, Taffler, Bellotti, & Nash, 2016; Donnelly & Mulcahy, 2008; Healy, Hutton, & Palepu, 1999; Jensen & Meckling, 1976; Kothari, Li, & Short, 2009). Information disclosure and communication practices are crucial aspects of every corporation[1]. As one of the main channels to reduce information asymmetry and agency costs, wide-ranging communication is not only what major investors are willing to pay a premium for, but is a key element on investors' minds when they evaluate a company's prospect (PWC, 2017). To satisfy investors' (the same can be said for stakeholders) demand for transparency, firms are continuously contemplating on what and when to disclose. To help better understand the impact of transparency on firm's value and risk, it is necessary to first, understand what forces shape communication for transparency, and second, to understand the relationship between firm's communication and firm's value and risk.

So far, the literature of corporate disclosures and transparency is built on the premise that rules and regulations set by government and supervisory institutions determine the level and quality of the content of the mandatory disclosures, and requirements set by the board of directors determine the level and quality of the voluntary disclosures. Since the disclosure is part of the communication, one can draw a picture that only these two forces (regulations and board of directors' decisions) are the only forces that shape communication. This picture only partially reflects the reality; it lacks a third element – communication culture.

Corporate communication culture at any given time sets the expected level of transparency that top managers are evaluated against. We know that managers care about their reputation as it

[1] In this paper, we do not equate communication with disclosure, and rather consider communication to be a broader concept that illustrates a firm's culture on how to connect with its stakeholders. Communication is a culture that comprises of numerous public disclosures of information over a long time that shapes firms' transparency reputation. A corporate disclosure is an instance when a firm disseminates a piece of information. Studies of corporate dislcosure, are mainly short-term and they focus on a specific type of disclosure tool or information category. In this study, we use a large number of corporate disclosure channels and topics over a long period of time to reflect the long-run communication culture.

directly affects their career opportunities and compensation benefits (Milbourn, 2003). We also know that market does not appreciate inconsistent communication practices and view any temporary fluctuations in communication as market manipulation (Mark H. Lang & Lundholm, 2000). Therefore, top managers' reputational concerns, personal interests to be perceived as transparent leaders, hesitation to be labelled and punished as market manipulators, all feed into the monitoring role of communication culture. The existing transparency benchmark creates a disciplinary force to keep the managers on the right track of communication, which results in reduction of the agency costs. This study is the first to focus on the disciplinary role of corporate communication and consider it as a stand-alone governance mechanism. To examine the disciplinary role of corporate communication, we test the impact of deviations from the expected transparency on deviations from the firm value measured by *Tobin's Q* ratio. The expected levels are proxied by historical three-year averages, and the models control for major events (M&A, Spin-offs, Lawsuits, and Financial Distress), firm risk, management quality, capital structure, firm size, firm age, CEO ownership, year, and industry. Controlling for major events is a necessary step, as the influx in the amount of communication followed by drop is expected when firms are going through these major changes (Botosan, 1997). The results show that there is a significant association between deviations from expected transparency and deviations from expected value. This finding asserts that market participants discount the value of a firm if the firm choose to deviate from the long-run level of communication, with no specific reason. The reaction of the market is the disciplinary power of communication culture.

Is the more the communication the better? If communication leads to more transparency and at the same time act as a governance mechanism, can we conclude that the more the communication, the better? To investigate the relationship between communication and firm's value and risk, we make use of "Cost-Benefit Trade-off" and "Bundles of Governance Mechanisms" theories.

The theory of "Cost-Benefit Trade Off", says that firms engagement with an initiative is determined by the comparison of marginal benefits with marginal costs. Like any other governance mechanism, corporate communication comes in a package of costs and benefits. While a firm may initially profit from providing information to the market, beyond a certain threshold, these benefits are offset by the increasing costs of disclosure. The trade-off between benefits and costs suggests an optimum level of disclosure that maximizes firm value and minimizes its risk. In terms of value,

the benefit of corporate communication is to reduce information asymmetry and thereby positively impact the value. However, too much information dissemination could be detrimental, as it unintentionally releases some proprietary information, which may lead to loss of competitive advantage. In terms of risk, the benefit of communication is to resolve ambiguity surrounding firm's prospect, but again, too much information could simply increase the noise, especially in the presence of investors limited attention (Please refer to Table 1). Due to these dynamics we hypothesize and test that the effect of communication on firm's value and risk is non-linear. To reject the linearity, we include the squared terms of communication measures in our regression models. We find strong and robust evidence that the relationship between communication and firms' value and risk is not linear. The findings assert that there is an optimum point for communication over which marginal costs overcome the marginal benefits. This optimum point is specific for each firm and therefore firms need to determine the level of their engagement in communication with regards their own specific conditions, by carrying cost-benefit analysis. Supporting the non-linearity, results consistently show a U-shaped association between communication and the firm's risk and an inverted U-shaped relationship between communication and the firm's value. The findings are robust after controlling for managerial ownership, capital structure, management quality, size, and age of the firm as well as industry and year fixed effects.

Bundles of governance mechanism theory postulates that firms employ governance mechanisms in bundles, and this is the overall effect of the bundle that matters (García-Castro et al., 2013; Oh et al., 2018; Schiehll et al., 2014; Ward et al., 2009; Yoshikawa et al., 2014). Inside the bundle, mechanisms have substitution-complimentary relationship, such that the effectiveness of a mechanism depends on the level and effectiveness of the other mechanisms. The same can be hold true about communication as a governance. The effectiveness of communication culture in disciplining managers is influenced by the level and effectiveness of other governance attributes. The main reason for endogeneity problem comes from the same relationships, which we address by 2SLS methods. We hypothesize and test that there is substitution and complementary relationships between communication and other governance attributes. According to the literature, the substitution-complementary relationship can best be tested in a model that incorporates different pairs of governance mechanisms to gauge their combined impact on some type of corporate outcome (Becher & Frye, 2011; Oh et al., 2018). The outcomes we considered are firm's value (measured by Tobin's Q ratio) and firm's risk (measured by ratio of idiosyncratic to total

risk). Results show that corporate communication has a substitution-complementary relationship with board size, board independence, board education, board expertise, CEO duality, frequency of board meetings, board gender diversity, institutional ownership, and product market competition. These significant associations suggest that the communication should be considered as part of governance bundle and the optimum level of communication should be determined according the specific configuration for each firm.

In this study, communication measures are based on the content analysis of more than 150,000 press releases and filings directly published by a sample of 96 Canadian firms listed on the TSX/S&P Composite Index from 1999 to 2014 (sixteen years). We consider both the mandatory and voluntary disclosures because: 1) the goal here is to analyze the overall communication culture of the firm, and 2) voluntary disclosure is increasingly integrated into the mandatory filings such that it is increasingly costly to clearly separate the two (Beyer, Cohen, Lys, & Walther, 2010; Holder-Webb, Cohen, Nath, & Wood, 2007), especially in a long-term study like this paper. To gauge corporate communication, we use three measures – *Length*, *Dictionary,* and *Communication Index* (*CI*), where the latter two are constructed by the authors in attempt to capture the quality of the communication. *Length* is the total word count of the filings and captures the amount of communication. *Dictionary* is the word count of a set of 608 business-related words and phrases[2] and captures the amount of business related information. *CI* is an industry adjusted

[2] Business aspects include business and financial, risk management, investor relations, sustainability and environmental practices, corporate governance, labor practices, forward-looking information, and general informative words. Please refer to Section 2.4 Methodology

2.4.1 Automated Content Analysis

Content analysis method is a spectrum covering completely manual methods to state-of-the-art automated techniques. Manual content analysis benefits from more granular analysis and accurate coding while suffers from data collection costs and researcher's subjectivity. Data collection costs result in small sample sizes that may lower generalizability and statistical power. Researcher's subjectivity could bias the findings and prevent replicability. The advantage of automated text analysis is that it solves both the above-mentioned problems. After developing the scoring algorithm, researchers can use computer-based analysis and examine a large volume of documents in a quick and cost-efficient manner. Large samples increase the statistical power which promotes generalizability. Furthermore, since the automated scoring algorithm is consistently applied to all documents, it limits the researcher's bias and minimizes random measurement error

linked to varying nature of manual coding application (F. Li, 2010a). The significant growth of information dissemination in business, accounting, and finance over the years intensifies the necessity of some level of automated content analysis techniques. Dyer, Lang, and Stice-Lawrence (2017) show that throughout 1996–2013, the median length of US registrants' 10-K annual reports increased at 113 percent. In this study, we also observe a similar trend even with a steeper slope (4 to 7 folds) over the years of 1999 to 2014 (Please refer to Table 6, Panels A and B).

Any study with a significant volume of information dissemination of a large sample of firms requires an automated content analysis approach that is scalable, generalizable, and objective. To meet the scalability criterion, we utilize a representation of the Natural Language Processing (NLP) technique. NLP methods can be grouped into three broad categories: supervised, unsupervised, and semi-supervised systems (Fisher, Garnsey, & Hughes, 2016). Supervised NLP requires a human intervention which is the main cost of such systems. However, as the research question demands more sophisticated linguistic features, more manual intervention is required (El-Haj, Rayson, Walker, Young, & Simaki, 2019). In contrast, unsupervised systems only rely on pattern matching or clustering algorithms to group unannotated data automatically (Balakrishnan, Qiu, & Srinivasan, 2010; Dyer et al., 2017; Frankel, Jennings, & Lee, 2016). One unsupervised method incorporated in some accounting and finance studies is 'topic modeling' using Latent Dirichlet Allocation (LDA) where statistical word patterns create the "themes". However, LDA has three major issues. First, the bag-of-words model used in LDA does not incorporate meaningful multi-word expressions or different meanings of single words. Second, LDA lacks reliability, meaning that if the same process is repeated multiple times on the same dataset, it can generate different topic wordlists. Third, the topic interpretation and identification require considerable subjectivity by the researchers (El-Haj et al., 2019; Semino, Demjén, Hardie, Payne, & Rayson, 2017). The majority of studies using NLP employ *supervised* classification of data, from which 56% utilize the basic 'bag-of-words' content analysis methods (El-Haj et al., 2019). Following the common practice in the literature, we employ a supervised NLP method that relies on the bag-of-words model. Our methodology includes a corpus annotation (automated tagging or classifying) procedure that begins with manual annotation of a smaller set of documents called 'training corpus'. Then the software replicates the selected annotations for the larger corpus under analysis. To reduce the limitations of bag-of-words method, our annotations consider meaningful

score and captures the diversity of topics in addition to the amount of business related information in communications.

This study has several contributions to both literatures of corporate communication and governance. First, it provides evidence that corporate communication has governance attributes, and its disciplinary role makes top managers sustain the expected level of information dissemination. Second, we show that the association between communication and firm value and

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multi-word expressions and the sequence of words. As this study entails measuring corporate communication practices addressing all types of stakeholders related to different aspects of business, manual intervention by domain experts is required to carefully consider the context and sequence of the disclosed words; These two features represent word sense disambiguation which is critical for an effective computer-based content analysis method. Loughran and Mcdonald (2016) suggest that methods that consider the context and word sequence add more signal than noise to the empirical analyses. In the computation of corporate communication measures, we use a custom dictionary and a scoring system that includes phrases in addition to roots of single words.

To satisfy generalizability, and to avoid selection bias, we carry the analysis on all parts of all types of communication sources that are originated from the firm. El-Haj et al. (2019) discuss that the tendency to lower extraction costs causes observational bias as studies limit their source of data. Such tendency is evident in the significant number of accounting and finance studies that only focus on 10-Ks or MD&As, using basic content analysis methods (e.g. readability algorithms such as Fog index), generic dictionaries (e.g. negative keywords from Harvard-IV-4 TagNeg), and mass-produced word count tools. Applying the wordlist from one source (e.g. annual reports) to study the content of another source loses its validity. Moreover, using a generic dictionary does not properly reflect the idiosyncratic content and context-specific jargon of business-related communication. Our study examines more than 100 types of corporate filings and press releases as the input source of our NLP procedure which also supports a multi-domain scoring system.

To satisfy objectivity, and hence replicability, we use two human coders with a validated inter-coder-agreement for our scoring algorithm. After this point, the automated process applies the scoring algorithm on all the filings without any human input, which satisfying objectivity and replicability.

2.4.2 Corporate Communication Measures and Appendix A for more details.

risk is not linear, and there is an optimal point above which marginal costs of information dissemination is more than its marginal benefits. This evidence of non-linearity signifies the importance of cost-benefit analysis in communication and disclosure practices to maximize shareholders' wealth. Third, our analysis of the substitution-complementary relationship between communication and other governance mechanisms magnifies the importance of the theory of "Bundles of Governance Mechanisms." We show that for every configuration of the bundle of governance mechanisms, different levels of corporate communication can enhance or deteriorate firm value and risk profile, therefore firms need to determine the optimum level of communication in relation to other governance mechanisms. The implication of these findings for practitioners is that the optimum level of involvement in communication practices depends on the long-run level of transparency and the specific configuration of firms' bundle of governance mechanisms. Forth, we provide alternative measures for corporate communication that capture the quality of the content in addition to the quantity of information. Fifth, this study is based on a sixteen-year period, which is by far the longest time-frame in the literature of communication and disclosure. A long-run study of communication makes it free from possible short-term but systematic exogenous shocks that influence communication practices, and ultimately, bias the research findings. And finally, despite the numerous challenges in data collection, which resulted in a significant hand-collection process, we provide a large-scale empirical study on Canadian public firms. Since Canada is different from the United States or Europe in terms of disclosure rules and corporate culture[3], our findings add to the international understanding of corporate governance and communication practices.

The remainder of the paper is organized as follows: Section 2.2 reviews corporate governance and corporate communication in the Canadian context, section 2.3 provides the literature review and hypothesis development, Section 2.4 is related to the design of our communication measures, Section 2.5 explains model specifications, Section 2.6 includes sample selection and descriptive analysis, Section 2.7 provides the interpretation of empirical results, and Section 2.8 delivers summary and concluding remarks.

[3] Please refer to 2.2 Corporate Communication in Canada for more details.

2.2 Corporate Communication in Canada

Canadian corporate governance environment is somewhere between the Angelo-American model (such as the US and UK) and the European model (such as Germany and France). As Gedajlovic and Shapiro (1998) point out, Canadian firms have high ownership concentration, a significant level of family owners, and rather moderate levels in aspects such as the board of directors composition, shareholder power, external financing and the market for corporate control. The ownership characteristics of Canadian firms makes them an interesting group to examine with regards to corporate disclosure and communication practices. Since literature finds that family firms and those with concentrated ownership disclose less information to the public[4], one can expect low voluntary disclosure by Canadian firms. In addition to its specific corporate ownership structure, Canada has a "principles-based' approach towards corporate governance rather than a "rules-based" that is employed in the U.S. The principles-based approach asks firms to disclose whether or not they follow the "best practices" guidelines, while "rules-based" approach requires mandatory compliance with the governance rules (Buhr & Freedman, 2001; K. Li & Broshko, 2006). The unique governance and disclosure environment in Canada create an interesting research setting to examine the governing role of the firm's overall communication practices. Moreover, unlike US public firms, Canadian public companies are required to file all their news releases in the regulatory filing system[5]. As a major source of voluntary disclosure, press and news releases are informative, direct ways of corporate communication with the external environment, and SEDAR filing system[6] guarantees access to firms' efforts in this regard.

2.3 Hypothesis Development

2.3.1 Corporate communication as a governance mechanism

Agency Theory postulates conflicts of interests and information gap between shareholders, creditors, and managers, which leads to inferior decisions by all parties, creating higher ambiguity over the firm's prospects, and thus deteriorating its value. Governance mechanisms are processes

[4] See Ali et al., 2007; García-Meca & Sánchez-Ballesta, 2010; Hossain et al., 1994; Lakhal, 2005; W. Li & Tang, 2007; Lim et al., 2007; McKinnon & Dalimunthe, 1993; Patelli & Prencipe, 2007.
[5] Rule: National Instrument - 51-102 - Continuous Disclosure Obligations, effective as of April 2nd, 2004.
[6] SEDAR (System for Electronic Document Analysis and Retrieval) is the electronic system for filing Canadian securities information, established by CSA (Canadian Securities Administrators). This service is equivalent to EDGAR (Electronic Data Gathering, Analysis, and Retrieval system) in U.S. Equity Market.

put in place to monitor managerial decisions with the goal of lowering agency issues (Donnelly & Mulcahy, 2008; Gillan, 2006; Jensen & Meckling, 1976).

Higher transparency and communication mitigate agency problems and therefore, significantly improves firm value (Agarwal et al., 2016; Hassan & Marston, 2010), and firm risk (Akhigbe & Martin, 2008; Elshandidy, Fraser, & Hussainey, 2013; Healy, Hutton, & Palepu, 1999; Kothari, Li, & Short, 2009a). The important role of corporate communication in reducing information asymmetry and agency issues has motivated numerous studies to find how communication practices are determined. The prevailing assumption in the literature is that communication is a mere downstream of regulations and board of directors' decisions. However, empirical findings provide an unclear understanding of the impact of governance attributes on firms' communication practices. As an example, board size is found to be both positively (Allegrini & Greco, 2011), and negatively (Cheng & Courtenay, 2006), associated with the level of voluntary disclosure. Other governance mechanisms, such as the presence of institutional investors, also show conflicting results in relation to the level of corporate disclosure (Bird & Karolyi, 2016; Eng & Mak, 2003). We believe that communication as governance can solve the puzzling findings in the literature.

The long-run level of communication forms a certain transparency culture and sets outsiders' expectations for transparency. Such expectation is the missing element among the forces that shape communication practices. Empirical studies show that the market is highly sensitive to negative surprises in transparency. There are evidence that that non-persistent and temporary increases in corporate disclosure (i.e. an increase in the disclosure that is followed by a reduction) is considered manipulation and is punished by the market (Jo & Kim, 2007; Mark H. Lang & Lundholm, 2000).

Decision-makers of communication efforts, top managers, tend to maintain the long-run level of transparency, as any reduction in transparency signals a negative message about the agency problem. The conjecture that brings top managers into the picture is built on three established facts: 1) top managers have enough power to effectively make any strategic decision (Bebchuk & Fried,

2005; Finkelstein, 1992; Schwartz-Ziv & Weisbach, 2013)[7], 2) based on agency and signaling theories, managers communicate to signal about the quality (Hassanein & Hussainey, 2015; Lopes & Rodrigues, 2007; Patten, 1992; Ross, 1977), and 3) managers' reputation is a significant factor in job security and compensation package (Milbourn, 2003). Moreover, investors believe that the level and quality of corporate disclosure reflect the personal quality of the top managers (PriceWaterhouseCoopers, 2017).

For communication to be a governance mechanism, it needs to influence managerial private benefits. There is a strand of literature that provides evidence for the relationship between managers' interests to shape their reputation and the level of corporate disclosure practices (Eugene F. Fama, 1980; Gibbons & Murphy, 1992; Park & Yoo, 2016; Verrecchia, 2001). The information dissemination helps managers update outsiders' understanding of their skills in improving firm's performance, which in turn affects their job opportunities and compensation packages. According to a survey of top executives, one of the main purposes of voluntary disclosure is to create a good reputation (Graham, Harvey, & Rajgopal, 2005). Monetary incentives (compensation packages) and non-monetary incentives (career concerns) feed into the desire of managers to be perceived as successful leaders in the managerial labor market and that creates a link between corporate communication practices and managerial private benefits.

Overall, the combination of managers' personal reputation and future career concerns, as well as the potential backlash they could face for the lack of consistent transparency, creates a huge pressure on the management to maintain or enhance the existing communication culture of the firm. The continuous pressure of the existing level of transparency is a self-sustaining process that controls managerial decisions and limits agency issues.

Since a manager's personal benefits are tied to their reputation which is in turn influenced by firm's performance (Francis, Huang, Rajgopal, & Zang, 2008; Garay, González, & Molina, 2007; Johnson, Young, & Welker, 1993; Lines, 2004), we consider firm's performance as the proxy for managerial benefits. To test the disciplinary role of communication culture, we hypothesize that unjustified deviations from expected communication is positively associated with deviations from expected value. Our first hypothesis reads:

[7] The extent of the power of top managers is such that it even shapes their own compensation. Bebchuk and Fried (2005) point out that managerial power plays a crucial role in shaping executive compensation, such that the pay-setting process has strayed far away from the arm's length model that should be pursued by the board of directors.

H_1: *Deviation from the expected level of corporate communication significantly affects the firm's value.*

Following Botoson (1997) we identified and excluded firm-year observations that a firm is involved in mergers and acquisitions, spin offs, major lawsuits, and financially distressed situation. These major events cause firms to temporarily deviate from their long-run communication cultures and have influx in the level of communication. Market expects such fluctuations and consider them as justifiable change in transparency.

Expected levels of communication and value are estimated by simple moving average procedure (SMA) of the past three years. The expected communication level is set based on the communication culture of the firm which does not follow a random walk. SMA is used for time-series forecasting as a simple, yet useful method to smooth out the data and mitigate the impacts of short-term fluctuations that bias our understanding of the current trends (Bamiatzi, Bozos, & Nikolopoulos, 2010; Johnston, Boyland, Meadows, & Shale, 1999; Kilgallen, 2012). Depending on the model specification, SMA results in lower forecast errors compared to other more sophisticated forecasting models (Nau, 2014), and is less costly than adaptive moving average methods (Ellis & Parbery, 2005). We believe that three years is a proper time-frame as it is not just a reflection of the immediate past, nor too far stretched in the back that loses the current touch.

2.3.2 Non-linear relationship between communication and firm's value and risk

Is the relationship between communication and firm's value and risk monotone? In another word, is the more the communication the better?

Corporate communication activities benefit stakeholders, and therefore firm value, by reducing the information gap and decreasing agency costs (Healy & Palepu, 2001; Jensen & Meckling, 1976); it also reduces the ambiguity around firm's prospects and therefore, help improve firm's risk profile (Baumann & Nier, 2004; Botosan, 1997; Healy et al., 1999). One would argue that such benefits encourage ever-increasing communication and information dissemination by firms. Like any other governance mechanism, corporate communication comes in a package of costs and benefits. While a firm may initially profit from providing information to the market, beyond a certain threshold, these benefits are offset by the increasing costs of disclosure. The theory of Information Proprietary Cost argues that extensive information disclosure is costly as it could erode the firm's competitive advantage (Clinch & Verrecchia, 1997; Darrough, 1993; Mckinnon,

1984; Verrecchia, 1983, 2001). Additionally, Signaling Theory predicts that in the presence of investors' limited attention, too much information disclosure increases the noise injected into firm's valuation (Darrough & Stoughton, 1990; Hassan & Marston, 2010; Hirshleifer & Teoh, 2003; Mckinnon, 1984; Verrecchia, 1983, 2001). In a recent paper, Dawd and Charfeddine (2019) examine the non-linear relationship between accounting performance and disclosure, using a sample of 51 firms listed on the Kuwait Stock Exchange in 2010. Their findings show a U-shaped association between aggregate disclosure and return on assets (ROA), as well as return on equity (ROE). The dynamic between marginal costs and marginal benefits at different levels of corporate communication determines whether an increment of information disclosure is value-enhancing or wealth deteriorating. The trade-off between benefits and costs suggests an optimum level of disclosure that maximizes firm value and minimizes its risk. We, therefore, hypothesize and test that:

H_2: *Corporate communication has a non-linear relationship with the firm's value.*

H_3: *Corporate communication has a non-linear relationship with the firm's risk.*

Table 1 summarizes the costs and benefits of corporate communication regarding the value and risk profile of a firm.

---------- Please insert Table 1 here ----------

Bundles of Governance Mechanisms Theory (Schiehll et al., 2014) proposes that the effectiveness of each element in the bundle depends on its inter-relationship with other mechanisms. Empirical studies show that some governance mechanisms substitute each other (Agrawal & Knoeber, 1996; Dalton, Daily, Certo, & Roengpitya, 2003; Demsetz, 1983; Zajac & Westphal, 1994), while others act as complements (Aguilera, Filatotchev, Gospel, & Jackson, 2008; Tosi & Gomez-Mejia, 1994; Tosi, Katz, & Gomez-Mejia, 1997). Such substitution-complementary relationship predicts that the impact of communication on firms' value and risk is not linear and should be determined dynamically according to the configurations of the rest of governance mechanisms. According to the literature, the substitution-complementary relationship should be tested in a model that incorporates different pairs of governance mechanisms to gauge their combined impact on some type of corporate outcome (Becher & Frye, 2011; Oh et al., 2018).

Firm's value[8] and firm's risk[9] are the two most used outcome variables in empirical studies on the impact of governance mechanisms on firms. Thus, hypotheses four and five read:

H_4: *Corporate communication has a substitution-complementary relationship with other governance mechanisms with respect to the firm's value.*

H_5: *Corporate communication has a substitution-complementary relationship with other governance mechanisms with respect to the firm's risk.*

2.4 Methodology

2.4.1 Automated Content Analysis

Content analysis method is a spectrum covering completely manual methods to state-of-the-art automated techniques. Manual content analysis benefits from more granular analysis and accurate coding while suffers from data collection costs and researcher's subjectivity. Data collection costs result in small sample sizes that may lower generalizability and statistical power. Researcher's subjectivity could bias the findings and prevent replicability. The advantage of automated text analysis is that it solves both the above-mentioned problems. After developing the scoring algorithm, researchers can use computer-based analysis and examine a large volume of documents in a quick and cost-efficient manner. Large samples increase the statistical power which promotes generalizability. Furthermore, since the automated scoring algorithm is consistently applied to all documents, it limits the researcher's bias and minimizes random measurement error linked to varying nature of manual coding application (F. Li, 2010a). The significant growth of information dissemination in business, accounting, and finance over the years intensifies the necessity of some level of automated content analysis techniques. Dyer, Lang, and Stice-Lawrence (2017) show that throughout 1996–2013, the median length of US registrants' 10-K annual reports increased at 113 percent. In this study, we also observe a similar trend even with a steeper slope (4 to 7 folds) over the years of 1999 to 2014 (Please refer to Table 6, Panels A and B).

Any study with a significant volume of information dissemination of a large sample of firms requires an automated content analysis approach that is scalable, generalizable, and

[8] Boyd, 1995; Carter, Simkins, & Simpson, 2003; Coles et al., 2008; Conger, J. A., Finegold, D., & Lawler, 1998; Cremers, Nair, & Wei, 2005; Erhardt, Werbel, & Shrader, 2003; Gabaix & Landier, 2008; Griffith, 1999; Hall, Hutchinson, & Michaelas, 2004; Jensen & Murphy, 1990; McConnell & Servaes, 1995; Mehran, 1995a; Tong, 2008; Vafeas, 1999; Yermack, 1996.

[9] Carpenter, 2000; DeYoung, Peng, & Yan, 2013; Faccio, Marchica, & Mura, 2016; Gande & Kalpathy, 2017; Sila, Gonzalez, & Hagendorff, 2016; Tan, Zhu, Zeng, & Gao, 2014; Wiseman & Gomez-Mejia, 1998.

objective. To meet the scalability criterion, we utilize a representation of the Natural Language Processing (NLP) technique. NLP methods can be grouped into three broad categories: supervised, unsupervised, and semi-supervised systems (Fisher, Garnsey, & Hughes, 2016). Supervised NLP requires a human intervention which is the main cost of such systems. However, as the research question demands more sophisticated linguistic features, more manual intervention is required (El-Haj, Rayson, Walker, Young, & Simaki, 2019). In contrast, unsupervised systems only rely on pattern matching or clustering algorithms to group unannotated data automatically (Balakrishnan, Qiu, & Srinivasan, 2010; Dyer et al., 2017; Frankel, Jennings, & Lee, 2016). One unsupervised method incorporated in some accounting and finance studies is 'topic modeling' using Latent Dirichlet Allocation (LDA) where statistical word patterns create the "themes". However, LDA has three major issues. First, the bag-of-words model used in LDA does not incorporate meaningful multi-word expressions or different meanings of single words. Second, LDA lacks reliability, meaning that if the same process is repeated multiple times on the same dataset, it can generate different topic wordlists. Third, the topic interpretation and identification require considerable subjectivity by the researchers (El-Haj et al., 2019; Semino, Demjén, Hardie, Payne, & Rayson, 2017). The majority of studies using NLP employ *supervised* classification of data, from which 56% utilize the basic 'bag-of-words' content analysis methods (El-Haj et al., 2019). Following the common practice in the literature, we employ a supervised NLP method that relies on the bag-of-words model. Our methodology includes a corpus annotation (automated tagging or classifying) procedure that begins with manual annotation[10] of a smaller set of documents called 'training corpus'. Then the software replicates the selected annotations for the larger corpus under analysis. To reduce the limitations of bag-of-words method, our annotations consider meaningful multi-word expressions and the sequence of words. As this study entails measuring corporate communication practices addressing all types of stakeholders related to different aspects of business, manual intervention by domain experts is required to carefully consider the context and sequence of the disclosed words[11]; These two features represent word sense disambiguation which is critical for an effective computer-based content analysis method. Loughran and Mcdonald

[10] The manual annotation process is employed in a number of prior studies related to tone (Huang, Teoh, & Zhang, 2014; Li, 2010b), risk (Kravet & Muslu, 2013), CEO integrity (Dikolli, Keusch, Mayew, & Steffen, 2020), and strategy-related disclosures (Athanasakou, El-Haj, Rayson, Walker, & Young, 2018).

11 An example of the importance of context can be illustrated by the phrase 'the activity of the of the firm in the bank'. Depending on the definition of the word 'bank', this sentence can have different meanings. An example for the importance of sequence is the phrase "loss decreased". If only single words are captured without the sequence, it is likely for the researcher to classify this phrase as a negative sentence, due to the presence of words such as loss and decreased, even though the sentence is positive.

(2016) suggest that methods that consider the context and word sequence add more signal than noise to the empirical analyses. In the computation of corporate communication measures, we use a custom dictionary and a scoring system that includes phrases in addition to roots of single words.

To satisfy generalizability, and to avoid selection bias, we carry the analysis on all parts of all types of communication sources that are originated from the firm. El-Haj et al. (2019) discuss that the tendency to lower extraction costs causes observational bias as studies limit their source of data. Such tendency is evident in the significant number of accounting and finance studies that only focus on 10-Ks or MD&As, using basic content analysis methods (e.g. readability algorithms such as Fog index), generic dictionaries (e.g. negative keywords from Harvard-IV-4 TagNeg), and mass-produced word count tools. Applying the wordlist from one source (e.g. annual reports) to study the content of another source loses its validity. Moreover, using a generic dictionary does not properly reflect the idiosyncratic content and context-specific jargon of business-related communication. Our study examines more than 100 types of corporate filings and press releases as the input source of our NLP procedure which also supports a multi-domain scoring system.

To satisfy objectivity, and hence replicability, we use two human coders with a validated inter-coder-agreement for our scoring algorithm[12]. After this point, the automated process applies the scoring algorithm on all the filings without any human input, which satisfying objectivity and replicability.

2.4.2 Corporate Communication Measures

Numerous studies use total count of words in a document as a proxy for the level of corporate disclosure in different contexts, such as earnings quality (F. Li, 2008), risk analysis (J. L. Campbell, Chen, Dhaliwal, Lu, & Steele, 2014), securities' law (Bozanic, Choudhary, & Merkley, 2019), investor composition (Lawrence, 2013), and investor litigation (Bourveau, Lou, & Wang, 2018). Following the common practice in the literature, we use total word count of all filings and press releases in each firm-year as a proxy for the level of corporate communication. This measure is called *Length* and captures the volume of all publicly disclosed information regardless of their information content. Despite its wide usage, this measure does not reflect the information content or meaningfulness of disclosed material.

[12] Please refer to section 2.4.2. for more details on the inter-coder reliability procedure.

As an alternative method for robustness purposes and to reflect the information content of communication in addition to its quantity, we construct two new measures: *Dictionary*, and *Communication Index (CI),* and utilize automated content analysis technique (El-Haj et al., 2019; Kothari et al., 2009) to compute them. Our goal of measuring the firm's communication efforts needs a direct measure that is free from third-party opinions about firm's communication, and one that uses a wordlist relevant to the business world. Prior studies that provide a business-related wordlist are either a combination of firm's communication and third-party opinions (Kothari et al., 2009), or limited to tone of the communication (Henry, 2008; Loughran & McDonald, 2011). We count the frequency of a custom dictionary of 608 business-related words and phrases of 8 main business aspects and use it to construct the two communication measures - *Dictionary* and *Communication Index* (*CI).*

Length and *Dictionary* are different as the former merely captures the volume of disclosure regardless of the meaning of the words, but the latter provides a proxy for the volume of informative disclosure. *Dictionary* and *CI* are different as CI captures the diversity of communicated topics compared to industry peers in addition to the amount of relevant content. The importance of industry comparison in *CI* is backed by the Signaling Theory, according to which the competitive pressure influences a firm's disclosure behavior (Lopes & Rodrigues, 2007).

To construct the custom dictionary of 608 business-related words, we took the following steps:

1- We randomly selected two large firms from each sector (11 sectors, 22 firms) – we chose large firms because the most complete disclosure and the highest variety of topics are expected to be discussed by large firms. We did not want to leave any topics untouched.

2- We downloaded all filings made by these firms in 2014[13]. The number of filings downloaded is roughly around 1500 documents from 22 firms. There are more than 100 different types[14] of documents that a firm may file at SEDAR over a fiscal year. These downloaded files are used to create the training corpus for the content analysis. As El-Haj, Rayson, Walker, Young, and Simaki (2019) explain, in computational linguistic, generalizable insight is obtained only when the diversity of reports under investigation reflects the target of the study. To have generalizable insight about corporate

[13] The year of 2014 is the last year of the sample.
[14] Please refer to Appendix B for the complete list of all documents.

communication, instead of focusing on a specific filing such as annual report, we incorporated all types of corporate filings. One of the features of Canadian data is that firms must file their press releases at SEDAR. By choosing our sample among Canadian firms, we made sure that we have included a major source of voluntary disclosure (i.e. Press Release) as well.

3- Two graduate research assistants (coders) separately studied all downloaded files and created a list of communicated topics within the training corpus. We then combined the lists from the coders and double-checked their relevancy. The final list consists of 91 different topics. We call these topics sub-categories. In the literature of computational linguistic these sub-categories are called named entities or classes (El-Haj et al., 2019). Without the classification, the frequency of dictionary words and phrases in the filings only reflect the overall information content of communication. The added categorization feature captures the diversity of topics discussed by each firm and enables us to compare firms' communication practices with that of industry peers. These 91 sub-categories belong to 8 main business areas: financial performance, risk management, investor relations, sustainability, environmental issues, governance mechanisms, labor policies, and strategic plans. We call these main business areas categories.

4- In the next step, the two coders went through the training corpus again and selected words and phrases that to the best of their knowledge contribute to the overall meaning of the specific sub-categories that are discussed in the document. It was important to include phrases as opposed to just single words. For example, count of "insider trading" expresses an entirely different meaning from the count of either "insider" or "trading". If we were to follow the "bag-of-words" methods used in many prior studies, we would have counted two separate words that capture completely a different meaning than "insider trading" as a whole. This problem is discussed by El-Haj, Rayson, Walker, Young, and Simaki (2019).

5- Then, we compared the lists and kept only those words and phrases that were selected by both coders. Working with the overlap of the two lists is called "intercoder reliability" in the literature of contextual analysis. The final list is called dictionary that has 608 informative words and phrases.

The process of in-depth manual extraction of meaningful words and phrases from a random sample of large firms representing all industries and all types of filings has several benefits.

Largest firms in the most recent year provide a representative sample of high-level communication practices. Each industry has its dynamics and therefore, by including different industries, we ensure that the wordlist is inclusive and is unbiased across sample firms. The human selection of informative words and phrases rather than automated methods used in natural language processing assures that the custom dictionary captures the informativeness and is context-relevant. El-Haj, Rayson, Walker, Young, and Simaki (2019) point out that the human judgment is necessary at some point during the content analysis to make sense out of the discourse even in the most sophisticated computational linguistics approaches. Moreover, the use of more sophisticated machine learning techniques or natural language processing methods are justifiable only if they bring in new insights or incrementally add to our understanding of the subject matter, otherwise, non-sophisticated approaches are as effective.

To compute the value of "*Dictionary*" measure we followed these steps:

1- We count instances of the words and phrases from the custom dictionary in each document across all filings for each firm in a specific year

2- The total count across all filings for a firm in a specific year is the value of *Dictionary* for that firm in that year.

To compute the value of "*Communication Index – CI*" measure, we followed these steps:

1- We count instances of words and phrases under each sub-category in each document across all filings for each firm in a specific year.

2- Then for each sub-category, the total count is being compared with the industry median in each year and will get the score of 2 if it is higher than median, 1 if it is lower than median, and 0 if there is no count of any of the words and phrases in that sub-category.

Table 2 provides a simple example to show the distinct value of *CI* over *Dictionary* and length measures. In this example, two firms, A and B, disclose different aspects of their businesses. Their communication practice is measured by the count of informative words and phrases in different sub-categories, namely 1, 2, 3. According to dictionary measure, firm A is considered more transparent as it has 50 informative words, while firm B has only 30. But according to Communication Index, firm B is more transparent because the CI score is higher. Both companies are from the same industry, and therefore investors and stakeholders need a similar set of the required information. Firm A discloses only in one aspect (perhaps the only aspect that is

beneficial), but firm B chooses to disclose in all other aspects that are perceived important in that industry. The importance of aspects is derived by the fact that if no firm disseminates information in regards to a sub-category, say sub-category 1, then the median for that sub-category will be zero, and that aspect will be removed automatically from the computation of CI score for firms in that industry. As it is shown, both communication measures bring their unique perspectives to the study of communication practices.

We would like to emphasize that we do not aim to examine the incremental value of voluntary information compared to mandatory disclosure, and therefore, we do not separate the two. Such separation would not deliver a clear-cut picture of communication practice employed by firms. It is very common for firms to voluntarily disclose in different parts of mandatory filings. In other words, managers exert a huge amount of discretion in preparation of their reports, regardless of the legal nature of them. As Beyer, Cohen, Lys, and Walther (2010) point out, even in studies that try to focus on voluntary disclosures, a mix of voluntary and mandatory information gets evaluated. Also, Holder-Webb, Cohen, Nath, and Wood (2008) show that 30.3% of voluntary governance disclosures are disseminated via mandatory filings and assert that, voluntary and mandatory disclosures are practically intertwined. To properly measure the voluntary and mandatory disclosures, in-depth text analysis is required to divide each filing into voluntary and mandatory portions/paragraphs. As we aim to examine the overall communication culture, such separation is not the focus of our study.

---------- Please insert Table 2 here ----------

The two self-constructed communication measures, *Dictionary* and *CI*, quantify the information content of corporate communication practices. According to Botosan (2004), there are four characteristics for any piece of information that enhances its meaningfulness for economic decision-makers: 1) *Understandability*, 2) *Relevancy*, 3) *Reliability*, and 4) *Comparability*[15]. First, our measures adhere to the *understandability* criterion, as they reflect the communication efforts via more than 100 different types of documents directly filed by companies, ranging from

[15] The above-mentioned four characteristics are derived from the International Accounting Standards Board (IASB) framework for information quality. We need to emphasize that the only way to correctly capture *quality* of communication is to cross-check the communicated information with the realized action, which is not the focus of this paper.

commonly known annual reports to sophisticated underwriting agreements. Second, the measures comply with the *relevancy* criterion as they are constructed using words and phrases that are directly used in documents firms published to address different business areas in their communication with shareholders, creditors, suppliers, customers, employees, unions, communities, and governmental agencies. Such diverse corporate areas are rarely present in disclosure studies where the applied dictionary of words is business-related (Henry, 2008; Henry & Leone, 2016; Li, 2010b). Third, the measures conform to the *reliability* criterion. Reliability and Validity questions are often raised for self-constructed indices. We address the reliability concern with "Inter-Coder Reliability" test (Hackston & Milne, 1996; Hussainey, Schleicher, & Walker, 2003), and the validity concern with "Criterion" and "Construct" validity tests (Hassan & Marston, 2010; Hope, Rotman, Street, & Ms, 2003). To meet the *reliability* criterion, two research assistants separately reviewed the same sample of filings and independently created two lists of informative words and phrases from which the common entries shaped the dictionary. The process of annotation is based on an annotation guide that is created by both assistants as they test their annotation process on a small set of corporate filings. As El-Haj et al. (2019) explain, manual annotation is best performed when multiple coders annotate the same set of text autonomously, then compare their results with each other and resolve any differences, and finally, create an annotation rule before moving on to the larger set of text. We are unaware of any published study where multiple coders annotate the same set of texts independently.

As for "Criterion Validity", we check if there is a significant correlation between our *CI* values and those of existing measures in the literature. The closest measure to the nature of *Dictionary* and *CI* is the length of the document used by Wang and Hussainey (2013). The correlations between *Dictionary* and *Length* are 0.91 and the correlation between *CI* and *Length* is 0.79. We also examine "Construct Validity" to see whether empirical results from our measures are similar to those of already established measures (i.e. *Length*). In almost all models, we find consistent results among *Length, Dictionary,* and *CI.* And finally, fourth, our measures adhere to *comparability* criterion, as they, by construct, capture the inter-temporal differences, as well as deviations from industry norms, making them comparable across firms and years.

2.4.3 Empirical Model

To examine the disciplinary role of corporate communication (H1), we provide both univariate and multivariate analyses of the relationship between deviation from expected transparency and deviation from expected performance. Deviations are calculated as the percentage change of the actual value from expected value. Expected values are simple three-year moving averages. The performance measure is *Tobin's Q*[16]. Univariate analysis is carried through pair-wise Pearson correlation, and multivariate analysis is OLS regression controlling for firm's risk, management quality, capital structure, CEO ownership, firm size, and firm age. As a robustness test, and in order to resolve the endogeneity in the relationship between corporate communication practices and firm value, we use the one-year lagged deviations of Tobin's Q and repeat the analysis.

(1)

$$Corr\ (Tobin'sQ\ Deviation\ _{i,t}\ \&\ Communication\ Deviation\ _{i,t})$$

(2)

$$\begin{aligned} Tobin'sQ\ Deviation\ _{i,t} &= b_0 + b_1\ Communication\ Deviation\ _{i,t} + b_2\ Risk\ Ratio\ _{i,t} \\ &+ b_3\ Mgt\ Quality\ _{i,t} + b_4\ Debt\ Ratio\ _{i,t} + b_5\ Firm\ size\ _{i,t} \\ &+ b_6\ Age\ from\ IPO\ _{i,t} + b_7\ CEO\ Ownership\ _{i,t} + \varepsilon_{i,t} \end{aligned}$$

For the risk measure, we follow Ferreira and Laux (2007) and use *Risk Ratio*, which is the ratio of idiosyncratic volatility to total risk[17]. This ratio makes firm-specific risks comparable among industries by removing their differences related to economy-wide shocks. *Mgt Quality* is the four-year growth rate of operating income, and *Debt Ratio* is the book value of all liabilities scaled by total assets, measured at the beginning of the fiscal year. *Firm Size* is the natural log of the book value of total assets at the beginning of the fiscal year (Hutton, Marcus, & Tehranian, 2009), and *Age from IPO* is the number of years between the IPO year and the year of the firm-year observation, inclusive. In addition, we include *CEO Ownership* which is the ratio of CEO

[16] Tobin's Q is computed as the market value of the firm (market cap plus book value of total assets minus the book value of outstanding equity) divided by book value of the total asset.

[17] Idiosyncratic risk is computed as annualized monthly standard deviation of residuals from market model that are estimated from rolling regressions over periods of two years, and total risk is computed as annualized standard deviation of monthly stock return (adjusted for dividends and splits).

equity holding (of common shares) to total shares outstanding[18]. *CEO ownership* controls for the effect of managerial ownership, founder CEO, and family businesses. Based on Agency Theory, if managers have personal incentives, they are motivated to make decisions in the best interests of shareholders (Beatty & Zajac, 1995; Rediker & Seth, 1995). Prior studies show positive relationships between CEO ownership and firm value, with some indication of the existence of an optimal ownership percentage (Griffith, 1999; Mehran, 1995; Tong, 2008). Also, stock ownership is found to be positively related to CEO's risk-taking behaviour (Carpenter, 2000; DeYoung, Peng, & Yan, 2013; Gande & Kalpathy, 2017; Tan, Zhu, Zeng, & Gao, 2014; Wiseman & Gomez-Mejia, 1998).

To test hypotheses H2 and H3, non-linearity of the effect of communication on firm's value and risk, we include $Communication_{i,t}^{2}$. And to test hypotheses H4 and H5, substitution/complementary relationships between communication and governance attributes, we use interaction terms of *Communication* and *governance variables*. The complementary relationship between different governance mechanisms exists when two costly initiatives are put together, and the combined benefits on a specific outcome surpass the combined costs. However, if combined costs outweigh the benefits, it implies that the two factors are competing for space, and therefore, they are substitutes for each other. In other words, the complementary effect suggests that different governance mechanisms increase shareholder wealth due to their positive synergy, while the substitution effect suggests that adopting multiple governance mechanisms may have wealth diminishing outcomes (Schepker & Oh, 2013; Zajac & Westphal, 1994). The same logic, but in an inverse manner, is true with regards to risk. Basically, the complementary (substitution) effect is when two mechanisms together reduce (increase) the firm's risk.

Outcome variables are value (measured by *Tobin's Q*) and risk (measured by *Risk Ratio*), and the explanatory variables are *Communication* measures and *governance variables*. *Governance variables* are Board Independence, Board Education, Board Expertise, Gender Diversity, Board Meeting Frequency, CEO Equity linked Remuneration, Institutional Ownership,

[18] Equity holding is the number of common shares owned, directly or indirectly, over which control or direction was exercised. This variable, which is hand-collected from firms' Proxy Statements and Information Circulars, excludes the value of stocks and other equities that are held through restricted, performance, or deferred shares units (RSUs, PSUs, DSUs respectively). This exclusion is based on the idea that there is a difference between equity ownership with and without full control. While the latter can motivate better performance and align interests, the former sets the stage for CEO to believe in the future of the business.

and Product Market Competition. *Control variables* are Risk Ratio, Management Quality, Debt Ratio, Firm Size, Firm Age, and CEO Ownership.

To control for endogeneity issues, we use exogenous portions of communication that is not related to any of the governance variables. *Exogenous Communication* is computed in the first stage of 2SLS method. In the first stage, total communication measures are regressed on internal and external governance variables (equation 3):

(3)

$$\begin{aligned} Total\ Communication_{\ i,t} &= b_0 + b_1\ Duality_{\ i,t} + b_2\ Board\ Size_{\ i,t} + b_3\ Board\ Independence_{\ i,t} \\ &+ b_4\ Board\ Education_{\ i,t} + b_5\ Board\ Expertise_{\ i,t} \\ &+ b_6\ Gender\ Diversity_{\ i,t} + b_7\ Meeting\ Frequency_{\ i,t} \\ &+ b_8\ CEO\ Equity\ remuneration_{\ i,t} + b_9\ Institutional\ Ownership_{\ i,t} \\ &+ b_{10}\ HHI_{\ i,t} + \varepsilon_{i,t} \end{aligned}$$

Communication measures are *Length*, *Dictionary* and *CI*. The residual $\varepsilon_{i,t}$ reflects the exogenous portion of the communication that is not under the influence of other governance mechanisms.

In the second stage, we use exogenous portion of the communication and call it *Communication* in the following model:

(4)

$$\begin{aligned} Y_{i,t} = {} & b_0 + b_1\ Communication_{\ i,t} + b_2\ Communication^{\ 2}_{\ i,t} + b_3\ Duality_{\ i,t} \\ & + b_4(Communication_{\ i,t} * Duality_{\ i,t}) + b_5\ Board\ Size_{\ i,t} \\ & + b_6\ (Communication_{\ i,t} * Board\ Size_{i,t}) + b_7\ Board\ Independence_{\ i,t} \\ & + b_8(Communication_{\ i,t} * Board\ Independence_{i,t}) \\ & + b_9\ Board\ Education_{\ i,t} + b_{10}(Communication_{\ i,t} * Board\ Education_{i,t}) \\ & + b_{11}\ Board\ Expertise_{\ i,t} + b_{12}(Communication_{\ i,t} * Board\ Expertise_{i,t}) \\ & + b_{13}\ Gender\ Diversity_{\ i,t} + b_{14}(Communication_{\ i,t} * Gender\ Diversity_{i,t}) \\ & + b_{15}\ Meeting\ Frequency_{\ i,t} \\ & + b_{16}(Communication_{\ i,t} * Meeting\ Frequency_{i,t}) \\ & + b_{17}\ CEO\ Equity\ remuneration_{\ i,t} \\ & + b_{18}(Communication_{\ i,t} * CEO\ Equity\ remuneration_{i,t}) \\ & + b_{19}\ Institutional\ Ownership_{\ i,t} \\ & + b_{20}(Communication_{\ i,t} * Institutional\ Ownership_{i,t}) + b_{21}\ HHI_{\ i,t} \\ & + b_{22}(Communication_{\ i,t} * HHI_{i,t}) + \sum_{b23}^{b30} Control\ Variables_{i,t} + e_{i,t} \end{aligned}$$

$Y_{i,t}$ is *Tobin's Q,* and *Risk Ratio,* in different models. As mentioned above, the *Communication* variable is only the exogenous portion of *Length*, *Dictionary*, and *CI*.

To find the substitution-complementary effect of corporate communication, we select a set of major governance attributes that are not highly correlated with each other. Literature shows that firm's financial performance and risk level is impacted by board attributes such as CEO duality (Boyd, 1995; Donaldson & Davis, 1991; Rechner & Dalton, 1991), board size (Coles, Daniel, & Naveen, 2008; Yermack, 1996), board independence (Baek, Johnson, & Kim, 2009; Donnelly & Mulcahy, 2008; Eng & Mak, 2003), board education (Carpenter & Westphal, 2001; Reeb & Zhao, 2013), board expertise (Kor & Misangyi, 2008; Rajagopalan & Datta, 1996; Tian, Haleblian, & Rajagopalan, 2011), meeting frequency (Conger, J. A., Finegold, D., & Lawler, 1998; Lipton & Lorsch, 1992; Vafeas, 1999), and gender diversification (Carter, Simkins, & Simpson, 2003a; Erhardt, Werbel, & Shrader, 2003; Faccio, Marchica, & Mura, 2016; Huang & Kisgen, 2013). *Duality* is a dummy variable that is equal to one when the CEO is also the chairman of the board. *Board Size* is the total number of board members in each firm-year. *Board Independence* reflects the percentage of Non-Executive Directors (NEDs). *Board Education* is the average of qualifications for NEDs, which is the sum of the number of qualifications of NEDs divided by board size for each firm-year. *Board Expertise* is the percentage of "expert" NEDs on the board, where "expert" is a director who has served on the board of more than one company in that specific sector until that year. *Gender Diversification (GenderDivers)* is the proportion of women on the board. *Meeting Frequency (MeetFreq)* is the number of meetings of the board of directors, including committee meetings, in each firm-year.

CEO Equity Remuneration Ratio (EquityRemun) is equity-linked compensation, which is the ratio of the value of stocks and options granted to the CEO, divided by the total compensation[19]. Literature shows that the equity-based portion of compensation incentivizes top managers to make value-maximizing decisions (Gabaix & Landier, 2008; Hall, Hutchinson, & Michaelas, 2004; Jensen & Murphy, 1990). While these studies provide evidence in support of the alignment of

[19] Total compensation includes salary, bonus, shares , option, long-term incentive plans, pension value, and all other perks (such as personal use of company's aircraft, travel, and tax gross-ups). This information is hand-collected from Proxy Statements and Information Circulars. In cases where the values of stocks are not reported in the proxy statement, we search for them in FactSet dataset, and in cases where the values of options awarded are not reported in the proxy, we estimate their intrinsic value using the Black Scholes model. This method is one of the accepted and primarily used methods with which firms report and file the value of their options (Seward & Walsh, 1996). In cases where there is no information on CEO, Executive President is considered instead.

interests between management and shareholders, others point to the increase in risk-taking behaviour with such compensation schemes (DeYoung et al., 2013; Gande & Kalpathy, 2017; Tan et al., 2014).

Institutional ownership (InstOwn), or the percentage of outstanding shares held by institutions, has also been the subject of extensive research in regard to firm value and risk[20]. For example, McConnell and Servaes (1990) find a positive association between Tobin's Q and the fraction of shares owned by institutional investors, while Wei, Xie, and Zhang (2005) find such relationship to be convex. Regarding the impact of institutional investors on the firm's risk, Rubin and Smith (2009) show a positive relationship between the fraction of institutional investors and stock volatility, especially for dividend-paying firms.

HHI reflects product market competition based on Herfindahl Hirschman Index, computed using SIC 4-digit codes in Compustat North American Universe. The empirical examination of the inter-relation of product market competition, firm disclosure, and firm value and risk is mixed and narrow. Theoretical papers predict that firms in competitive environments tend to withhold information to preserve their competitive advantage (Clinch & Verrecchia, 1997; Janssen & Roy, 2015; Teoh & Hwang, 1991); Whereas empirical studies such as Harris (1998) find that even firms in low-competitive environments tend to withhold information to preserve their abnormal high margins. Interestingly, empirical studies on the relationship between product market competition and firm value and risk show a negative association in both relations (Beiner, Schmid, & Wanzenried, 2011; Gaspar & Massa, 2006).

Variable definitions and sources are reported in Table 3.

---------- Please insert Table 3 about here ----------

2.4.4 Sample Selection and Description

Our target sample is the collection of all documents and reports that are published and filed by Canadian firms listed on the S&P/TSX Composite Index from 1999 to the end of 2014. This body of documents includes approximately 600,000 filings by 520 firms at SEDAR. The total market capitalization of these firms in 2014 represents 70% of the total market capitalization on

[20] (See Cuervo, 2002; McConnell & Servaes, 1995; Rubin & Smith, 2009; Shleifer & Vishny, 1986; Villalonga & Amit, 2006; Wei, Xie, & Zhang, 2005).

the Toronto Stock Exchange (TSX). Accessing public filings through SEDAR website requires a manual process of downloading each document for each firm in each year. Therefore, because of time constraints, we restrict the sample to a quarter of the target sample. We randomly selected a sample of 148 firms and downloaded all their filings which consists of 150,000 documents[21] (of more than 100 different types). Due to missing data on some financial and non-financial variables, the final sample reduced to 96 firms, which translates into 1123 firm-year observations. Table 4 summarizes the steps leading to our final sample of firm-year observations.

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Fundamental data is collected from COMPUSTAT, market data from CRSP, ownership structure data from Thomson Reuters and FactSet (13-f filings), and corporate governance data from BoardEx. CEO Ownership, CEO equity remuneration and meeting frequencies are hand-collected from Proxy Statements and Management Information Circulars. Due to the lack of information on some variables, the final sample reduced to 96 Canadian firms listed on the TSX/S&P Composite Index from 1999-2014.

Following Botosan (1997), we exclude the years in which a major event happened to the company which controls for justified spikes in communication[22]. Major events in this study include corporate takeovers, corporate divestitures, major lawsuits, financial distress, and bankruptcy. Corporate takeover consists of acquisition transactions where the acquired firm is public. We do not include partial asset acquisitions as major events since they are more common and would not spark a significant change in corporate communication levels. Corporate divestitures include corporate spinoffs, sell-off and carve-outs. Lawsuits are considered major events if the settlement amount is equal or higher than two percent of the company's total sales in that year. Financial distress as a major event occurs when the company receives a court's protection order against its creditors. This data is hand-collected from annual reports, management analysis and discussions, and proxy circulars.

[21] For the complete list of all document types used in this study, please refer to Appendix B.
[22] Another method to control for major events is to include a dummy variable in the models for the event years. However, this method does not remove the issue of decline in communication level after the event, which can bias the results.

Table 5, Panel A, presents descriptive statistics of our dependent and explanatory variables. Our sample represents a diverse group of firms regarding communication policies, performance, size, age, capital structure, governance quality, and ownership structure. For example, *CI* ranges from 23 to 83, *Risk ratio* from 28 up to 90 percent, institutional owners from 0 to 100 percent, and age from 5 to 139 years. Regarding governance attributes, such as *Board Size*, *Education*, *Expertise,* and Meetings Frequency, firms are approximately normally distributed over the spectrum. Interestingly, we have firms in our sample with zero to 100 percent CEO equity compensation. Panel B shows the time distribution of firm-year observations, where we note that firm communication has increased substantially over the years. The sum of *Dictionary* word count in 2014 is 3.75 times more than that of 1999 after adjusting for the number of firms. This significant increase is due to two forces: 1) more regulated disclosure over the years, and 2) an increase in demand for transparency and voluntary disclosure of information.

--- Please insert Table 5 about here ---

Table 6 shows the level of communication efforts by a representative firm, separating press releases (purely voluntary) from all other filings. The representative firm is the sample's median firm by size in 2014. Sum of the *Length*, sum of the *Dictionary* values, as well as average values of *Length* and *Dictionary* per document for each year, are depicted. The mean annual numbers of mandatory and voluntary reports filed by this firm are 30 and 43, respectively. The distribution shows that the number of mandatory reports is relatively constant while there is a reduction in the number of press releases over the years. However, the average length of the mandatory report has increased four-fold over this time, from 2,638 to 10,926 words. Furthermore, the level of overall disclosure, as measured by the number of our dictionary words used in the reports, have gone up 7 folds, from 63 to 428 per report. Voluntary disclosure has also increased over time but by a much smaller percentage (3 folds, from 11 to 30). The data in Table 6 shows that both the amount and the information content of disclosure has increased substantially over time, and much of this increased communication is channeled through mandatory filings.

---- Please insert Table 6 about here ---

2.5 Empirical Results

Our analysis begins with the pairwise correlation of all continuous variables. The overall findings in Table 6 show that there is no major multicollinearity between variables. There are positive inter-relations between communication measures and board independence, the board size, board education, gender diversity, meeting frequency, CEO equity-linked compensation, and institutional ownership, while communication is negatively associated with CEO ownership. Such pairwise correlations illustrate the natural relationship among all types of governance mechanisms. This is the main reason we expect to see substitution-complimentary effect among them. The magnitude of correlations and variance inflation factors (all VIFs being lower than 2.5) do not warrant concerns in regard to multicollinearity among variables.

--- Please insert Table 7 about here ---

Table 8 provides univariate results to show the pair-wise correlation between the sign of the deviations from the expected level of transparency (measured by *Length*, *Dictionary* and *CI*) and the sign of the deviations from the expected level of performance (measured by *Tobin's Q*). The deviations are in percentages, and the expected levels at t = 0 are set according to the average of the actual levels of the variable over the last three years t = (-3, -1). Significant and positive correlation coefficients for *Tobin's Q* and all the communication measures demonstrate a co-movement between deviation in expected transparency and deviation in expected performance. This evidence shows that when there is a negative deviation from the expected level of transparency, the market reacts negatively, and we see lower *Tobin's Q* values than the expected ones. The findings illustrate the importance of consistency in corporate communication practices for top managers as it affects the market value of their company. The sensitivity of the firm's market value to the unexpected fluctuations in communication adds to the disciplinary role of long-run communication level. These findings imply that when managers increase the level of communication, they set a new expected level of transparency which they need to maintain, or otherwise suffer significant negative consequences. The force of the existing level of communication that shapes top management's decisions illustrates its governing power.

--- Please insert Table 8 about here ---

Following the findings in Table 8, we expand the analyses in Table 9 to incorporate relevant control variables in a multivariate setting. We use the OLS regression on both the sign and the level of percentage deviation from the expected transparency as explanatory variables for the changes in *Tobin's Q*. Table 9 includes six models where Models 1, 2, and 3 only use the sign of the percentage deviation (similar to Table 8), while Models 4, 5, and 6 consider both the amount and the sign of the percentage deviations. The results support H1 as they consistently show a positive and significant relationship between deviations from expected transparency and deviations from expected firm value, which reinforces our claim of the disciplining role of long-run corporate communication. Worthy to note that, compared to their counterpart, such a relationship is stronger when the amount of deviation is added to the analysis (Models 4, 5, and 6), and when *Dictionary* and *CI* are the communication measures (Models 5 and 6). The strongest association occurs in Model 6 when the firm deviates from the expected level of industry-adjusted communication measure (that is CI). If such deviation is positive, the firm receives a significant boost in its market value, and if negative, it gets a severe punishment from the market. The negative consequence of transparency reduction forces managers to at least maintain the existing communication practices. We refer to the force of the existing communication level as a new governance mechanism. To address the possibility of endogeneity problem, we re-ran the analysis with one year lag of deviations from expected communications and observe the similar results.

--- Please insert Table 9 about here ---

In the following analyses, we test the non-linearity hypotheses (H2 and H3) as well as examining the substitution-complementary effects (*H4 and H5*).

The non-linearity is put to test by rejection of linearity. That is, by inclusion of squared terms of communication measures, we are trying to find evidence that the relationship is, in fact, not linear. We pair communication with other governance mechanisms in an interactive format to study the combined impact of communication and governance variables on the firm's value and risk ratio. The main evidence of substitution (complementary) effect is when the coefficient of the interaction variable is negative and significant (positive and significant) for firm's value. As for

the firm's risk, the main evidence of substitution (complementary) effect is when the coefficient of the interaction variable is positive and significant (negative and significant).

Tables 10 to 15 report the results from multivariate fixed-effect regression analyses on measures of value (*Tobin's Q*) and risk (*Risk Ratio*). In all these tables, Models 1 to 10 includes one governance mechanism at a time, while model 11 incorporates all of them together to control for the inter-relationships among different mechanisms. Tables 10, 11, and 12 have *Tobin's Q* as dependent variable and *Length, Dictionary, and CI* as communication measures, respectively. Tables 13, 14, and 15 have *Risk Ratio* as the dependent variable and *Length, Dictionary, and CI* as the communication measures, respectively. We would reiterate that to control for any endogeneity issues, we use 2SLS estimation and incorporate only the exogenous portion of communication in all models. Moreover, models control for industry and year fixed effects, and standard errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors.

Overall, results in Tables 10, 11, and 12 show significant and positive (negative) relationships between communication (communication squared) and *Tobin's Q,* which is the evidence of the inverted U-shaped relationship and supports the non-linearity hypothesis H2. Using *Length* as the communication measure, Table 10 provides the evidence of substitution relationship with CEO duality, board independence, board education and gender diversity on the board, which supports H2. Table 11, where *Dictionary* is the communication variable, illustrates similar findings, while Table 12, in which *CI* is the main communication factor, only provides results for CEO duality. These findings imply that in general, if the existing governance bundle includes more independence, educated, and women board members, increasing the communication practices might be more costly than beneficial from the investor's point of view. Interestingly, CEO duality also shows the same substitution relationship with communication, which reflects the benefits of duality. This finding is consistent with the findings of Yang and Zhao (2014) that show the positive effects of CEO duality on firm performance by reducing information costs and increasing the speed of decision-making in corporations. With regards to complementary relationships, HHI is significantly associated with communication variables *Length* and *Dictionary*, and institutional ownership complements communication when *CI* is the relative measure. These results imply that when the product market is less competitive or when there is high institutional ownership, adding to the level of communication positively impacts firm value.

--- Please insert Tables 10, 11, 12 about here ---

Tables 13, 14, and 15 focus on the *Risk Ratio* as the dependent variable with *Length*, *Dictionary* and *CI* as the communication measure, respectively. Supporting H3, the non-linear association between corporate communication and risk is evident from the results of Models 3 and 11 in Table 13, where the coefficient of *Length (length^2)* is significantly negative (positive). A similar and stronger relationship is shown in Tables 14 and 15, which support our hypothesis of non-linearity with regards to the firm's risk (H3). Such a U-shaped relationship suggests that increasing information dissemination to the public reduces the firm's risk up to a point, after which the additional information is considered as noise that adds to the risk level. Supporting hypothesis H5, the results in Tables 13, 14, and 15 show the complementary relationship between communication and product market competition and substitution relationship between communication and board size, independence, education, expertise, meeting frequency, institutional ownership. The interpretation of the substitution-complementary relationship with regards to the firm's risk is different from the value. For example, the complementary relationship between product market competition and communication in Tables 13 and 14 suggests that in industries with a low competition where companies often have low transparency, the extra effort in communication lowers the ambiguity and risk of the company. Building on the basic definition of complementary relationships, these findings imply that there is more need for communication in situations where there is more uncertainty around a firm (which is associated with low product market competition). On the other hand, the nature of substitution relationships suggests that in firms with certain board and governance configurations, additional communication has more costs than benefits with respect to the firm's risk profile. The substitution findings on board independence and board education in Tables 13, 14, and 15 are inherently similar to those in Tables 10, 11, and 12, where Tobin's Q is the dependent variable. Our results also support substitution relationships between communication and board size, board expertise, board meeting frequency, and institutional ownership.

--- Please insert Tables 13, 14, 15 about here ---

In summary, the findings support the disciplinary role of communication culture (i.e. the expected transparency) and that the impact of this new governance mechanism on outputs such as firms' value and risk is non-linear and depends on the configuration of other governance mechanisms. The nonlinear relationship between communication and market-based measures of performance and risk, and the substitution-complementary relationships between communication and other governance mechanisms reflects the notion of 'equifinality' where firms have strategic flexibility in choosing their governance configurations (Gresov & Drazin, 1997; Oh et al., 2018). . These findings point to the necessity of dynamic analysis of costs and benefits of communication in relation to other governance measures. The implication of these findings for practitioners is that the optimum level of involvement in communication practices depends on the long-run level of transparency and the specific configuration of firms' bundle of governance mechanisms.

2.6 Summary and Conclusion

We examine the role of corporate communication as a stand-alone governance mechanism and investigate its impact on firms' market based outcomes such as value and risk. This study is the first to examine the independent role of communication as a governance mechanism that disciplines managers and, therefore, reduces agency issues. We analyze the content of more than 150,000 mandatory and voluntary documents, consisting of press releases and more than 100 different types of filings published by 96 Canadian firms listed on the TSX/S&P Composite Index from 1999-2014. This research has multiple contributions to the literature of communication and corporate governance.

First, it adds to our understanding of the role of transparency as a self-governing mechanism by showing the significant relationship between negative deviation from the expected level of transparency and the reduction in Tobin's Q. Second, it adds to our understanding of the importance of cost-benefit analysis in determining the optimum point of involvement in communication practices, by providing evidence that corporate communication has an inverted U-shaped association with Tobin's Q and a U-shaped relationship with risk. This curvilinear connection implies that improving communication adds to the firm's value (and reduces the risk) but at a declining rate. Third, it provides practical implications that the optimum level of involvement in communication practices depends on the long-run level of transparency and the specific configuration of firms' bundle of governance mechanisms. The substitution-

complementary effect is based on the joint impact of communication and another governance mechanism on the firm's value (measured by Tobin's Q) and risk profile (measured by the ratio of idiosyncratic risk to total volatility). Overall, we find significant substitution or complementary relationship for board independence, board education, board size, board expertise, board meeting frequency, board gender diversity, CEO duality, institutional ownership, and product market competition. Forth, we introduce two new measures of communication that can quantify the information content of communication (*Dictionary*) as well as the diversity of communicated topics compared to the industry median (*CI*). These measures are direct, reliable, and valid. Fifth, the sixteen-year sample period captures the firms' communication culture that is free from short-term biases. We could not find any other study in the literature with a comparable time-frame. In addition, by removing firm-year observations in which major events took place, we provide a clear picture that is not under the influence of temporary discussions and public relations activities. Sixth, we provide a large-scale study in the Canadian context, which is different from its US or European counterparts with regards to disclosure regulations and common corporate communication practices. These findings point to the necessity of dynamic analysis of costs and benefits of communication in relation to other governance measures. The implication of these findings for practitioners is that the optimum level of involvement in communication practices depends on the long-run level of transparency and the specific configuration of firms' bundle of governance mechanisms. Determination of the optimal level of corporate communication regarding firm value and risk can be the focus of future studies. In addition, since our sample is restricted to Canadian firms, future studies can adapt our framework to conduct a cross-country analysis to compare the governing power of corporate communication in environments with different institutional settings and stakeholder protections. Finally, the benefits and costs of self-constructed direct communication measures can be further examined and tested against indirect measures of transparency, such as analyst coverage and market liquidity.

Chapter 3: The Importance of Investor Relation and Stakeholder Communication (IRSC) – Evidence from Corporate Financing

3.1 Introduction and Literature Review

In the previous essay we learnt that temporary deviations from long-run level of transparency (communication culture) is perceived as market manipulation and if there is no specific reason like a major event, market will react negatively. Here in the second essay, we are trying to understand "why do firms deviate from that communication culture?

We also learnt, from the previous chapter, that there is an optimum level of communication that is determined based on cost-benefit analysis of information dissemination to stakeholders and the specific configurations of firm's bundle of governance mechanisms. This finding has two implications: 1) firms engage in communication practices when marginal benefits of information dissemination overcome the marginal costs, and 2) the level of firms' involvement in communication practices depends on the status of transparency by which a firm is characterized.

These two implications provide an opportunity to investigate the importance of Investor Relation and Stakeholder Communication (IRSC) activities. IRSC activities enhance company's profile, investor familiarity, analyst following, and stock liquidity (Agarwal, Taffler, Bellotti, & Nash, 2016; Brennan & Tamarowski, 2000; Chang, D'Anna, Watson, & Wee, 2008), which result in lower information asymmetry and lower cost of capital. We hypothesize and test that firms engage in IRSC activities when marginal benefits of lowering information asymmetry is more than marginal costs, otherwise they tend to stick with previous levels of communication, and hence transparency. The first implication – cost-benefit comparison – requires measurement of the cost of information asymmetry. The second implication – status of transparency – suggests that the benefits of information symmetry vary for firms at different levels of transparency, and therefore the importance of IRSC activities depends on the general level of transparency in the firms.

To measure the cost of information asymmetry we use the cost of external financing. External financing is a costly but frequent decision in all types of firms. We know, from practice and research, that cost of information asymmetry is part of the cost of financing. This linkage provides an interesting research setting to investigate the importance of IRSC, because if one of the goals of corporate finance is to reduce the cost of financing, any attempt in lowering the cost of information asymmetry should be valuable, and therefore, we should be able to capture the

benefits of IRSC by tracking the changes in the cost of financing. The perception of the market about a firm, significantly influences the costs of financing, and in the presence of information asymmetry, these costs rise. A firm's cost of capital is not only determined by the general state of demand and supply in capital markets, but more importantly, by the riskiness of the borrowers (Cremers, Nair, & Wei, 2004; John & Senbet, 1998; Shleifer & Vishny, 1997; Stiglitz & Weiss, 1981). Focusing on the information risk and its impact on required premiums, Merton (1987) concludes that voluntary disclosure reduces information risk and, as a result, the cost of capital. As Healy and Palepu (2001) explain, one of the motives for firms' voluntary disclosure is the anticipation of making capital market transactions. Our goal here is to use the cost of financing as a proxy for the cost of information asymmetry. By focusing on the changes in the cost of new equity and debt issues, we are trying to better understand the cost-benefit analysis that firms go through, when they decide to deviate from that long-run level of communication.

To investigate the importance of IRSC activities we use the second implication mentioned above and hypothesize that "IRSC activities have higher impact on the cost of financing in low-transparent compared to high-transparent firms". We know from prior studies that firms with high information asymmetry have difficulty securing external financing, and when they do, it is at a higher premium compared to firms with lower information asymmetry (Krishnaswami, Spindt, & Subramaniam, 1999). Empirical studies show a significant negative relationship between the cost of equity capital and analyst coverage, which implies the important effect of firm's transparency on cost of equity financing (He, Lepone, & Leung, 2013). Fu, Kraft, and Zhang (2012), and He, Lepone, and Leung (2013) provide evidence that the type of firm in terms of transparency alters the association between investor relation activities and cost of financing.

The best way to test the importance of IRSC is in situations where the sensitivity of information is higher. It is not a stretch to assume that the importance of communication is higher in places where the need for information is higher. One of these situations is when a firm is deciding on raising capital by issuing equity as oppose to issuing debt. According to the Pecking Order Theory, debt is a cheaper source of external financing and it should be preferred over equity. Mangers act in the best interests of current shareholders and issue equity when it is overvalued. (Myers, 1984; Myers & Majluf, 1984). According to this theory, the market automatically discount the value to immune itself from this overvaluation, and therefore firms need more transparency around the equity issues in order to justify their choice of financing and to reduce the expected

premiums (Dierkens, 1991). We use this expected link and hypothesize that "IRSC activities have a higher impact on the cost of equity issues compared to the cost of debt issues".

In general, IRSC refers to management's strategic decisions regarding the level of involvement in communication initiatives with stakeholders. Communication takes place either through one-way channels (such as annual reports, press release, and presentation slides on company's website) or through two-way channels (such as conference calls, investor meetings, and industry gatherings). Each of these activities serves a purpose and targets a group of investors and stakeholders. These activities can directly (without the influence of a third-party opinion) reflect a firm's transparency efforts and lower information gap between insiders and outsiders of the firm. Two-way channels provide interactive settings for communication and feature unexpected question and answer. Due to the unexpected nature of questions, the degree of managerial involvement in two-way IRSC activities illustrate a more complete picture of managers' commitment to transparency.

To conduct an in-depth analysis of the content of such meetings, we examine the proportion of questions and answers (Q&A), the average length of an answer for each question, and the frequency of presentation slides in the meetings. IRSC measures are calculated for the immediate six months prior to the issue date (i.e. -129 to -3 days, called *Period -1*), as well as their percentage change from the earlier six months period (i.e. -260 to -130 days, called *Period -2*). To robustly capture the cost of information asymmetry, we employ two measures for the cost of debt and five measures for the cost of equity. Each proxy reflects the cost from a different viewpoint, such as accounting versus financial market or short-term versus long-term points of view. Our alternative proxies for the level of firm's state of transparency at the time of the issue are based on the industry-year median bid-ask spread and analyst coverage[23].

Using a sample of 1,190 firms listed on the S&P1500 Index from 1999 to 2018, we show that, in general, IRSC activities significantly affect the cost of financing. In general, we find that, higher frequencies of Press Release are cross-sectionally associated with higher costs of information asymmetry, while firms' temporary engagement in this activity reduce those costs. While, higher frequencies of Meetings are cross-sectionally associated with lower costs of information asymmetry, we could not find evidence for firms' temporary engagement in this activity. This could be due to the lack of change in the number of meetings over a 6-month period.

[23] For variable definitions, please refer to Table 17.

We find that higher levels of Q&A to Length of meetings are cross-sectionally associated with higher costs of information asymmetry, if they are driven by higher numbers of questions, rather than lengthier answers. And finally, higher frequencies as well as percentage changes of Slides are associated with higher costs of information asymmetry, perhaps because the time spent on presenting the Slides is not allocated to holding interactive Q&A sessions in the meetings.

We conclude that IRSC activities are effective mediums of communication, and firms engage in IRSC activities to change the state of information asymmetry. Firms engagement in IRSC activities depends on their analyses of costs and benefits. Benefits of engagement in IRSC activities are larger in situations where the need for transparency is higher. In cases, benefits overcome the costs, managers deviate from long-term norms of transparency in their firms. We call these long-term norms, communication cultures.

This study extends our understandings of the impact of corporate communication and investor relation activities on the cost of information asymmetry and the choice of external financing by large-scale empirical analysis of a wide range of communication methods, the intermediary role of transparency and firm's choice of capital. We provide a deeper look into the quality of the meetings by considering the existence of presentation slides, the proportion of Q&A section to the total length of the *Event* and the average length of each answer in the Q&A section of the meetings. Furthermore, we could not find any published work that studies the impact of investor relations and corporate communications on the cost of both financing options in a comparative manner. We believe that examining the two external financing options in a system of simultaneous equations provides a better reflection of what managers face when they are about to issue securities and make funding decisions. As IRSC activities aim to reduce information asymmetry between insiders and the participants in debt or equity markets, it is only logical to consider the firm's existing level if information asymmetry when we examine the significance of IRSC efforts on cost of financing.

The remainder of Chapter 3 is organized as follows: Section 3.2 develops the hypotheses, Section 3.3 includes sample selection and variable measurement details, Section 3.4 explains the methodology, Section 3.5 explains the results, and Section 3.6 delivers concluding remarks.

3.2 Hypothesis Development

3.2.1. IRSC Activities and Transparency

The cost of financing has significant effects on the prospects of the firm by allowing or preventing firms to access funds and invest in growth opportunities. Studies in the field of capital structure and cost of capital use models based on four main influential factors: 1) Agency Costs, which refers to the conflicts of interest between insiders and outsiders of the firm (i.e. between managers and shareholders, and between shareholders and creditors), 2) Information Asymmetry, which is related to the difference of information owned by insiders compared to investors as well as the information gap among different types of investors, 3) Corporate control, which focuses on the short-term changes in capital structure in the context of takeovers, and 4) Product/Input market interactions, which refers to the role of product characteristics and industry competition in the capital structure decisions (M. Harris & Raviv, 1991; Ravi & Hong, 2014).

Information asymmetry is of particular importance in the context of external financing costs. A firm's cost of capital is not only determined by the general state of demand/supply in capital markets, but more importantly, by the riskiness of the borrowers (Cremers et al., 2004; John & Senbet, 1998; Shleifer & Vishny, 1997; Stiglitz & Weiss, 1981). A number of studies show that a lower level of information asymmetry results in less perceived risk which manifests itself in more informative stock prices (Gelb & Zarowin, 2002; Lundholm & Myers, 2002), lower bid-ask spreads (Heflin, Shaw, & Wild, 2005; Welker, 1995), less analyst forecast dispersion (Hope et al., 2003; M. Lang & Lundholm, 1993), lower cost of equity (Botosan, 1997), and lower cost of debt capital (Sengupta, 1998). There are different views on the relationship between corporate disclosure and information asymmetry, and the impact of such relationship on cost of financing. One strand of research focuses on the information asymmetry between different groups of investors (i.e. informed versus uninformed) and imply that more disclosure can actually increase the information asymmetry among these investor groups and eventually, add to the cost of capital (He et al., 2013; Huson & MacKinnon, 2003; Ravi & Hong, 2014). Another group focuses on the information gap between managers and the market and claim that the public dissemination of information to a larger investor population decreases the cost of financing for firms (Amihud & Mendelson, 1989; Lambert, Leuz, & Verrecchia, 2011; Lambert, Leuz, & Verrecchia, 2007; Merton, 1987). Lack of proper information dissemination creates the "lemon" problem where the capital market rationally undervalues high-quality firms and overvalues low-quality ones (Healy

& Palepu, 2001). Firms with positive prospects and justified projects to finance, significantly benefit from higher information transfer (Leland, Hayne E. and Pyle, 1977). A company with a reputable communication strategy is perceived to be trustworthy and credible which, according to the *Transaction Cost Economics,* results in lower contracting and monitoring costs, and therefore, lower external financing costs (Dollinger, Golden, & Saxton, 1997; Gabbioneta, Ravasi, & Mazzola, 2007).

The perception of the market about a corporation significantly influences the costs of debt or equity financing, and in the presence of higher information asymmetry, these costs rise. In other words, the level of corporate transparency plays an intermediary role in the relationship between corporate voluntary disclosure and cost of capital. We know from prior studies that firms with high information asymmetry have difficulty securing external financing (Krishnaswami et al., 1999), and when they do, it is at a higher premium compared to firms with lower information asymmetry. Higher quality of information is associated with a lower cost of equity capital, especially for firms that have low analyst coverage or higher information asymmetry (Berger & Udell, 2006; Mande, Park, & Son, 2012; Morck, Yeung, & Yu, 2000). In addition, Brown and Hillegeist (2007) show that the negative relationship between disclosure quality and information asymmetry is more pronounced in firms with lower transparency levels. Their results are mainly driven by firms that have a higher level of information asymmetry which suggests that low transparent firms are more sensitive to changes in information dissemination with regards to their financing costs. In another study, He, Lepone, and Leung (2013) use a sample of companies listed on the S&P/ASX 200 Index and show a significant negative relationship between the cost of equity capital and analyst coverage, which implies the important effect of firm transparency on cost of equity financing. Derrien, Kecskés, and Mansi (2016) focus on the cost of debt financing and find that an exogenous increase in information asymmetry, measured by loss of an analyst, is associated with a higher cost of debt financing by 25 basis points.

Part of corporate communication is required by law and the rest is at the discretion of management. In order to increase transparency and lower information asymmetry, firms can enhance their efforts via different voluntary investor relations and communication channels. In the context of external financing, higher levels of voluntary disclosure lower the associated costs of raised capital. Focusing on the information risk and its impact on investors' required premium, Merton (1987) concludes that voluntary disclosure reduces information risk and, as a result, the

cost of capital. Moreover, Healy and Palepu (2001) explain that one of the motives for firms' voluntary disclosure is the anticipation of making capital market transactions, such as external financing. In a study by Brown, Hillegeist, and Lo (2004b) on 5,754 firms and 31,652 conference calls, having a habit of conducting conference calls is associated with lower information asymmetry measured by the probability of informed trading. Fu, Kraft, and Zhang (2012) also show that a higher frequency of interim reporting is negatively associated with the firm's information asymmetry and cost of equity capital. In this study, the collection of corporate initiatives such as press releases, conference calls, and other meetings with analysts, shareholders or industry peers is called "Investor Relations and Stakeholder Communication (IRSC)" practices. Overall, we expect that low-transparent firms benefit from communication and hypothesize that the impact of IRSC activities on lowering the cost of financing is more pronounced in firms with higher levels of information asymmetry (i.e. low-transparency firms).

H1. IRSC activities have higher impacts on the cost of financing in low-transparent firms compared to high-transparent firms.

3.2.2. IRSC Activities and Type of Financing (Equity vs. Debt)

The value of firms' effort in resolving informational gap between insiders and outsiders is higher in situations where the need for such information symmetry is higher. One of the highest informationally sensitive times during the life cycle of firms is when they are deciding on capital structure and more specifically on the external financing.

According to the Pecking Order Theory, debt, compared to equity, is the cheaper external financing option and that managers act in the best interest of the existing shareholders, and therefore they decide to issue equity only when it is over-valued (Myers, 1984; Myers & Majluf, 1984). As a result, equity financing conveys a negative signal to the investors and is subject to discounts (higher premiums) from investors. From the perspective of a quality firm, equity issuance needs more explanation to overturn the negative signal to positive. In other words, equity financing is more information-sensitive compared to debt financing, and companies can benefit from the reduction of information asymmetry at the time of equity financing more than the time of debt financing (Chang, Dasgupta, & Hilary, 2006; Fulghieri & Lukin, 2001; Patro, 2008). Dierkens (1991) explains that the significance and importance of transparency at the time of new

equity issues are so much that firms try to time these issues close to the time of an information dissemination events such as quarterly earnings announcements.

The simultaneous comparison of debt and equity issuance is important because these are two very different forms of raising capital with their own specific consequences for these three groups of stakeholders: managers, shareholders, and creditors. The frequency and the amount of debt and equity issues impact the conflicts of interest between managers and shareholders as well as the conflicts between shareholders and debt holders. IRSC can change the dynamics between these three groups by changing the status of informational gap between them. We hypothesize that **H2**. IRSC activities have a larger benefit at the time of equity financing compared to debt financing.

3.2.3 IRSC Activities and Transparency and Type of Financing (The Severe Case)

Here we combine H1 and H2 and investigate the value of IRSC in reducing information asymmetry in the situation where the need for transparency is the highest. We call this situation the severe case in which a low transparent firm issues equity. The expectation is that the marginal benefit of engagement in IRSC activities easily overcome the marginal costs of information dissemination and therefore the lowering effect of IRSC activities on cost of financing becomes strongly significant. Therefore hypothesis 3 reads:

H3. IRSC activities have a larger benefit at the time of equity financing compared to debt financing for low transparent firms.

3.3 Methodology

3.3.1. IRSC Measures

This study employs different measures to represent IRSC activities during the six months prior to the new issue date (i.e. -129 to -3 days, called *Period -1*): *Press*, *Event*, *QAtoLength, Answer*, and *Slide*. Each of these activities captures a different aspect of the firm's efforts in increasing public disclosure and decreasing information asymmetry. *Press* is the total number of all press releases originated directly by the firm. This is the most common communication method, which is very time and cost-efficient and reaches all types of investors. Although informative, the press release is a one-way communication method that is originated from inside the firm addressing the outside world.

Event is the frequency of all types of meetings and calls that a firm holds with different stakeholders, including Analyst Meetings, Earnings Call, Earnings Release, Guidance Call, Sales Call, Shareholder Meeting, and Special Situation Meetings. Prior studies show the significant information content of conference calls in reducing information asymmetry and their value-relevancy for the investors (Bowen, Davis, & Matsumoto, 2002; Brown, Hillegeist, & Lo, 2004; Frankel, Johnson, & Skinner, 1999; Kimbrough, 2005; Tasker, 1998). The two-way communication and the possibility of detailed questions and answers make these events informative, but time-consuming and costly for the firm. These events are more sophisticated than press releases and provide a chance for analysts and investors to have a conversation with the firm's insiders about the unclear topics.

Every conference call starts with a presentation by the firm's top executives on the latest important events as well as the future plans. In some cases, companies go a step further and add a slide to their presentation. In the second part of the call, there is an opportunity for analysts and investors to ask their questions directly from the company executives, which is the unique feature of these meetings (Q&A portion). *QAtoLength* is the length (word count) of the Q&A portion to the total length (word count) of each *Event*. Since the question and answer part of the events is the time for analysts and investors to ask their questions, it is beneficial to evaluate firms' transparency by finding how much of the whole event is spent on Q&A. *Answer* is the average length (word count) of an answer in the Q&A portion of the events. This measure shows another aspect of firm transparency effort by showing how much information, on average, is provided by the managers for each question. Considering these two variables (Q&A to length and the average length of answers) together reveals the quality of transparency and confusion around an event. For example, if *QAtoLength* is high and *Answer* is low, it means analysts had so many questions to which answers were relatively short. This could be a negative signal that the situation is ambiguous, triggering lots of questions and unsatisfactory answers. *Slide* is the number of presentation slides, which is an extra communication effort from the managers to provide a more user-friendly outlet of organized information.

In addition, we include the percentage change in IRSC variables from *Period -2* to *Period -1*. The percentage change of IRSC for each firm is calculated as below:

(5)

$$IRSC_{\%change,i} = \frac{IRSC_{Period-1,i} - IRSC_{Period-2,i}}{IRSC_{Period-1,i}}$$

This measure is used to capture the impact of the change in corporate communication behaviour prior to a new issue on the cost of financing.

3.3.2. Cost of Financing Measures

The cost of financing is the cost of equity and cost of debt in different models. The reason we are using alternative measures for the cost of financing is two folds: 1) it adds to the robustness of our findings, 2) we are using these measures as proxies for the cost of information asymmetry. Each of these measures have their own properties and address a specific dimension in the structure of required return.

There are different approaches to estimate the cost of equity capital. A group of methods including Gordon's dividend discount model and the price-earnings growth (PEG) ratio computes the cost of equity capital as the internal rate of return that equates the future cash flows to the current market price of the firm (Easton, 2004; Gordon & Gordon, 1997). Another group, such as the Capital Asset Pricing Model (CAPM) and Fama and French (1995) three-factor model, use priced risk factors to calculate the cost of equity capital. Each group has its own advantages and limitations and provides the opportunity to analyze the context of financing costs from different perspectives. In this study, we use five costs of equity capital proxies from both approaches: 1) *R_peg_21*, 2) *R_peg_54*, 3) *R_Gordon*, 4) *R_Idio*, and 5) *Bid_Ask_Spread*. To start, we base one of our measures (*R_peg_21)* on the works of Easton (2004), and the other one (*R_peg_54)* on the work of Botosan and Plumlee (2005). Easton (2004) shows that, with some assumptions, the cost of equity can be measured by the following formula[24]:

$$r_{PEG} = \sqrt{\frac{eps_2 - eps_1}{P_0}}. \qquad (6)$$

[24] Easton built this formula by imposing two assumptions to the model of Ohlson and Juettner-Nauroth (2005) called *OJ Model*. Assumptions are: 1) Zero dividend at t=1, and 2) Zero change in abnormal growth in earnings (AGR) beyond the forecast horizon (i.e. the next period's AGR can be used as an unbiased proxy for all subsequent ones during the forecast horizon).

Where eps_t is the consensus analysts' estimate for earning per share (EPS) in year $t=1$ and $t=2$ following the issue date. And P_0 is the market price at the time of estimation. These values are chosen such that they are closest to the time of the issue. This measure is appropriate for mid-range analysis of returns. The assumptions are: 1) Zero dividend at time t=1, and 2) Zero change in abnormal growth in earnings beyond the forecast horizon. The proof of this construct is in the appendix.

As mentioned above, our alternative measure of the cost of equity is the revised format of equation (6) suggested by Botosan and Plumlee (2005) as below:

$$r_{PEG} = \sqrt{\frac{eps_5 - eps_4}{P_0}}. \tag{7}$$

The extension of the forecasted EPS allows us to respect the second assumption of the original model and to prevent loss of observations in cases where eps_2 is less than eps_1. This is a measure with longer sight. We use the PEG Ratio Method because compared to Gordon Growth Model, Industry Method, or Average Realized Premium, the PEG Ratio Method is more reliable with respect to different firm-specific risks such as market risk, leverage risk, information risk, residual risk, and growth (Botosan & Plumlee, 2005)[25]. However, since both PEG Ratio methods assume zero dividends in the first year, they may not be appropriate for dividend-paying firms.

To add the role of dividend in our analysis, we use Gordon and Gordon (1997) model for stock return (*R_Gordon*) as another proxy for the cost of equity capital:

$$R_{i,t} = \frac{D_{i,t+1}}{P_{i,t}} + g_{i,t} \tag{8}$$

Where $D_{i,t+1}$ and $g_{i,t}$ are analysts' consensus estimates for the next annual dividend and long-term growth rate. This dividend discount model provides the opportunity to have dividend and long-term growth expectations in the analysis of the cost of equity capital. This measure is highly sensitive to the estimated values of growth rate (g). This sensitivity have implications on the interpretation of results.

For the second group of estimators, we calculate the estimated excess return (residuals) from CAPM in order to capture the firm-specific return (*R_Idio*). Botosan (2006a) argues that in

[25] Average Realized Premium is the mean of realized returns using a large sample over a long period of time. Please refer to Appendix C for the details on the other methods.

the context of corporate disclosure, there is no theoretical support for the relationship between corporate disclosure and market beta, and therefore, using asset pricing models that are based on equilibrium is problematic. However, as a robustness check, we followed the literature and considered the firm-specific part of the expected return due to idiosyncratic risk (J. Y. Campbell, Lettau, Malkiel, & Xu, 2001). We estimated excess returns from the CAPM model, using 275 trading days prior to the issue, with at least 128 days of available data. The market portfolio is a value-weighted portfolio in the universe of CRSP.

(9)

$$(R_i - R_f) = \alpha_i + \beta_i(R_m - R_f) + \varepsilon_i$$

Alpha tends to capture mispricing, and epsilon the firm specific part of the return. This measure, aside from what Botoson says on models that are based on equilibrium, has 2 not-so-helpful-for-purpose properties:

1) We cannot predict a specific direction for the sign of estimated coefficients. Miss pricing or firm specific elements could go in both directions as more information is released.
2) If too much information is disseminated, then Epsilon may simply capture the noise.

And lastly, we use bid-ask spread (*Bid_Ask_Spread*) as a proxy for the cost of equity capital that reflects the firm's information asymmetry (Coller & Yohn, 1997), and compute it as the ratio of bid ask spread over its midpoint on the day of the issue:

(10)

$$Bid\_Ask\_Spread_{i,t} = \frac{Ask_{i,t} - Bid_{i,t}}{(Ask_{i,t} + Bid_{i,t})/2}$$

To calculate the cost of debt financing, following Sengupta (1998), we use yield to maturity (*YTM*). We kept only debt offerings that are at least one year apart to make sure that both periods of IRSC (*Period -2* and *Period -1*) are related to only one financing activity. In cases where debt offerings are in tranches, we calculate the weighted average YTM using the ratio of each tranche's proceeds to total proceeds as weights.

And finally, we utilize default spread (*Default_Spread*) as alternative measure of debt financing cost. This measure is calculated as the weighted average of default spreads of all tranches of an issue where individual spreads are the excess YTM from similar-maturity Treasury yield,

sold closest to the time of issue. This measure captures the firm-specific portion of corporate bond yields that is reflective of the risk of the issuer and is not under the influence of the systematic treasury yields.

3.3.3. Control Variables

Our proxies for the level of transparency at the time of the issue is based on the industry-year median bid-ask spread and analyst coverage. In all the regression models, we control for analyst coverage (*Analyst_Cov*), which is the number of unique analysts following the firm each year. Analyst coverage is one of the factors reflecting the level of firms' information asymmetry (CHANG et al., 2006; Roulstone, 2003). In addition, following the literature of corporate capital structure[26], we control for market-to-book ratio (*MB_Ratio*) which is the market value per share divided by book value per share, asset tangibility (*Tangibility*) which is equal to property, plants and equipment (net of depreciation) scaled by total assets, innovation (*Innovation*) which is the natural logarithm of R&D expenses scaled by total assets, level of total liabilities scaled by total assets (*Leverage*), total risk (*Volatility*) calculated as the sum of systematic and idiosyncratic risks[27], and expected inflation (*Exp_Inflation*), which is a five-year forward expected inflation rate obtained from the Federal Reserve Bank of St Louis. For more details on the definition and calculation of each variable, please refer to Table 16.

In the previous chapter's analyses, we included different attributes of board of directors to control for the effect of this governance mechanism on communication practices and isolate the governing attributes of corporate communication culture. In this chapter, we replace all the board attributes with a representative proxy measure. Specifically, our models include two alternative proxies for board quality: 1) Analyst coverage, and 2) Bid-ask spread. Prior studies show that higher (lower) quality boards is significantly associated with lower (higher) bid-ask spread and higher (lower) analyst coverage. Levesque, Libby, Mathieu, and Robb (2010) focus on earnings announcement and show the significant impact of board monitoring quality on firm's information asymmetry measured by bid-ask spread. In their study, influential monitoring variables include CEO duality, number of outside directors, and board size, among others. In another study, Cai,

[26] (Bradley, Jarrell, & KIim, 1984; Frank & Goyal, 2009; Graham & Leary, 2011; Kayhan & Titman, 2007).

[27] *Volatility* is the total variance over last 275 trading days of the new issues. Idiosyncratic volatility equal to $\sigma_i^2 - (\beta_i^2\ \sigma_m^2)$, where β is derived from CAPM model estimated using 275 trading days of the new issues.

Liu, Qian, and Yu (2015) measure asymmetric information by an index comprising of seven variables including number of analysts, and find significant relationships between asymmetric information and difference variables related to board monitoring quality as well as CEO pay-for-performance sensitivity. In a more recent study, Goh, Lee, Ng, and Ow Yon (2016) show the significant role of board independence in reducing information asymmetry measured by bid-ask spread. In addition, they show that board independence is positively associated with analyst coverage. Overall, the findings of prior studies support our choice of bid-ask spread and analyst coverage as two proxies for board of director's monitoring quality.

------ Please insert Table 16 about here ------

3.3.4. Sample

We initially start this study with a sample of 7,826 US firms listed on the S&P 1500 Index from 1999 to 2018. The firm's fundamental data is collected from COMPUSTAT, and market data is gathered from CRSP. Next, we use *FactSet* platform to hand-collect IRSC frequency of all the press and news releases (1,902,592 documents), and the frequency (199,228 events) and transcripts (134,744 documents) of conference calls, corporate meetings (including analyst meetings, shareholder meetings, guidance calls, sales calls, sales releases, and special situation meetings), as well as presentation slides (43,136 documents). The availability of data from FactSet reduced our sample to 2,192 companies. We had to limit ourselves to years after 1999 because this is the earliest time Factset records transcripts of conference calls. In the next step, we use *Securities Data Company (SDC) Platinum* to collect data for new equity and debt issues. We filter the data for asset-backed-securities, government bonds, and municipalities debts. We remove observations that data on date, yield to maturity, and proceeds were not available. We combine multiple tranches of one issue into one observation and kept issues that are at least 12 months apart. We also remove shelf-registrations. Our final sample consists of 1,190 firms. which ultimately reduces our final sample to 1,190 firms. For more details on the sample in each database, please refer to Table 17.

------ Please insert Table 17 about here ------

3.4 Empirical Models and Results

3.4.1. Descriptive and Univariate Analysis

Table 18 shows the summary statistics for our dependent and explanatory variables. The cost of debt measured by *YTM* ranges from 0.25% to 10%, with a mean value of 5.6%. We note an even greater range for the cost of equity measures, *R_peg_21, R_peg_54,* from almost nothing to about 30%. All IRSC measures are calculated over *Period -1,* which is six months prior to the announcement of the new equity or debt issue (up to 3 days prior). The frequencies of events, press releases, and slides show a very dispersed range, which illustrates variations in the level of IRSC practices in our sample firms. As expected, the frequency of press is considerably more than the number of events. On average, issuing firms release about seven-folds more press news compared to events such as conference calls and analysts' meetings. We also show that for firms that hold events prior to their issue, there are some firms with no Q&A section, while others spend most of the time of the event (maximum of 84%) on these conversations. As another important indicator of transparency and level of information dissemination, the average length of each answer in the Q&A part of the event ranges from 80 words to 292 words with an average of 177 words. During the six months prior to the issue, firms that issue debt or equity provided 1.9 slides with a minimum of one to a maximum of six slides, which is an extra step for providing information to the public. The average number of analysts following the firm is 13 with at least one analyst and at most 44 ones. Since we have small, medium and large firms in our sample, such a wide range is understandable and supports the necessity of control. The diversity in our sample is also noticeable in the range of total assets, the ratio of tangible assets to total assets, innovation-related expenses and risk levels. All these differences are important in explaining the differences in firms' behaviour at the time of debt or equity issuance in the context of IRSC initiatives.

------ Please insert Table 18 about here ------

Table 19 shows the Pearson correlation coefficients for the variables used in the analysis and regression models. Pairwise correlations show no significant collinearity issues among explanatory variables. IRSC activities have weak correlation with each other and shows that each activity captures a different aspect of IRSC efforts, and therefore our analyze should facilitate the analysis of the engagement in IRSC activities, both separately and all together. Variance Inflation

Factors are lower than 4. VIFs between 1 and 5 suggest that there is a moderate correlation, but it is not severe enough to warrant corrective measures. Considering the magnitude of correlation coefficients, there is no multicollinearity among predictor variables.

Regarding the univariate relationship of the IRSC variables with the financing cost proxies, we note that Press is significantly and positively associated with *R_peg_21, R_peg_54, R_Idio, Bid_Ask_Spread* and *YTM.* Interestingly, the *Event* is not significantly related to any of the cost measures, except it has a positive relationship with *Bid_Ask_Spread*. It is interesting because we expected to see with increase in firms IRSC activities, its information asymmetry decreases.

The portion of Q&A in the event is positively associated with *R_peg_21* and *Default_Spread* and has no significant relationship with other cost measures. This relationship is also of great interest as one can argue in favour of the opposite sign. A positive relationship might, however, imply that higher portions of Q&A in an event signal more uncertainty around the firm's operations that needed to be discussed and had not been addressed before the event. From another perspective, the average length of each question (Answer) shows a significant negative association with *Bid_Ask_Spread, YTM* and *Default_Spread.* It seems higher Q&A implies ambiguous situations full of unresolved questions, and the amount of information that managers give to analysts in their answers can reflect their effort to clarify the unclear topics, which results in a lower cost of financing. We observe no significant relationships with the frequency of slides and the financing cost proxies, except for a weak positive association with *R_peg_21*.

------ Please insert Table 19 about here ------

3.4.2. Multivariate Analysis: Role of Firm Transparency Level (High vs. Low)

To analyze the combined effects of IRSC activities and different levels of corporate transparency, we use interaction terms that include each of the IRSC measures and measures of corporate information asymmetry.

We used alternative measures for information asymmetry 1) *Low_Transparent,* which is a dummy that takes the value of one for firms with a bid-ask spread above the industry-year median and zeroes for those with bid-ask spread below the industry-year median on the issue date, and 2) *IA_high,* which is a dummy equal to one for the firms with the number of analysts following the firm below the industry-year median and zero for those with the number of analysts above the

industry-year median during the issue year. Each of these measures captures the impact of IRSC on a firm's information asymmetry from a different angle. The relationship between analyst following and the firm's disclosure policy can be either positive or negative. On the one hand, more transparent firms may encourage higher analysts following due to higher availability of information, and on the other hand, the investor demand for analyst coverage may be less for such firms (Lang & Lundholm, 1996).

Bid-ask spread, which is related to the liquidity of a stock, is also a proxy for incomplete or asymmetry of public information. Prior studies differentiate between three groups of equity traders: equity specialists, informed traders and uninformed traders, by focusing on the role of information asymmetry in the establishment of the bid-ask spread (Copeland & Galai, 1983; Glosten & Harris, 1988; Glosten & Milgrom, 1985; Lin, Sanger, & Booth, 1995; Merton, 1987; Ravi & Hong, 2014). Informed traders are those with information advantage, and they can lose or gain their information advantage over other groups depending on the type of information released during the IRSC activities. Larger positive bid-ask spreads increase the profits for the equity specialists, which, in turn, offsets their losses when facing informed traders. Uninformed traders mainly trade for liquidity reasons, and higher disclosure can add to the liquidity by reducing the bid-ask spread for this group (Kanagaretnam, Lobo, & Whalen, 2005).

We see that depending on a firm's investor composition from these three groups, higher IRSC activities can decrease or increase the overall level of information asymmetry, and as a result, impact its cost of financing. We use the following general OLS regression model for the combined effect of IRSC activities and level of firm transparency:

(11)

$$
\begin{aligned}
Financing\_Cost_{i,t} &= \alpha + b_1\, IRSC_{i,t} + b_2\, IRSC_{i,t} * Low\_Transparency_{i,t} \\
&+ b_3\, Low\_Transparency_{i,t} + b_4\, Analyst_{Cov_{i,t}} + b_5\, Analyst_{Cov_{i,t}} \\
&+ b_6\, Tangibility_{i,t} + b_7\, Innovation_{i,t} \\
&+ b_8\, Volatility_{i,t} + b_9\, Exp_{Inflation_{i,t}} + b_{10}\, MB_{Ratio_{i,t}} + b_{11}\, Firm\_Size_{i,t} \\
&+ b_{12}\, Leverage_{i,t} + Industry\ and\ Year\ Fixed\ Effects + e_{i,t}
\end{aligned}
$$

Where, *Financing Cost* is the cost of equity or cost of debt in different models, measured by *R_peg_21, R_peg_54, R_Gordon, R_Idio,* and *Bid_Ask_Spread.* $Transparency_{i,t}$ is measured by *Low_Transparent* (in Table 20) and *IA_high* (in Table 21).

We should note that there are four specifications in all of the multivariate regression models in this study: 1) In order to make IRSC activities comparable among all firm sizes, we scale the IRSC variables by firm's book value of total assets, 2) We omit financing issues announced during 2001-2002 and 2008-2009, to exclude the established abnormal increase in financing costs resulted from the financial crises (Persakis & Iatridis, 2015; Pianeselli & Zaghini, 2014), 3) We use natural logarithm transformation of the financing cost measures[28], and 4) All models include year and industry fixed effect, where industries are denoted by SIC 4-digit codes.

To test our first hypothesis, we use the regression of cost of financing, measured by *R_peg_21* (and *R_Gordon* as an alternative measure), on different types of IRSC activities. Table 20 shows the relationship between *R_peg_21* and the size-adjusted IRSC proxies. Models 1 to 5 focus on the level of individual IRSC measures and Model 6 includes all the IRSC variables in one regression model. As we see in Table 19, IRSC activities have weak or no relationship with each other, showing each activity captures a different aspect of IRSC efforts, and therefore we not only consider them in isolation (models 1 to 5, and 7 to 11), we also keep them all in one model (models 6 and 12). Moreover, the increase in adjusted R-Squared in Model 6 compared to each of Models 1 to 5 shows that considering all the IRSC measures in one model adds to the overall explanatory power of the analysis. Models 7 to 11 include the percentage change of each IRSC measure from *Period -2* to *Period -1*, and Model 12 shows the regression results of all the measures together.

The findings in Table 20 reveal that *Press* and percentage change in *Press* are positively associated with the cost of financing. Although a positive effort to disseminate information, a strand of literature has pointed out that press releases are noisy and a way of impression management for managers to project the desired narrative to the outside world (Ahern & Sosyura, 2014; Bowen, Davis, & Matsumoto, 2005). Model 7 in Table 20 provides significant results for the beneficial effect of change in the *Press* on *R_peg_21* for firms that are less transparent (H1 supported). A higher frequency of events is associated with lower *R_peg_21,* especially for firms that suffer from low transparency, which supports H1 with regards to the frequency of events

[28] The natural logarithm transformation helps to normalize the distribution of the measures of cost of financing. Please refer to Appendix D for the diagnostic test results.

implying that the higher number of events before any type of new financing is associated with lower costs. As for *QAtoLength*, the results show significant positive coefficients. Although the association is not what we expected, we justify it by the following reason: Level of IRSC (models 1 to 6) captures the cross-sectional state of IRSC just before the issue. It does not show the temporary change in firms' engagement in IRSC activities. If we look at model 7 to 12, where percentage changes are used, the coefficients of *Event*, *Q&A*, and *Answer*, become insignificant.

With regards to the control variables, as expected, our results in almost all models show that low-transparency, high volatility, and high leverage ratio are positively associated with higher *R_peg_21*, while higher market-to-book ratio (which signals higher growth opportunities), and larger size are related to lower *R_peg_21*.

------ Please insert Table 20 about here ------

For robustness, in table 21, we used *R_Gordon* (instead of *R_peg_21*) to include the role of dividend and future growth opportunities in the estimation of the cost of financing. Comparing to Table 20, in which the measure of information asymmetry was based on the industry-median of the bid-ask spread, Table 21 uses the industry-median number of analysts following the firm during the issue year. IA_high, is a dummy for the firms with the number of analysts following the firm below the industry-year median. Consistent with table 20, Press increased the cost of financing.

Table 21 provides significant results in Models 7 to 9 where percentage changes of *Press* and *Event* have negative, and *QAtoLength* a positive relationship with the cost of financing when firms have high information asymmetry (Please refer to the coefficients of interaction terms).

The findings on leverage ratio and market-to-book ratio is opposite to table 20. But they are not surprising. *R_Gordon* is very sensitive to future growth opportunities, as me mentioned earlier the big portion of R Gordon is determined by growth rate g, and a higher M/B ratio signals higher future growth. Also, we know from the literature that high leverage firms have lower investment opportunities (L. Lang, Ofek, & Stulz, 1996), which can diminish the firm's future growth rates; hence, we see the negative effect of leverage on *R_Gordon*. Moreover, we find a significant positive relationship for analyst coverage which is supported by the finding of prior studies on the positive relationship between analyst following and future growth opportunities

(Cragg & Malkiel, 1968; Doukas, Kim, & Pantzalis, 2005), and a negative relationship between analyst following and asset tangibility as well as the expected inflation rate.

------ Please insert Table 21 about here ------

3.4.3. Multivariate Analysis: Role of Financing Type (Equity vs. Debt)

Hypothesis two reads, "IRSC activities have a higher impact on the cost of equity issues compared to the cost of debt issues." The reason behind this model is to test if market appreciates firm's effort for transparency when the need for information symmetry is higher. We know that equity holders as the last claim holders, take more risk than debt holders. And therefore, information is expected to be more important to them. Here we are using equity vs debt as a proxy for the need for transparency. We use two-way interaction terms of IRSC measures and *Equity_issue*, where *Equity_issue* is a dummy variable that gets 1 if the issue is equity.

(12)

$$
\begin{aligned}
Financing\_Cost_{i,t} &= \alpha + b_1\, IRSC_{i,t} + b_2\, IRSC_{i,t} * Equity\_Issue_{i,t} + b_3\, Low\_Transparent_{i,t} \\
&+ b_4\, Analyst_{Cov_{i,t}} + b_5\, Tangibility_{i,t} + b_6\, Innovation_{i,t} + b_7\, Volatility_{i,t} \\
&+ b_8\, Exp\_Inflation_{i,t} + b_9\, MB\_Ratio_{i,t} + b_{10}\, Firm\_Size_{i,t} \\
&+ b_{11}\, Leverage_{i,t} + Industry\ and\ Year\ Fixed\ Effects + e_{i,t}
\end{aligned}
$$

Similar to Tables 20 and 21, in Tables 22 and 23, we use *R_peg_21* and *R_Gordon* and apply the interaction of equity issue dummy with different types of IRSC activities.

------ Please insert Table 22 about here ------

As before, Models 1 to 6 include the level of size-adjusted IRSC variables, while Models 7 to 12 show the explanatory power of their percentage change. In Table 22, the most informative variable of interest is the interaction term. In Model 7, we find significant negative coefficient for the interaction term with percentage change in Press. This supports the intermediary role of financing type, and shows that when transparency is needed, even Press Release is valuable. In Model 6, we find a significant negative coefficient for the interaction term of the Event. This

finding implies that compared to debt issues, firms with equity issues benefit from holding more Meetings. Perhaps the value of these meetings with investors and analysts lies in the fact that these events are two-way communication opportunities. In Model 6, the positive association for the interaction term of QAtoLength, is week, but surprising and interesting at the same time. The greater portion of Q&A in meetings perhaps signals the higher level of ambiguity and need for transparency. It is not a stretch to assume that greater portion of question and answer to the length of the meeting could be due to more questions than answers. When we combine this finding with the coefficient of average length of answer from table 23, we confirm that, if the question and answer has been driven by more questions, it is a signal for the existing ambiguity around the financing decision and firms' prospects. And if the firm attempts to remove those informational gaps, market will appreciate. The significant negative coefficient for the interaction variable of Answer asserts this interpretation. The findings on control variables in Tables 22 and 23 are like those in Tables 20 and 21.

------ Please insert Tables 22 and 23 about here ------

3.4.4. Multivariate Analysis: Combined Role of Transparency and Type of Financing

Hypothesis 3 is the combination of H1 and H2 and predict the value of IRSC in reducing information asymmetry in most severe cases, that is equity issuance by low transparent firms. Main variables of interest in this empirical evaluation are three-way interaction terms, and therefore we focus our interpretations on them.

(13)

$$
\begin{aligned}
Financing_{Cost_{i,t}} &= \alpha + b_1\, IRSC_{i,t} + b_2\, IRSC_{i,t} * Equity_{issue_{i,t}} + b_3\, IRSC_{i,t} * Transparency_{i,t} \\
&+ b_4\, IRSC_{i,t} * Transparency_{i,t} * Equity_{issue_{i,t}} + b_5\, Transparency_{i,t} \\
&* Equity_{issue_{i,t}} + b_6\, Transparency_{i,t} + b_7\, Equity_{issue_{i,t}} + b_8\, Analyst_{Cov_{i,t}} \\
&+ b_9\, Tangibility_{i,t} + b_{10}\, Innovation_{i,t} + b_{11}\, Volatility_{i,t} \\
&+ b_{12}\, Exp\_Inflation_{i,t} + b_{13}\, MB\_Ratio_{i,t} + b_{14}\, Firm\_Size_{i,t} + b_{15}\, Leverage_{i,t} \\
&+ Industry\ and\ Year\ Fixed\ Effects + e_{i,t}
\end{aligned}
$$

Table 24 uses *R_peg_21* as the proxy for cost of information asymmetry. Like before, we find that holding *Event* is beneficial for these firms. But regarding *Press*, results show a positive association for both level and percentage change. It seems in the most severe cases, where the firm is low transparent and seeks capital through equity, press release increases the noise and hence the cost. There are three points worth mentioning here: First, models 1 to 6 are working with the level of IRSC, which captures the status quo right before the issue. To capture firm's temporary changes in communication practices, we need to focus on percentage changes and use models 7 to 12. Second, the coefficient of *Press* in model 12 is marginally significant and requires additional investigation. Therefore, we continue this analysis with alternatives for cost of financing. Alternative measures and corresponding tables are: R_peg_21 (Table 24), R_Gordon (Table 25), R_peg_54 (Table 30), R_idio (Table 31), Bid_Ask_Spread (Table 32). And the third point is the possibility of endogeneity problem. There are two sources for endogeneity. One, endogeneity between *Press* and other *Events*. Two, endogeneity between equity and debt. We will address both endogeneity issues in tables 26 to 41.

------ Please insert Table 24 about here ------

When we shift to *R_Gordon* as the measure for financing cost, the role of both *Press* and its percentage change becomes beneficial, and they get significant negative coefficients in Models 6 and 7 in Table 25. Consistent with previous findings, *Event* is negatively associated with *R_Gordon*. The proportion of Q&A in the event has a positive and significant relationship with *R_Gordon,* which implies that investors perceive long Q&A discussions as a signal of more ambiguity rather than clarification. Longer *Answer* and more frequent *Slide* are reducing the cost of financing for firms with high information asymmetry and when the issue is equity. The findings on significant control variables are the same as before when *R_Gordon* is used as the proxy of cost.

------ Please insert Table 25 about here ------

As additional robustness checks, we run the similar three-way interaction analyses using *R_peg_54 (Table 30), R_Idio (Table 31),* and *Bid_Ask_Spread (Table 32),* and in overall, we find

Press and *QAtoLength* are positively associated with the cost of financing for firms with lower transparency that issue equity, while *Event* and *Answer* show a negative relationship with the cost of financing of such firms. The damaging results of *Press* and *QAtoLength* might be due to the notion that in some cases corporate disclosure is utilized as a way of impression management for low-transparent firms which will not be appreciated by investors (Bowen et al., 2005; MARK H. Lang, Carolina, Lundholm, & Michigan, 2000).

3.4.5. Addressing Endogeneity: Multivariate Multiple Regression Model

There are two possible endogeneity problems that we mention before and need to be addressed: 1) Endogeneity problem between IR channels (e.g. Press release and Conference call) – we know that both will increase if a firm wants to announce a change and hold a meeting for it. 2) Correlation between cost of equity and cost of debt - We believe that examining the two external financing options in a system of simultaneous equations provides a better reflection of what managers face when they are about to issue securities and make funding decisions. We implement Multivariate Multiple Regression models to address the simultaneous interdependencies between debt and equity. We followed Zellner (1962) and Greene (2012) methodologies for these Seemingly Unrelated Systems of Equations.

Table 26, Panel A focuses just on Press, summarizing regression results on the press release (Model 1) as well as it's percentage change (Model 2). Column 1 shows the results for the cost of equity (*R_peg_21*), column 2 for the cost of debt (*YTM*), and column 3 shows the difference between the two. Panel B summarizes regression results for the complete set of IRSC variables. We replaced Press with *Press_Exog.* The exogenous portion is the estimated residuals from the first stage of the Two-Stage Least Squares (2SLS) model, where the Press is regressed on other IRSC elements and shows the proportion of press release that is not influenced by an omitted variable that influence other IRSC initiatives at the same time. The same as before, the main variable of interest is the interaction term. And we just need to focus on those interaction terms whose differences (in third columns) are significant.

As we see in Table 26, a higher percentage change in Q&A portion of the events was more effective in reducing cost of information asymmetry for equity comparing to debt issue, supporting our hypothesis H3 that firms engage in IRSC activities and temporary deviate from their communication culture where they see benefits overcomes the costs.

------ Please insert Table 26 about here ------

For the cost of equity financing, we use *R_peg_21* in Tables 26 and 28, *R_Gordon* in Tables 27 and 29. For the cost of debt, we use *YTM* in Tables 26 and 27, and *Default_Spread* in Tables 28 and 29. As before, all the financing cost measures are in the format of the natural logarithm, and all of the IRSC measures are size-adjusted.

------ Please insert Table 27 about here ------

Table 27 uses *R_Gordon* and *YTM* for the financing costs and illustrates the effect of *Event* and *Press_Exog* for equity-issuing firms with high information asymmetry. When information asymmetry is high, the percentage change in *Press* and *QAtoLength* reduce the cost of information asymmetry, and therefore, are considered effective. *Slide* is only beneficial in debt financing when firms have a high asymmetry of information. Tables 28 and 29 use default spread instead of YTM, and show similar results to Tables 26 and 27, respectively.

------ Please insert Tables 29 and 30 about here ------

For robustness purposes we used alternative measures for cost of equity and debt and find similar results. Following tables show the results of analyses with respect to the alternative measures: R_peg_54 in Tables 33 and 36, R_idio in Tables 34 and 37, Bid_Ask_Spread in Tables 35 and 38, YTM in Tables 26, 27, 33, 34, 35, and Default_Spread in Tables 28, 29, 36, 37, 38.

3.4.6 Summary of the findings

To summarize the findings across all tables, we combine all the results from table 20 to table 38 in Tables 39 and 40. The first 4 rows are related to hypotheses 1, and 2, and the rest of them are related to hypothesis 3, the special case where the need for transparency is supposed to be the highest, meaning that low transparent firms who are seeking to raise capital through equity issuance. Each group of rows tabulates the results of the same test but with alternative measures. The name of the main variable of interest, the one whose significant coefficient determines the

results of our tests, is written under the column "Model". In front of each model, we have the signs of significant coefficients related to IRSC variables. Results for both level and percentage changes are tabulated. Those that are in red color, are for coefficients that are marginally significant, and are considered as weak evidence. In order to get an idea of total effect, I have added the last row which is just sum of the signs, where negative signs cancel the positive ones, and the number shows the dominant effect of the IRSC measures on the Cost.

The overall results are interesting, and quite different depending on weather we look at level of IRSC just before the issue, or we look at the change in IRSC before the issue. For example, when we look at the level, it seems *Press* and *Q&A* have deteriorating effect, while when we look at their Percentage change, they show beneficial effect. The same, but with opposite direction, is true for *Event* and *Answer*. Surprisingly, *Slide* has deteriorating effect in both cases.

In order to have a stronger understanding of the situation and provide a clearer picture, we remove weak evidences that are less than 95% significant. The results are in Table 40. In general, we find that, higher frequencies of Press Release are cross-sectionally associated with higher costs of information asymmetry, while firms' temporary engagement in this activity reduce those costs. While, higher frequencies of Meetings are cross-sectionally associated with lower costs of information asymmetry, we could not find evidence for firms' temporary engagement in this activity. This could be due to the lack of change in the number of meetings over a 6-month period. Higher levels of Q&A to Length of meetings are cross-sectionally associated with higher costs of information asymmetry, if they are driven by higher numbers of questions, rather than lengthier answers. And finally, higher frequencies as well as percentage changes of Slides are associated with higher costs of information asymmetry, perhaps because the time spent on presenting the Slides is not allocated to holding interactive Q&A sessions in the meetings.

3.5 Conclusions

In this paper, we incorporate firms' transparency level and choice of financing as influential factors on the impact of Investor Relations and Stakeholder Communication (IRSC) activities on the cost of information asymmetry in external financing. The IRSC activities include firm's press releases, events including conference calls and other investor meetings, the proportion of question and answer (Q&A) to the whole length of the event, the average length of answers provided for each question, and the existence of presentation slides. The inclusion of the firm's

calls, meetings and slides (which are all hand-collected) adds to the context of corporate transparency because of their unique interactive communication setting where managers are exposed to unexpected questions. We consider the level and percentage change in IRSC measures, where levels are calculated as frequency over a six months period immediately before the issue date (*Period -1*), and the percentage change is the percentage change from the same length period but ending six months before issue date (*Period -2*). There are different proxies for costs of debt (*YTM* and *Default_Spread*) and the cost of equity capital (*R_peg_21, R_Gordon, R_peg_54, R_Idio* and *Bid_Ask_Spread*). Two methods are used to categorize firms into low and high transparency levels based on the industry-year median of bid-ask spread (*Low_Transparent*) as well as the number of analyst coverage (*IA_high*). In addition to the OLS regression models, we use Multivariate Multiple Regression Models to conduct a simultaneous analysis of the impact of IRSC activities on the cost of equity financing compared to debt.

Using a sample of 1,190 firms listed on the S&P 1500 Index from 1999 to 2018, we show that IRSC activities impact the cost of financing, and this effect varies based on firm's transparency level at the time of financing (low versus high) and issue type (debt versus equity). We find that a higher number of press releases and the longer portion of Q&A to the whole event are positively associated with the cost of financing, especially when firms issue equity and have lower transparency levels. Interestingly, these relationships reverse when we consider percentage change of press releases and Q&A portion proxies from twelve to six months before the issue date. In order to remove the endogeneity issues related to the relationship between the number of press releases and other IRSC activities, we employ estimated residuals (called *Press_Exog*) from the first stage of 2SLS regression models where we regress press releases on other IRSC proxies. The results of the relationship between *Press_Exog* and the cost of financing are like those of the *Press*. In addition, we provide significant evidence that a higher number of events before the issue and the longer answers provided for each question, is negatively associated with financing costs specifically for low-transparent, equity-issuing firms. The role of presentation slides is significant in reducing the cost of financing, but only for debt issuers. Overall, the findings support all three hypotheses on the beneficiary effects of IRSC activities (*Event, Answer,* the percentage change in *Press,* and percentage change in *QAtoLength*) in reducing the cost of financing. These effects are more pronounced at the time of equity issues and in firms with high information symmetry.

At the end we conclude that IRSC activities are effective mediums of communication. And, firms engage in IRSC activities to change the state of information asymmetry. Firms engagement in IRSC activities depends on their analyses of costs and benefits. Benefits of engagement in IRSC activities are larger in situations where the need for transparency is higher. In cases, benefits overcome the costs, managers deviates from long-term norms of transparency in their firms. We call these long-term norms, communication cultures.

Chapter 4: Final Remarks

In this dissertation, we examined the role of corporate communication as a governance mechanism and investigated the impact of firms' engagement in investor relations and stakeholder communication (IRSC) activities on the cost of new financing.

Located in Chapter 2 is the first essay in which we conducted a content analysis of more than 150,000 mandatory and voluntary documents, consisting of more than 100 different types of disclosures published by 96 Canadian firms listed on the TSX/S&P Composite Index during 1999-2014. We extended our knowledge of communication and corporate governance by the following contributions: First, we demonstrate the disciplinary role of communication by showing the significant relationship between negative deviation from the expected level of transparency and the reduction in Tobin's Q. Second, we show that corporate communication has an inverted U-shaped association with Tobin's Q and a U-shaped relationship with risk. This curvilinear connection implies that improving communication adds to the firm's value (and reduces the risk) but at a declining rate. Third, we provide evidence on the substitution-complementary relationship between communication and other established governance attributes which illustrates the governing power of communication. The substitution-complementary effect is based on the joint impact of communication and another governance mechanism on the firm's value (measured by Tobin's Q) and risk profile (measured by the ratio of idiosyncratic risk to total volatility). Forth, we introduce two new measures of communication that can quantify the information content of communication (*Dictionary*) as well as the diversity of communicated topics compared to the industry median (*CI*). These measures are direct, reliable, valid, and repeatable in large-scale studies. Fifth, the sixteen-year time period captures the reality of firms' communication culture that is free from the bias of short-term exogenous shocks. Moreover, by removing firm-year observations in which major events took place for the firm, we provide a clear picture that is not under the influence of temporary discussions and public relations activities. Sixth, we provide a large-scale study in the Canadian context, which is different from its US or European counterparts with regards to disclosure regulations and common corporate communication practices. The overall findings show that for every existing configuration of governance mechanism and with respect to different outcomes, there is an optimal level of communication. Determination of the optimal level of corporate communication regarding firm value and risk can be the focus of future studies. In addition, since our sample is restricted to Canadian firms, future studies can adapt our

framework to conduct a cross-country analysis in order to compare the governing power of corporate communication in environments with different institutional settings and stakeholder protections. Finally, the benefits and costs of self-constructed direct communication measures can be further examined and tested against indirect measures of transparency, such as analyst coverage and market liquidity.

Located in Chapter 3 is the second essay that examines whether firms' engagement in IRSC activities reduces the cost of information asymmetry at the time of external financing considering the intermediary role of the existing level of firm transparency and the financing source (debt vs equity). The measures of IRSC initiatives are frequency of press releases, frequency of events (meetings, conferences, industry gatherings, and investment bank seminars), the ratio of question and answer to the length of events, the average length of answers, and the frequency of slides used in events. We find that higher frequencies of Press Release are cross-sectionally associated with higher costs of information asymmetry, while firms' temporary engagement in this activity reduce those costs. While, higher frequencies of Meetings are cross-sectionally associated with lower costs of information asymmetry, we could not find evidence for firms' temporary engagement in this activity. This could be due to the lack of change in the number of meetings over a 6-month period. Higher levels of Q&A to Length of meetings are cross-sectionally associated with higher costs of information asymmetry, if they are driven by higher numbers of questions, rather than lengthier answers. Higher frequencies as well as percentage changes of Slides are associated with higher costs of information asymmetry, perhaps because the time spent on presenting the Slides is not allocated to holding interactive Q&A sessions in the meetings. Multivariate multiple regression analyses (seemingly unrelated regression models) show that these findings are more pronounced for firms that have low transparency and plan to issue equity compared to firms of high transparency and those with debt issues.

Perhaps the main finding of this paper is the evidence that firms' transparency level and choice of financing influence firms' engagement in Investor Relations and Stakeholder Communication (IRSC) activities as firms are vested in reducing the cost of information asymmetry at the external financing. The inclusion of the firm's calls, meetings and slides (which are all hand-collected) adds to the context of corporate transparency because of their unique interactive communication setting where managers are exposed to unexpected questions. We consider the level and percentage change in IRSC measures and different proxies for costs of debt

(*YTM* and *Default_Spread*) and the cost of equity capital (*R_peg_21, R_Gordon, R_peg_54, R_Idio* and *Bid_Ask_Spread*). Our sample consists of 1,190 firms listed on the S&P 1500 Index from 1999 to 2018. Two methods are used to categorize firms into low and high transparency levels based on the industry-year median of bid-ask spread (*Low_Transparent*) as well as the number of analyst coverage (*IA_high*). In addition to the OLS regression models, we use Multivariate Multiple Regression Models to conduct a simultaneous analysis of the impact of IRSC activities on the cost of equity financing compared to debt.

In general, we illustrate that the ability of corporate communication in reducing the firm's cost of information asymmetry at the time of issue changes according to the channel of information dissemination, the choice of financing, and the firm's existing level of information asymmetry. Since information is the basis of every financial decision, the findings of this study are useful for a wide range of stakeholders. Access to correct and timely information increases market efficiency, which is beneficial to firms, investors, and the economy. When managers employ communication policies that are suitable for their firm's financing plan and overall transparency policy, there are fewer agency issues, and thus lower premium is required by investors and creditors. It is legitimate to claim that, depending on the financing choice and firm's existing transparency condition, a well-executed public relations program can play a vital role in reducing the cost of capital, and potentially broaden opportunities for strategic investments.

Our final words: IRSC activities are effective mediums of communication. Firms engage in IRSC activities to change the state of information asymmetry. Firms engagement in IRSC activities depends on their analyses of costs and benefits. Benefits of engagement in IRSC activities are larger in situations where the need for transparency is higher. In cases, benefits overcome the costs, managers deviate from long-term norms of transparency in their firms. We call these long-term norms, communication cultures.

References

Adams, R. B., & Ferreira, D. (2008). Women in the Boardroom and Their Impact on Governance and Performance. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1107721

Agarwal, V., Taffler, R. J., Bellotti, X., & Nash, E. A. (2016). Investor relations, information asymmetry and market value. *Accounting and Business Research*, *46*(1), 31–50. https://doi.org/10.1080/00014788.2015.1025254

Agrawal, A., & Knoeber, C. R. (1996). Firm Performance and Mechanisms to Control Agency Problems between Managers and Shareholders. *The Journal of Financial and Quantitative Analysis*, *31*(3), 377. https://doi.org/10.2307/2331397

Aguilera, R. V., Filatotchev, I., Gospel, H., & Jackson, G. (2008). An Organizational Approach to Comparative Corporate Governance: Costs, Contingencies, and Complementarities. *Organization Science*, *19*(3), 475–492. https://doi.org/10.1287/orsc.1070.0322

Ahern, K. R., & Sosyura, D. (2014). Who Writes the News? Corporate Press Releases during Merger Negotiations. *The Journal of Finance*, *69*(1), 241–291. https://doi.org/10.1111/jofi.12109

Akhigbe, A., & Martin, A. D. (2008). Influence of disclosure and governance on risk of US financial services firms following Sarbanes-Oxley. *Journal of Banking & Finance*, *32*(10), 2124–2135. https://doi.org/10.1016/j.jbankfin.2007.12.037

Ali, A., Chen, T.-Y., & Radhakrishnan, S. (2007). Corporate disclosures by family firms. *Journal of Accounting and Economics*, *44*(1–2), 238–286. https://doi.org/10.1016/J.JACCECO.2007.01.006

Allegrini, M., & Greco, G. (2011). Corporate boards, audit committees and voluntary disclosure: evidence from Italian Listed Companies. *Journal of Management & Governance*, *17*(1), 187–216. https://doi.org/10.1007/s10997-011-9168-3

Amihud, Y., & Mendelson, H. (1989). The Effects of Beta, Bid-Ask Spread, Residual Risk, and Size on Stock Returns. *The Journal of Finance*, *44*(2), 479. https://doi.org/10.2307/2328600

Athanasakou, V. E., El-Haj, M., Rayson, P., Walker, M., & Young, S. (2018). Annual Report Management Commentary Articulating Strategy and Business Model: Measurement and Impact. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3212854

Baek, H. Y., Johnson, D. R., & Kim, J. W. (2009). Managerial Ownership, Corporate Governance, and Voluntary Disclosure. *Journal of Business & Economic Studies*, *15*(2),

44–61. https://doi.org/ISSN 1063-343X

Balakrishnan, R., Qiu, X. Y., & Srinivasan, P. (2010). On the predictive ability of narrative disclosures in annual reports. *European Journal of Operational Research*, *202*(3), 789–801. https://doi.org/10.1016/j.ejor.2009.06.023

Bamiatzi, V., Bozos, K., & Nikolopoulos, K. (2010). On the predictability of firm performance via simple time-series and econometric models: evidence from UK SMEs. *Applied Economics Letters*, *17*(3), 279–282. https://doi.org/10.1080/13504850701720163

Baumann, U., & Nier, E. (2004). Disclosure, volatility, and transparency: an empirical investigation into the value of bank disclosure. *Economic Policy Review*, *10*(2), 31–45.

Beatty, R. P., & Zajac, E. J. (1995). MANAGERIAL INCENTIVES, MONITORING, AND RISK BEARING IN INITIAL PUBLIC OFFERING FIRMS. *Journal of Applied Corporate Finance*, *8*(2), 87–96. https://doi.org/10.1111/j.1745-6622.1995.tb00291.x

Bebchuk, L. A., & Fried, J. M. (2005). Pay Without Performance: Overview of the Issues. *Journal of Applied Corporate Finance*, *17*(4), 8–23. https://doi.org/10.1111/j.1745-6622.2005.00056.x

Becher, D. A., & Frye, M. B. (2011). Does regulation substitute or complement governance? *Journal of Banking & Finance*, *35*(3), 736–751. https://doi.org/10.1016/J.JBANKFIN.2010.09.003

Beiner, S., Schmid, M. M., & Wanzenried, G. (2011). Product Market Competition, Managerial Incentives and Firm Valuation. *European Financial Management*, *17*(2), 331–366. https://doi.org/10.1111/j.1468-036X.2009.00505.x

Berger, A. N., & Udell, G. F. (2006). A more complete conceptual framework for SME finance. *Journal of Banking & Finance*, *30*(11), 2945–2966. https://doi.org/10.1016/j.jbankfin.2006.05.008

Beyer, A., Cohen, D. A., Lys, T. Z., & Walther, B. R. (2010). The financial reporting environment: Review of the recent literature. *Journal of Accounting and Economics*, *50*(2–3), 296–343. https://doi.org/10.1016/J.JACCECO.2010.10.003

Bird, A., & Karolyi, S. A. (2016). Do Institutional Investors Demand Public Disclosure? *Review of Financial Studies*, *29*(12), 3245–3277. https://doi.org/10.1093/rfs/hhw062

Botosan, C. A. (1997). Disclosure Level and the Cost of Equity Capital. *The Accounting Review*, *72*(3 (July)), 323–349.

Botosan, C. A. (2004). Discussion of a framework for the analysis of firm risk communication. *The International Journal of Accounting*, *39*(3), 289–295. https://doi.org/10.1016/J.INTACC.2004.06.007

Botosan, C. A. (2006). Disclosure and the cost of capital: what do we know? *Accounting and Business Research*, *36*(sup1), 31–40. https://doi.org/10.1080/00014788.2006.9730042

Botosan, C. A., & Plumlee, M. A. (2002). A Re-examination of Disclosure Level and the Expected Cost of Equity Capital. *Journal of Accounting Research*, *40*(1), 21–40. https://doi.org/10.1111/1475-679X.00037

Botosan, C. A., & Plumlee, M. A. (2005). Assessing Alternative Proxies for the Expected Risk Premium. *The Accounting Review*, *80*(1), 21–53. https://doi.org/10.2308/accr.2005.80.1.21

Bourveau, T., Lou, Y., & Wang, R. (2018). Shareholder Litigation and Corporate Disclosure: Evidence from Derivative Lawsuits. *Journal of Accounting Research*, *56*(3), 797–842. https://doi.org/10.1111/1475-679X.12191

Bowen, R. M., Davis, A. K., & Matsumoto, D. A. (2002). Do Conference Calls Affect Analysts' Forecasts? *The Accounting Review*, *77*(2), 285–316. https://doi.org/10.2308/accr.2002.77.2.285

Bowen, R. M., Davis, A. K., & Matsumoto, D. A. (2005). Emphasis on pro forma versus GAAP earnings in quarterly press releases: Determinants, SEC intervention, and market reactions. *Accounting Review*. American Accounting Association. https://doi.org/10.2308/accr.2005.80.4.1011

Boyd, B. K. (1995). CEO duality and firm performance: A contingency model. *Strategic Management Journal*, *16*(4), 301–312. https://doi.org/10.1002/smj.4250160404

Bozanic, Z., Choudhary, P., & Merkley, K. J. (2019). Securities law expertise and corporate disclosure. In *Accounting Review* (Vol. 94, pp. 141–172). American Accounting Association. https://doi.org/10.2308/accr-52265

Bradley, M., Jarrell, G. A., & KIim, E. H. (1984). On the Existence of an Optimal Capital Structure: Theory and Evidence. *The Journal of Finance*, *39*(3), 857–878. https://doi.org/10.1111/j.1540-6261.1984.tb03680.x

Brennan, M. J., & Tamarowski, C. (2000). INVESTOR RELATIONS, LIQUIDITY, AND STOCK PRICES. *Journal of Applied Corporate Finance*, *12*(4), 26–37. https://doi.org/10.1111/j.1745-6622.2000.tb00017.x

Brown, S., & Hillegeist, S. A. (2007). How disclosure quality affects the level of information asymmetry. *Review of Accounting Studies*, *12*(2–3), 443–477. https://doi.org/10.1007/s11142-007-9032-5

Brown, S., Hillegeist, S. A., & Lo, K. (2004). Conference calls and information asymmetry. *Journal of Accounting and Economics*, *37*(3), 343–366. https://doi.org/10.1016/J.JACCECO.2004.02.001

Buhr, N., & Freedman, M. (2001). Culture, Institutional Factors and Differences in Environmental Disclosure Between Canada and the United States. *Critical Perspectives on Accounting*, *12*(3), 293–322. https://doi.org/10.1006/CPAC.2000.0435

Cai, J., Liu, Y., Qian, Y., & Yu, M. (2015). Information Asymmetry and Corporate Governance. *Quarterly Journal of Finance*, *5*(3). https://doi.org/10.1142/S2010139215500147

Campbell, J. L., Chen, H., Dhaliwal, D. S., Lu, H. min, & Steele, L. B. (2014). The information content of mandatory risk factor disclosures in corporate filings. *Review of Accounting Studies*, *19*(1), 396–455. https://doi.org/10.1007/s11142-013-9258-3

Campbell, J. Y., Lettau, M., Malkiel, B. G., & Xu, Y. (2001). Have Individual Stocks Become More Volatile? An Empirical Exploration of Idiosyncratic Risk. *The Journal of Finance*, *56*(1), 1–43. https://doi.org/10.1111/0022-1082.00318

Carpenter, M. A. (2000). The price of change: the role of ceo compensation in strategic variation and deviation from industry strategy norms. *Journal of Management*, *26*(6), 1179–1198. https://doi.org/10.1016/S0149-2063(00)00078-7

Carpenter, M. A., & Westphal, J. D. (2001). The Strategic Context of External Network Ties: Examining the Impact of Director Appointments on Board Involvement in Strategic Decision Making. *Academy of Management Journal*, *44*(4), 639–660. https://doi.org/10.5465/3069408

Carter, D. A., Simkins, B. J., & Simpson, W. G. (2003). Corporate Governance, Board Diversity, and Firm Value. *The Financial Review*, *38*(1), 33–53. https://doi.org/10.1111/1540-6288.00034

Chang, M., D'Anna, G., Watson, I., & Wee, M. (2008). Does Disclosure Quality via Investor Relations Affect Information Asymmetry? *Australian Journal of Management*, *33*(2), 375–390. https://doi.org/10.1177/031289620803300208

CHANG, X., DASGUPTA, S., & HILARY, G. (2006). Analyst Coverage and Financing

Decisions. *The Journal of Finance*, *61*(6), 3009–3048. https://doi.org/10.1111/j.1540-6261.2006.01010.x

Cheng, E. C. M., & Courtenay, S. M. (2006). Board composition, regulatory regime and voluntary disclosure. *The International Journal of Accounting*, *41*(3), 262–289. https://doi.org/10.1016/j.intacc.2006.07.001

Cho, C. H., & Patten, D. M. (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, *32*(7–8), 639–647. https://doi.org/10.1016/J.AOS.2006.09.009

Clinch, G., & Verrecchia, R. E. (1997). Competitive disadvantage and discretionary disclosure in industries. *Australian Journal of Management*, *22*(2), 125–137. https://doi.org/10.1177/031289629702200201

Coles, J. L., Daniel, N. D., & Naveen, L. (2008). Boards: Does one size fit all? *Journal of Financial Economics*, *87*(2), 329–356. https://doi.org/10.1016/J.JFINECO.2006.08.008

Coller, M., & Yohn, T. L. (1997). Management Forecasts and Information Asymmetry: An Examination of Bid-Ask Spreads. *Journal of Accounting Research*, *35*(2), 181. https://doi.org/10.2307/2491359

Conger, J. A., Finegold, D., & Lawler, E. E. (1998). Appraising boardroom performance. *Harvard Business Review*, *76*, 136–164.

Copeland, T. E., & Galai, D. (1983). Information Effects on the Bid-Ask Spread. *The Journal of Finance*, *38*(5), 1457–1469. https://doi.org/10.1111/j.1540-6261.1983.tb03834.x

Cragg, J. G., & Malkiel, B. G. (1968). The Consensus and Accuracy of Some Predictions of the Growth of Corporate Earnings. *The Journal of Finance*, *23*(1), 67. https://doi.org/10.2307/2325310

Cremers, K. M., Nair, V. B., & Wei, C. (2004). *Governance Mechanisms and Bond Prices* (October 2006 No. Yale ICF Working Paper No. 06-30). *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.516564

Cremers, K. M., Nair, V. B., & Wei, C. (2005). Governance Mechanisms and Equity Prices. *The Journal of Finance*, *60*(6), 2859–2894. https://doi.org/10.1111/j.1540-6261.2005.00819.x

Cuervo, A. (2002). Corporate Governance Mechanisms: a plea for less code of good governance and more market control. *Corporate Governance*, *10*(2), 84–93. https://doi.org/10.1111/1467-8683.00272

Dalton, D. R., Daily, C. M., Certo, S. T., & Roengpitya, R. (2003). Meta-Analyses of Financial Performance and Equity: Fusion or Confusion? *Academy of Management Journal*, *46*(1), 13–26. https://doi.org/10.5465/30040673

Darrough, M. N. (1993). Disclosure Policy and Competition: Cournot vs. Bertrand. *The Accounting Review*. American Accounting Association. https://doi.org/10.2307/248200

Darrough, M. N., & Stoughton, N. M. (1990). Financial disclosure policy in an entry game. *Journal of Accounting and Economics*, *12*(1–3), 219–243. https://doi.org/10.1016/0165-4101(90)90048-9

Dawd, I., & Charfeddine, L. (2019). Effect of aggregate, mandatory and voluntary disclosure on firm performance in a developing market: the case of Kuwait. *International Journal of Accounting, Auditing and Performance Evaluation*, *15*(1), 31–56.

Demsetz, H. (1983). The Structure of Ownership and the Theory of the Firm. *The Journal of Law and Economics*, *26*(2), 375–390. https://doi.org/10.1086/467041

Derrien, F., Kecskés, A., & Mansi, S. A. (2016). Information asymmetry, the cost of debt, and credit events: Evidence from quasi-random analyst disappearances. *Journal of Corporate Finance*, *39*, 295–311. https://doi.org/10.1016/J.JCORPFIN.2016.05.002

DeYoung, R., Peng, E. Y., & Yan, M. (2013). Executive Compensation and Business Policy Choices at U.S. Commercial Banks. *Journal of Financial and Quantitative Analysis*, *48*(01), 165–196. https://doi.org/10.1017/S0022109012000646

Dierkens, N. (1991). Information Asymmetry and Equity Issues. *The Journal of Financial and Quantitative Analysis*, *26*(2), 181. https://doi.org/10.2307/2331264

Dikolli, S. S., Keusch, T., Mayew, W. J., & Steffen, T. D. (2020). CEO behavioral integrity, auditor responses, and firm outcomes. *Accounting Review*, *95*(2), 61–88. https://doi.org/10.2308/accr-52554

Dollinger, M. J., Golden, P. A., & Saxton, T. (1997). THE EFFECT OF REPUTATION ON THE DECISION TO JOINT VENTURE. *Strategic Management Journal*, *18*(2), 127–140. https://doi.org/10.1002/(SICI)1097-0266(199702)18:2<127::AID-SMJ859>3.0.CO;2-H

Donaldson, L., & Davis, J. H. (1991). Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns. *Australian Journal of Management*, *16*(1), 49–64. https://doi.org/10.1177/031289629101600103

Donnelly, R., & Mulcahy, M. (2008). Board Structure, Ownership, and Voluntary Disclosure in

Ireland. *Corporate Governance: An International Review*, *16*(5), 416–429. https://doi.org/10.1111/j.1467-8683.2008.00692.x

Doukas, J. A., Kim, C. (Francis), & Pantzalis, C. (2005). The Two Faces of Analyst Coverage. *Financial Management*, *34*(2), 99–125. https://doi.org/10.1111/j.1755-053X.2005.tb00101.x

Dyer, T., Lang, M., & Stice-Lawrence, L. (2017). The evolution of 10-K textual disclosure: Evidence from Latent Dirichlet Allocation. *Journal of Accounting and Economics*, *64*(2–3), 221–245. https://doi.org/10.1016/j.jacceco.2017.07.002

Easton, P. D. (2004). PE Ratios, PEG Ratios, and Estimating the Implied Expected Rate of Return on Equity Capital. *The Accounting Review*, *79*(1), 73–95. https://doi.org/10.2308/accr.2004.79.1.73

EISDORFER, A. (2008). Empirical Evidence of Risk Shifting in Financially Distressed Firms. *The Journal of Finance*, *63*(2), 609–637. https://doi.org/10.1111/j.1540-6261.2008.01326.x

El-Haj, M., Rayson, P., Walker, M., Young, S., & Simaki, V. (2019). In search of meaning: Lessons, resources and next steps for computational analysis of financial discourse. *Journal of Business Finance and Accounting*. https://doi.org/10.1111/jbfa.12378

Ellis, C. A., & Parbery, S. A. (2005). Is smarter better? A comparison of adaptive, and simple moving average trading strategies. *Research in International Business and Finance*, *19*(3), 399–411. https://doi.org/10.1016/j.ribaf.2004.12.009

Elshandidy, T., Fraser, I., & Hussainey, K. (2013). Aggregated, voluntary, and mandatory risk disclosure incentives: Evidence from UK FTSE all-share companies. *International Review of Financial Analysis*, *30*, 320–333. https://doi.org/10.1016/J.IRFA.2013.07.010

Eng, L. L., & Mak, Y. T. (2003). Corporate governance and voluntary disclosure. *Journal of Accounting and Public Policy*, *22*(4), 325–345. https://doi.org/10.1016/S0278-4254(03)00037-1

Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of Director Diversity and Firm Financial Performance. *Corporate Governance*, *11*(2), 102–111. https://doi.org/10.1111/1467-8683.00011

Faccio, M., Marchica, M.-T., & Mura, R. (2016). CEO gender, corporate risk-taking, and the efficiency of capital allocation. *Journal of Corporate Finance*, *39*, 193–209. https://doi.org/10.1016/J.JCORPFIN.2016.02.008

Fama, Eugene F. (1980). Agency Problems and the Theory of the Firm. *Journal of Political Economy*, *88*(2), 288–307. https://doi.org/10.2307/1837292

Fama, EUGENE F., & French, K. R. (1995). Size and Book-to-Market Factors in Earnings and Returns. *The Journal of Finance*, *50*(1), 131–155. https://doi.org/10.1111/j.1540-6261.1995.tb05169.x

Ferreira, M. A., & Laux, P. A. (2007). Corporate Governance, Idiosyncratic Risk, and Information Flow. *The Journal of Finance*, *62*(2), 951–989. https://doi.org/10.1111/j.1540-6261.2007.01228.x

Finkelstein, S. (1992). Power in Top Management Teams: Dimensions, Measurement, and Validation. *Academy of Management Journal*, *35*(3), 505–538. https://doi.org/10.5465/256485

Fisher, I. E., Garnsey, M. R., & Hughes, M. E. (2016). Natural Language Processing in Accounting, Auditing and Finance: A Synthesis of the Literature with a Roadmap for Future Research. *Intelligent Systems in Accounting, Finance and Management*, *23*(3), 157–214. https://doi.org/10.1002/isaf.1386

Francis, J., Huang, A. H., Rajgopal, S., & Zang, A. Y. (2008). CEO Reputation and Earnings Quality. *Contemporary Accounting Research*, *25*(1), 109–147. https://doi.org/10.1506/car.25.1.4

Frank, M. Z., & Goyal, V. K. (2009). Capital Structure Decisions: Which Factors Are Reliably Important? *Financial Management*, *38*(1), 1–37. https://doi.org/10.1111/j.1755-053X.2009.01026.x

Frankel, R., Jennings, J., & Lee, J. (2016). Using unstructured and qualitative disclosures to explain accruals. *Journal of Accounting and Economics*, *62*(2–3), 209–227. https://doi.org/10.1016/j.jacceco.2016.07.003

Frankel, R., Johnson, M., & Skinner, D. J. (1999). An Empirical Examination of Conference Calls as a Voluntary Disclosure Medium. *Journal of Accounting Research*, *37*(1), 133. https://doi.org/10.2307/2491400

Fu, R., Kraft, A., & Zhang, H. (2012). Financial reporting frequency, information asymmetry, and the cost of equity. *Journal of Accounting and Economics*, *54*(2–3), 132–149. https://doi.org/10.1016/J.JACCECO.2012.07.003

Fulghieri, P., & Lukin, D. (2001). Information production, dilution costs, and optimal security

design. *Journal of Financial Economics*, *61*(1), 3–42. https://doi.org/10.1016/S0304-405X(01)00054-X

Gabaix, X., & Landier, A. (2008). Why Has CEO Pay Increased So Much? *. *Quarterly Journal of Economics*, *123*(1), 49–100. https://doi.org/10.1162/qjec.2008.123.1.49

Gabbioneta, C., Ravasi, D., & Mazzola, P. (2007). Exploring the Drivers of Corporate Reputation: A Study of Italian Securities Analysts. *Corporate Reputation Review*, *10*(2), 99–123. https://doi.org/10.1057/palgrave.crr.1550048

Gande, A., & Kalpathy, S. (2017). CEO compensation and risk-taking at financial firms: Evidence from U.S. federal loan assistance. *Journal of Corporate Finance*, *47*, 131–150. https://doi.org/10.1016/J.JCORPFIN.2017.09.001

Garay, U., González, M., & Molina, C. A. (2007). Firm performance and CEO reputation costs: New evidence from the Venezuelan banking crisis. *Emerging Markets Finance and Trade*, *43*(3), 16–33. https://doi.org/10.2753/REE1540-496X430302

García-Castro, R., Aguilera, R. V., & Ariño, M. A. (2013). Bundles of Firm Corporate Governance Practices: A Fuzzy Set Analysis. *Corporate Governance: An International Review*, *21*(4), 390–407. https://doi.org/10.1111/corg.12024

García-Meca, E., & Sánchez-Ballesta, J. P. (2010). The Association of Board Independence and Ownership Concentration with Voluntary Disclosure: A Meta-analysis. *European Accounting Review*, *19*(3), 603–627. https://doi.org/10.1080/09638180.2010.496979

Gaspar, J., & Massa, M. (2006). Idiosyncratic Volatility and Product Market Competition*. *The Journal of Business*, *79*(6), 3125–3152. https://doi.org/10.1086/505251

Gebhardt, W. R., Lee, C. M. C., & Swaminathan, B. (2001). Toward an Implied Cost of Capital. *Journal of Accounting Research*, *39*(1), 135–176. https://doi.org/10.1111/1475-679X.00007

Gedajlovic, E. R., & Shapiro, D. M. (1998). Management and ownership effects: Evidence from five countries. *Strategic Management Journal*, *19*(6), 533–553.

Gelb, D. S., & Zarowin, P. (2002). Corporate Disclosure Policy and the Informativeness of Stock Prices. *Review of Accounting Studies*, *7*(1), 33–52. https://doi.org/10.1023/A:1017927530007

Gibbons, R., & Murphy, K. J. (1992). Optimal Incentive Contracts in the Presence of Career Concerns: Theory and Evidence. *Journal of Political Economy*, *100*(3), 468–505. https://doi.org/10.1086/261826

Gillan, S. L. (2006). Recent Developments in Corporate Governance: An Overview. *Journal of Corporate Finance*, *12*(3), 381–402. https://doi.org/10.1016/j.jcorpfin.2005.11.002

Glosten, L. R., & Harris, L. E. (1988). Estimating the components of the bid/ask spread. *Journal of Financial Economics*, *21*(1), 123–142. https://doi.org/10.1016/0304-405X(88)90034-7

Glosten, L. R., & Milgrom, P. R. (1985). Bid, ask and transaction prices in a specialist market with heterogeneously informed traders. *Journal of Financial Economics*, *14*(1), 71–100. https://doi.org/10.1016/0304-405X(85)90044-3

Gode, D., & Mohanram, P. (2003). Inferring the Cost of Capital Using the Ohlson–Juettner Model. *Review of Accounting Studies*, *8*(4), 399–431. https://doi.org/10.1023/A:1027378728141

Goh, B. W., Lee, J., Ng, J., & Ow Yong, K. (2016). The Effect of Board Independence on Information Asymmetry. *European Accounting Review*, *25*(1), 155–182. https://doi.org/10.1080/09638180.2014.990477

Gordon, J. R., & Gordon, M. J. (1997). The Finite Horizon Expected Return Model. *Financial Analysts Journal*, *53*(3), 52–61.

Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, *40*(1–3), 3–73. https://doi.org/10.1016/j.jacceco.2005.01.002

Graham, J. R., & Leary, M. T. (2011). A Review of Empirical Capital Structure Research and Directions for the Future. *Annual Review of Financial Economics*, *3*(1), 309–345. https://doi.org/10.1146/annurev-financial-102710-144821

Gresov, C., & Drazin, R. (1997). Equifinality: Functional Equivalence in Organization Design. *Academy of Management Review*, *22*(2), 403–428. https://doi.org/10.5465/amr.1997.9707154064

Griffith, J. M. (1999). CEO ownership and firm value. *Managerial and Decision Economics*, *20*(1), 1–8. https://doi.org/10.1002/(SICI)1099-1468(199902)20:1<1::AID-MDE914>3.0.CO;2-T

Hackston, D., & Milne, M. J. (1996). Some determinants of social and environmental disclosures in New Zealand companies. *Accounting, Auditing & Accountability Journal*, *9*(1), 77–108. https://doi.org/10.1108/09513579610109987

Hall, G. C., Hutchinson, P. J., & Michaelas, N. (2004). Determinants of the Capital Structures of

European SMEs. *Journal of Business Finance & Accounting*, *31*(5–6), 711–728. https://doi.org/10.1111/j.0306-686X.2004.00554.x

Harris, M., & Raviv, A. (1991). The theory of capital structure. *The Journal of Finance*, *46*(1), 297–355.

Harris, M. S. (1998). The Association between Competition and Managers' Business Segment Reporting Decisions. *Journal of Accounting Research*, *36*(1), 111. https://doi.org/10.2307/2491323

Hassan, O., & Marston, C. L. (2010). Disclosure Measurement in the Empirical Accounting Literature - A Review Article. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1640598

Hassanein, A., & Hussainey, K. (2015). Is forward-looking financial disclosure really informative? Evidence from UK narrative statements. *International Review of Financial Analysis*, *41*, 52–61. https://doi.org/10.1016/j.irfa.2015.05.025

He, W. P., Lepone, A., & Leung, H. (2013). Information asymmetry and the cost of equity capital. *International Review of Economics & Finance*, *27*, 611–620. https://doi.org/10.1016/J.IREF.2013.03.001

Healy, P. M., Hutton, A. P., & Palepu, K. G. (1999). Stock Performance and Intermediation Changes Surrounding Sustained Increases in Disclosure. *Contemporary Accounting Research*, *16*(3), 485–520. https://doi.org/10.1111/j.1911-3846.1999.tb00592.x

Healy, P. M., & Palepu, K. G. (2001). Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, *31*(1–3), 405–440. https://doi.org/10.1016/S0165-4101(01)00018-0

Heflin, F. L., Shaw, K. W., & Wild, J. J. (2005). Disclosure Policy and Market Liquidity: Impact of Depth Quotes and Order Sizes. *Contemporary Accounting Research*, *22*(4), 829–865. https://doi.org/10.1506/EETM-FALM-4KDD-9DT9

Henry, E. (2008). Are Investors Influenced By How Earnings Press Releases Are Written? *Journal of Business Communication*, *45*(4), 363–407. https://doi.org/10.1177/0021943608319388

Henry, Elaine, & Leone, A. J. (2016). Measuring Qualitative Information in Capital Markets Research: Comparison of Alternative Methodologies to Measure Disclosure Tone. *The Accounting Review*, *91*(1), 153–178. https://doi.org/10.2308/accr-51161

Hirshleifer, D., & Teoh, S. H. (2003). Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics*, *36*(1–3), 337–386. https://doi.org/10.1016/j.jacceco.2003.10.002

Holder-Webb, L., Cohen, J., Nath, L., & Wood, D. (2007). A Survey of Governance Disclosures Among U.S. Firms. *Journal of Business Ethics*, *83*(3), 543–563. https://doi.org/10.1007/s10551-007-9638-3

Hope, O., Rotman, J. L., Street, S. G., & Ms, C. (2003). Analyst following and the influence of disclosure components , IPOs and ownership concentration Financial analysts serve an important role as intermediaries between firms and investors . international sample . Prior research has found that analyst coverag. *Symposium A Quarterly Journal In Modern Foreign Literatures*.

Hossain, M. ., Tan, L. M., & Adams, M. (1994). Voluntary disclosure in an emerging capital market: Some empirical evidence from companies listed on the Kuala Lumpur stock exchange. *The International Journal of Accounting*, *29*, 334–351.

Huang, J., & Kisgen, D. J. (2013). Gender and corporate finance: Are male executives overconfident relative to female executives? *Journal of Financial Economics*, *108*(3), 822–839. https://doi.org/10.1016/J.JFINECO.2012.12.005

Huang, X., Teoh, S. H., & Zhang, Y. (2014). Tone Management. *The Accounting Review*, *89*(3), 1083–1113. https://doi.org/10.2308/accr-50684

Huson, M. R., & MacKinnon, G. (2003). Corporate spinoffs and information asymmetry between investors. *Journal of Corporate Finance*, *9*(4), 481–503. https://doi.org/10.1016/S0929-1199(02)00056-1

Hussainey, K., Schleicher, T., & Walker, M. (2003). Undertaking large-scale disclosure studies when AIMR-FAF ratings are not available: the case of prices leading earnings. *Accounting and Business Research*, *33*(4), 275–294. https://doi.org/10.1080/00014788.2003.9729654

Hutton, A. P., Marcus, A. J., & Tehranian, H. (2009). Opaque financial reports, R2, and crash risk. *Journal of Financial Economics*, *94*(1), 67–86. https://doi.org/10.1016/J.JFINECO.2008.10.003

Janssen, M. C. W., & Roy, S. (2015). Competition, Disclosure and Signalling. *The Economic Journal*, *125*(582), 86–114. https://doi.org/10.1111/ecoj.12110

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs

and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Jensen, M. C., & Murphy, K. J. (1990). Performance Pay and Top-Management Incentives. *Journal of Political Economy*, *98*(2), 225–264. https://doi.org/10.2307/2937665

Jo, H., & Kim, Y. (2007). Disclosure frequency and earnings management. *Journal of Financial Economics*, *84*(2), 561–590. https://doi.org/10.1016/J.JFINECO.2006.03.007

John, K., & Senbet, L. W. (1998). Corporate governance and board effectiveness. *Journal of Banking & Finance*, *22*(4), 371–403. https://doi.org/10.1016/S0378-4266(98)00005-3

Johnson, W. B., Young, S. M., & Welker, M. (1993). Managerial Reputation and the Informativeness of Accounting and Market Measures of Performance. *Contemporary Accounting Research*, *10*(1), 305–332. https://doi.org/10.1111/j.1911-3846.1993.tb00394.x

Johnston, F. R., Boyland, J. E., Meadows, M., & Shale, E. (1999). Some properties of a simple moving average when applied to forecasting a time series. *Journal of the Operational Research Society*, *50*(12), 1267–1271. https://doi.org/10.1057/palgrave.jors.2600823

Kanagaretnam, K., Lobo, G. J., & Whalen, D. J. (2005). Relationship Between Analyst Forecast Properties and Equity Bid-Ask Spreads and Depths Around Quarterly Earnings Announcements. *Journal of Business Finance & Accounting*, *32*(9–10), 1773–1799. https://doi.org/10.1111/j.0306-686X.2005.00647.x

Kayhan, A., & Titman, S. (2007). Firms' histories and their capital structures. *Journal of Financial Economics*, *83*(1), 1–32. https://doi.org/10.1016/J.JFINECO.2005.10.007

Kilgallen, T. (2012). Testing the simple moving average across commodities, global stock indices, and currencies. *Journal of Wealth Management*, *15*(1), 82–100. https://doi.org/10.3905/jwm.2012.15.1.082

Kimbrough, M. D. (2005). The Effect of Conference Calls on Analyst and Market Underreaction to Earnings Announcements. *The Accounting Review*, *80*(1), 189–219. https://doi.org/10.2308/accr.2005.80.1.189

Kor, Y. Y., & Misangyi, V. F. (2008). Outside directors' industry-specific experience and firms' liability of newness. *Strategic Management Journal*, *29*(12), 1345–1355. https://doi.org/10.1002/smj.709

Kothari, S. P., Li, X., & Short, J. E. (2009). The Effect of Disclosures by Management, Analysts, and Business Press on Cost of Capital, Return Volatility, and Analyst Forecasts: A Study

Using Content Analysis. *The Accounting Review*, *84*(5), 1639–1670. https://doi.org/10.2308/accr.2009.84.5.1639

Kravet, T., & Muslu, V. (2013). Textual risk disclosures and investors' risk perceptions. *Review of Accounting Studies*, *18*(4), 1088–1122. https://doi.org/10.1007/s11142-013-9228-9

Krishnaswami, S., Spindt, P. A., & Subramaniam, V. (1999). Information asymmetry, monitoring, and the placement structure of corporate debt. *Journal of Financial Economics*, *51*(3), 407–434. https://doi.org/10.1016/S0304-405X(98)00059-2

Lakhal, F. (2005). Voluntary Earnings Disclosures and Corporate Governance: Evidence from France. *Review of Accounting and Finance*, *4*(3), 64–85. https://doi.org/10.1108/eb043431

Lambert, Richard, Leuz, C., & Verrecchia, R. E. (2011). Information Asymmetry, Information Precision, and the Cost of Capital*. *Review of Finance*, *16*(1), 1–29. https://doi.org/10.1093/rof/rfr014

Lambert, RICHARD, Leuz, C., & Verrecchia, R. E. (2007). Accounting Information, Disclosure, and the Cost of Capital. *Journal of Accounting Research*, *45*(2), 385–420. https://doi.org/10.1111/j.1475-679X.2007.00238.x

Lang, L., Ofek, E., & Stulz, R. (1996). Leverage, investment, and firm growth. *Journal of Financial Economics*, *40*(1), 3–29. https://doi.org/10.1016/0304-405X(95)00842-3

Lang, M., & Lundholm, R. (1993). Cross-Sectional Determinants of Analyst Ratings of Corporate Disclosures. *Journal of Accounting Research*, *31*(2), 246. https://doi.org/10.2307/2491273

Lang, MARK H., Carolina, U. of N., Lundholm, R. J., & Michigan, U. of. (2000). Voluntary Disclosure and Equity Offerings: Reducing Information Asymmetry or Hyping the Stock? *Contemporary Accounting Research*, *17*(4), 623–662. https://doi.org/10.1506/9N45-F0JX-AXVW-LBWJ

Lang, Mark H., & Lundholm, R. J. (1996). Corporate Disclosure Policy and Analyst Behavior. *The Accounting Review*, *71*(4), 467–492.

Lang, Mark H., & Lundholm, R. J. (2000). Voluntary Disclosure and Equity Offerings: Reducing Information Asymmetry or Hyping the Stock? *Contemporary Accounting Research*, *17*(4), 623–662. https://doi.org/10.1506/9N45-F0JX-AXVW-LBWJ

Lawrence, A. (2013). Individual investors and financial disclosure. *Journal of Accounting and Economics*, *56*(1), 130–147. https://doi.org/10.1016/j.jacceco.2013.05.001

Leland, Hayne E. and Pyle, D. H. (1977). INFORMATIONAL ASYMMETRIES, FINANCIAL STRUCTURE, AND FINANCIAL INTERMEDIATION. *Journal of Finance*, *32*(2), 371–387.

Levesque, T. J., Libby, T., Mathieu, R., & Robb, S. W. G. (2010). The effect of director monitoring on bid and ask spreads. *Journal of International Accounting Research*, *9*(2), 45–65.

Li, F. (2008). Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics*, *45*(2–3), 221–247. https://doi.org/10.1016/J.JACCECO.2008.02.003

Li, F. (2010a). Textual Analysis of Corporate Disclosures: A Survey of the Literature. *Journal of Accounting Literature; Gainesville*, *29*, 143–165.

Li, F. (2010b). The Information Content of Forward-Looking Statements in Corporate Filings-A Naïve Bayesian Machine Learning Approach. *Journal of Accounting Research*, *48*(5), 1049–1102. https://doi.org/10.1111/j.1475-679X.2010.00382.x

Li, K., & Broshko, E. B. (2006). Corporate Governance Requirements in Canada and the United States: A Legal and Empirical Comparison of the Principles-Based and Rules-Based Approaches. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.892708

Li, W., & Tang, Y. (2007). An evaluation of corporate governance evaluation, governance index (CGI NK) and performance: Evidence from Chinese listed companies in 2003. *Frontiers of Business Research in China*, *1*(1), 1–18. https://doi.org/10.1007/s11782-007-0001-4

Lim, S., Matolcsy, Z., & Chow, D. (2007). The Association between Board Composition and Different Types of Voluntary Disclosure. *European Accounting Review*, *16*(3), 555–583. https://doi.org/10.1080/09638180701507155

Lin, J.-C., Sanger, G. C., & Booth, G. G. (1995). Trade Size and Components of the Bid-Ask Spread. *Review of Financial Studies*, *8*(4), 1153–1183. https://doi.org/10.1093/rfs/8.4.1153

Lines, V. L. (2004). Corporate reputation in Asia: Looking beyond bottom-line performance. *Journal of Communication Management*, *8*(3), 233–245.

Lipton, M., & Lorsch, J. W. (1992). A Modest Proposal for Improved Corporate Governance. *The Business Lawyer*. American Bar Association. https://doi.org/10.2307/40687360

Lopes, P. T., & Rodrigues, L. L. (2007). Accounting for financial instruments: An analysis of the determinants of disclosure in the Portuguese stock exchange. *The International Journal of*

Accounting, *42*(1), 25–56. https://doi.org/10.1016/J.INTACC.2006.12.002

Loughran, T., & Mcdonald, B. (2016). Textual Analysis in Accounting and Finance: A Survey. *Journal of Accounting Research*, *54*(4), 1187–1230. https://doi.org/10.1111/1475-679X.12123

Loughran, T., & McDonald, B. (2011). When Is a Liability Not a Liability? Textual Analysis, Dictionaries, and 10-Ks. *The Journal of Finance*, *66*(1), 35–65. https://doi.org/10.1111/j.1540-6261.2010.01625.x

Lundholm, R., & Myers, L. A. (2002). Bringing the Future Forward: The Effect of Disclosure on the Returns-Earnings Relation. *Journal of Accounting Research*, *40*(3), 809–839. https://doi.org/10.1111/1475-679X.00072

Mande, V., Park, Y. K., & Son, M. (2012). Equity or Debt Financing: Does Good Corporate Governance Matter? *Corporate Governance: An International Review*, *20*(2), 195–211. https://doi.org/10.1111/j.1467-8683.2011.00897.x

McConnell, J. J., & Servaes, H. (1995). Additional Evidence on Equity Ownership and Corporate Value. *Journal of Financial Economics*, *27*(2), 595–612.

McKinnon, J. L., & Dalimunthe, L. (1993). VOLUNTARY DISCLOSURE OF SEGMENT INFORMATION BY AUSTRALIAN DIVERSIFIED COMPANIES. *Accounting & Finance*, *33*(1), 33–50. https://doi.org/10.1111/j.1467-629X.1993.tb00192.x

Mckinnon, S. M. (1984). A COST-BENEFIT STUDY OF DISCLOSURE REQUIREMENTS FOR MULTINATIONAL CORPORATIONS. *Journal of Business Finance & Accounting*, *11*(4), 451–468. https://doi.org/10.1111/j.1468-5957.1984.tb00763.x

Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics*, *38*(2), 163–184. https://doi.org/10.1016/0304-405X(94)00809-F

Merton, R. C. (1987). A Simple Model of Capital Market Equilibrium with Incomplete Information. *The Journal of Finance*, *42*(3), 483–510. https://doi.org/10.1111/j.1540-6261.1987.tb04565.x

Milbourn, T. T. (2003). CEO reputation and stock-based compensation. *Journal of Financial Economics*, *68*(2), 233–262. https://doi.org/10.1016/S0304-405X(03)00066-7

Morck, R., Yeung, B., & Yu, W. (2000). The information content of stock markets: why do emerging markets have synchronous stock price movements? *Journal of Financial*

Economics, *58*(1–2), 215–260. https://doi.org/10.1016/S0304-405X(00)00071-4

Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, *39*(3), 574–592.

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Nau, R. (2014). Forecasting with moving averages. *Fuqua School of Business, Duke University*, 1–3.

Oh, W.-Y., Chang, Y. K., & Kim, T.-Y. (2018). Complementary or Substitutive Effects? Corporate Governance Mechanisms and Corporate Social Responsibility. *Journal of Management*, *44*(7), 2716–2739. https://doi.org/10.1177/0149206316653804

Ohlson, J. A., & Juettner-Nauroth, B. E. (2005). Expected EPS and EPS Growth as Determinantsof Value. *Review of Accounting Studies*, *10*(2–3), 349–365. https://doi.org/10.1007/s11142-005-1535-3

Park, S. Y., & Yoo, K. H. (2016). CEO career concerns and voluntary disclosure. *Journal of Applied Business Research*, *32*(6), 1603–1628. https://doi.org/10.19030/jabr.v32i6.9811

Patelli, L., & Prencipe, A. (2007). The Relationship between Voluntary Disclosure and Independent Directors in the Presence of a Dominant Shareholder. *European Accounting Review*, *16*(1), 5–33. https://doi.org/10.1080/09638180701265820

Patro, S. (2008). The evolution of ownership structure of corporate spin-offs. *Journal of Corporate Finance*, *14*(5), 596–613. https://doi.org/10.1016/j.jcorpfin.2008.08.009

Patten, D. M. (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: A note on legitimacy theory. *Accounting, Organizations and Society*, *17*(5), 471–475. https://doi.org/10.1016/0361-3682(92)90042-Q

Persakis, A., & Iatridis, G. E. (2015). Cost of capital, audit and earnings quality under financial crisis: A global empirical investigation. *Journal of International Financial Markets, Institutions and Money*, *38*, 3–24. https://doi.org/10.1016/J.INTFIN.2015.05.011

Pianeselli, D., & Zaghini, A. (2014). The cost of firms' debt financing and the global financial crisis. *Finance Research Letters*, *11*(2), 74–83. https://doi.org/10.1016/J.FRL.2013.12.002

PWC. (2017). *Global investor survey on corporate reporting: PWC*.

Rajagopalan, N., & Datta, D. K. (1996). CEO Characteristics: Does Industry Matter? *Academy of Management Journal*, *39*(1), 197–215. https://doi.org/10.5465/256636

Ravi, R., & Hong, Y. (2014). Firm opacity and financial market information asymmetry. *Journal of Empirical Finance*, *25*, 83–94. https://doi.org/10.1016/J.JEMPFIN.2013.11.007

Rechner, P. L., & Dalton, D. R. (1991). CEO duality and organizational performance: A longitudinal analysis. *Strategic Management Journal*, *12*(2), 155–160. https://doi.org/10.1002/smj.4250120206

Rediker, K. J., & Seth, A. (1995). Boards of directors and substitution effects of alternative governance mechanisms. *Strategic Management Journal*, *16*(2), 85–99. https://doi.org/10.1002/smj.4250160202

Reeb, D. M., & Zhao, W. (2013). Director capital and corporate disclosure quality. *Journal of Accounting and Public Policy*, *32*(4), 191–212. https://doi.org/10.1016/J.JACCPUBPOL.2012.11.003

Ross, S. A. (1977). The Determination of Financial Structure: The Incentive-Signalling Approach. *The Bell Journal of Economics*, *8*(1), 23–40. https://doi.org/10.2307/3003485

Roulstone, D. T. (2003). Analyst Following and Market Liquidity*. *Contemporary Accounting Research*, *20*(3), 552–578. https://doi.org/10.1506/X45Y-PMH7-PNYK-4ET1

Rubin, A., & Smith, D. R. (2009). Institutional ownership, volatility and dividends. *Journal of Banking and Finance*, *33*(4), 627–639. https://doi.org/10.1016/j.jbankfin.2008.11.008

Schepker, D. J., & Oh, W.-Y. (2013). Complementary or Substitutive Effects? Corporate Governance Mechanisms and Poison Pill Repeal. *Journal of Management*, *39*(7), 1729–1759. https://doi.org/10.1177/0149206312441209

Schiehll, E., Ahmadjian, C., & Filatotchev, I. (2014). National Governance Bundles Perspective: Understanding the Diversity of Corporate Governance Practices at the Firm and Country Levels. *Corporate Governance: An International Review*, *22*(3), 179–184. https://doi.org/10.1111/corg.12067

Schwartz-Ziv, M., & Weisbach, M. S. (2013). What do boards really do? Evidence from minutes of board meetings. *Journal of Financial Economics*, *108*(2), 349–366. https://doi.org/10.1016/J.JFINECO.2012.04.011

Semino, E., Demjén, Z., Hardie, A., Payne, S., & Rayson, P. (2017). Conclusions. In *Metaphor, Cancer and the End of Life* (pp. 261–279). Routledge. https://doi.org/10.4324/9781315629834-11

Sengupta, P. (1998). Corporate Disclosure Quality and the Cost of Debt. *The Accounting Review*,

73(4), 459–474.

Seward, J. K., & Walsh, J. P. (1996). The Governance and Control of Voluntary Corporate Spin-Offs. *Strategic Management Journal*, *17*(1), 25–39. https://doi.org/10.2307/2486935

Shleifer, A., & Vishny, R. W. (1986). Large Shareholders and Corporate Control Author (s): Andrei Shleifer and Robert W . Vishny Source : Journal of Political Economy , Vol . 94 , No . 3 , Part 1 (Jun ., 1986), pp . 461-488 Published by : The University of Chicago Press Stable URL : http: *Journal of Political Economy*, *94*(3), 461–488. https://doi.org/10.1002/jae.l225

Shleifer, A., & Vishny, R. W. (1997). A Survey of Corporate Governance. *The Journal of Finance*, *52*(2), 737–783. https://doi.org/10.1111/j.1540-6261.1997.tb04820.x

Sila, V., Gonzalez, A., & Hagendorff, J. (2016). Women on board: Does boardroom gender diversity affect firm risk? *Journal of Corporate Finance*, *36*, 26–53. https://doi.org/10.1016/J.JCORPFIN.2015.10.003

Stiglitz, J., & Weiss, A. (1981). Credit rationing in markets with imperfect information. *The American Economic Review*, *71*(3), 393–410.

Stroh, L. K., Brett, J. M., Baumann, J. P., & Reilly, A. H. (1996). AGENCY THEORY AND VARIABLE PAY COMPENSATION STRATEGIES. *Academy of Management Journal*, *39*(3), 751–767. https://doi.org/10.2307/256663

Tan, Y., Zhu, Z., Zeng, C., & Gao, M. (2014). Does external finance pressure affect corporate disclosure of Chinese non-state-owned enterprises? *International Review of Financial Analysis*, *36*, 212–222. https://doi.org/10.1016/j.irfa.2014.01.004

Tasker, S. C. (1998). Bridging the Information Gap: Quarterly Conference Calls as a Medium for Voluntary Disclosure. *Review of Accounting Studies*, *3*(1/2), 137–167. https://doi.org/10.1023/A:1009684502135

Teoh, S. H., & Hwang, C. Y. (1991). Nondisclosure and Adverse Disclosure as Signals of Firm Value. *Review of Financial Studies*, *4*(2), 283–313. https://doi.org/10.1093/rfs/4.2.283

Tian, J. J., Haleblian, J. J., & Rajagopalan, N. (2011). The effects of board human and social capital on investor reactions to new CEO selection. *Strategic Management Journal*, *32*(7), 731–747. https://doi.org/10.1002/smj.909

Tong, Z. (2008). Deviations from optimal CEO ownership and firm value. *Journal of Banking & Finance*, *32*(11), 2462–2470. https://doi.org/10.1016/J.JBANKFIN.2008.05.005

Tosi, H. L., & Gomez-Mejia, L. R. (1994). CEO Compensation Monitoring and firm performance. *Academy of Management Journal*, *37*(4), 1002–1016. https://doi.org/10.5465/256609

Tosi, H. L., Katz, J. P., & Gomez-Mejia, L. R. (1997). Disaggregating The Agency Contract: The Effects Of Monitoring, Incentive Alignment, And Term In Office On Agent Decision Making. *Academy of Management Journal*, *40*(3), 584–602. https://doi.org/10.5465/257054

Vafeas, N. (1999). Board meeting frequency and firm performance. *Journal of Financial Economics*, *53*(1), 113–142. https://doi.org/10.1016/S0304-405X(99)00018-5

Verrecchia, R. E. (1983). Discretionary Disclosure. *Journal of Accounting and Economics*, *5*, 179–194.

Verrecchia, R. E. (2001). Essays on disclosure. *Journal of Accounting and Economics*, *32*(1–3), 97–180. https://doi.org/10.1016/S0165-4101(01)00025-8

Villalonga, B., & Amit, R. (2006). How do family ownership, control and management affect firm value? *Journal of Financial Economics*, *80*(2), 385–417. https://doi.org/10.1016/j.jfineco.2004.12.005

Wang, M., & Hussainey, K. (2013). Voluntary forward-looking statements driven by corporate governance and their value relevance. *Journal of Accounting and Public Policy*, *32*(3), 26–49. https://doi.org/10.1016/j.jaccpubpol.2013.02.009

Ward, A. J., Brown, J. A., & Rodriguez, D. (2009). Governance Bundles, Firm Performance, and the Substitutability and Complementarity of Governance Mechanisms. *Corporate Governance: An International Review*, *17*(5), 646–660. https://doi.org/10.1111/j.1467-8683.2009.00766.x

Wei, Z., Xie, F., & Zhang, S. (2005). Ownership Structure and Firm Value in China's Privatized Firms: 1991-2001. *The Journal of Financial and Quantitative Analysis*, *40*(1), 87–108.

Welker, M. (1995). Disclosure Policy, Information Asymmetry, and Liquidity in Equity Markets. *Contemporary Accounting Research*, *11*(2), 801–827. https://doi.org/10.1111/j.1911-3846.1995.tb00467.x

Wiseman, R. M., & Gomez-Mejia, L. R. (1998). A Behavioral Agency Model of Managerial Risk Taking. *Academy of Management Review*, *23*(1), 133–153. https://doi.org/10.5465/amr.1998.192967

Yang, T., & Zhao, S. (2014). CEO duality and firm performance: Evidence from an exogenous

shock to the competitive environment. *Journal of Banking & Finance*, *49*, 534–552. https://doi.org/10.1016/J.JBANKFIN.2014.04.008

Yermack, D. (1996). Higher market valuation forfirms with a small board of directors. *Journal of Financial Economics1*, *40*(1494), 185–211.

Yoshikawa, T., Zhu, H., & Wang, P. (2014). National Governance System, Corporate Ownership, and Roles of Outside Directors: A Corporate Governance Bundle Perspective. *Corporate Governance: An International Review*, *22*(3), 252–265. https://doi.org/10.1111/corg.12050

Zajac, E. J., & Westphal, J. D. (1994). The Costs and Benefits of Managerial Incentives and Monitoring in Large U.S. Corporations: When is More not Better? *Strategic Management Journal*, *15*(S1), 121–142. https://doi.org/10.1002/smj.4250150909

Tables

Table 1 - Effects of corporate communication on the firm's value and risk

Effect on	Benefits	Costs
Value	Reduces asymmetry of information and agency costs ➔ Increases value	Increases probability of proprietary information loss ➔ Decreases value
Risk	Resolves ambiguity and uncertainty about prospects of the firm ➔ Decreases risk	Induces noise ➔ Increases risk

Table 2 - An exemplary comparison between CI and Dictionary

	Company A			Company B	
	Dictionary	CI	Industry Median	Dictionary	CI
Sub-Category 1	50	2	20	10	1
Sub-Category 2	0	0	20	10	1
Sub-Category 3	0	0	20	10	1
Total	50	2		30	3
Transparent Firm (Dictionary count)	A				
Transparent Firm (Communication Index)					B

Table 3 - Variable Definitions, Sources and Purposes

Variable Label	Definition	Source (Dataset)	Purpose
Firm-Specific SD	Annualized monthly idiosyncratic volatility, computed as Standard Deviation of 24-month residuals from rolling regression of Capital Asset Pricing Model.	CRSP	Used in computations
Total SD	Annualized Standard Deviation of Monthly Stock Returns (Adjusted for Dividends and Splits)	CRSP	Used in computations
Risk_Ratio	The ratio of Firm-Specific Standard Deviation (SD) to Total SD	CRSP	Dependent
Tobin's Q	Tobin's Q measured as Market value of firm (Market Cap plus Book value of Total Assets minus Book value of outstanding Equity) divided by Book Value of Total Asset.	CRSP & Compustat	Dependent
CI	Communication Index	Authors	Principal independent
Dictionary	Count of Dictionary Keywords (Key words and phrases as are explained in Appendix A)	Authors	Principal independent
Length	Length of communication, measured by summing the length of all filings, reports, and press releases over a year. Length is captured by the number of words used in a document.	Authors	Principal independent
Dev_Length, Dev_Dictionary, Dev_CI	Communication Deviation is the percentage change between actual communication measure at time t = 0 and the expected level of communication at time t = 0. Expected communication is the average of actual communication in the previous three years (t = -1, -2, -3).	Authors	Principal independent
Board_Size	Number of board members	Boardex	Control
Duality	CEO Dual Role. If CEO is Chairman of the Board, Dummy variable = 1	Boardex	Control
Independence	Board independence is the ratio of the number of independent board members to board size.	Boardex	Control
GenderDivers	Gender Diversity, is the proportion of women on the board.	Boardex	Control

Table 3. Cont'd

Variable Label	Definition	Source (Dataset)	Purpose
Education	Board education is the sum of the number of qualifications of Non-Executive Directors (NEDs) divided by Board size for each firm-year. Qualifications are certificates of higher education after high school diploma including Graduate, Doctorate and Post-Doctoral Degrees (Ph.D., DJ, DL, MA, MS, MBA); Bachelor of Arts, Science, Engineering, Education, or Administration (BA, AB, BSc, B.Eng., B.Econ, B.Admin, etc.); Industry Certificates and Designations (i.e. Chartered Financial Analyst – CFA, Chartered Professional Accountant – CPA, Certificate of Corporate Directorship, Financial Planner, Fraud Examiner, General Accountant, Managerial Accountant, Public Accountant, Accredited Appraiser, Information Security, Petroleum or Mining Geologist, Contracts Manager – CPCM, Professional Purchaser – CPP, etc.); Executive Program Diploma; Associate Degree (AA).	Boardex	Control
Expertise	Board expertise is the percentage of industry expert NEDs on the board, where expert is defined as an indicator variable for all the years the director has served on the board of more than 1 company in a specific sector until the report date.	Boardex	Control
MeetFreq	Meeting frequency is the number of the meetings of the board of directors – either as a whole or in committees.	(Hand-collected) Proxy Statements and Management Information Circulars	Control
CEO_Ownership	Ratio of CEO equity holding (common shares) to shares outstanding. The values are rounded to the nearest $1000.	(Hand-collected) Proxy Statements and Management Information Circulars	Control
EquityRemun	CEO Equity Remuneration Ratio is equity incentive compensation for CEO, which is ratio of equity-linked compensation divided by the total compensation. Equity-linked means the value of granted stocks and options. The values are rounded to the nearest $1000. In cases where the price of options are not disclosed, we used Black Scholes model to estimate the price.	(Hand-collected) Proxy Statements and Management Information Circulars	Control

Table 3 Cont'd

Variable Label	Definition	Source (Dataset)	Purpose
InstOwn	Institutional ownership is the sum of percentage of outstanding shares held by institutions per year per firm.	Institutional (13f) Holdings, Thompson Reuters, FactSet	Control
Mgt_Quality	Management quality measured as 4-year growth rate of industry-adjusted operating income before Interest, Tax, Depreciation, and Amortization	Compustat	Control
HHI	Proxy for product market competition is defined as Herfindahl Hirschman Index computed using SIC 4-digit codes in Compustat North American Universe.	Compustat	Control
Debt_Ratio	Proxy for financial leverage, debt ratio is the book value of all liabilities scaled by total assets, measured at the beginning of fiscal year (Hutton et al., 2009)	Compustat	Control
P/B Equity Ratio	The ratio of the market value of equity to the book value of equity, measured at the beginning of fiscal year (Hutton et al., 2009)	CRSP & Compustat	Control
Firm_Size	The natural logarithm of the book value of total asset at the beginning of fiscal year (Hutton et al., 2009)	Compustat	Control
Age	Number of years between the IPO year and the year of the firm-year observation, inclusive.	Hand-collected) SEDAR Filings, Audit Analytics, Internet Search, Companies Websites	Control

Table 4 – Sample Selection

Panel A: Target and Final sample

	Unique Firms
Target population	520
Random selection	148
Loss of firms	(52)
Final sample	96
Firm-year observations	*1123*
	Filings
Total number of documents in the corpus	*150,000*

Panel B: Final sample distribution among sectors and comparison with target sample

Sector	% in Final Sample	% in Target Sample
Energy	28%	26%
Materials	22%	26%
Financials	17%	6%
Industrials	8%	8%
Consumer Discretionary	7%	7%
Utilities	6%	3%
Information Technology	4%	8%
Real Estate	4%	5%
Consumer Staples	2%	3%
Telecommunication	1%	4%
Health Care	0%	4%
Sum	100%	100%

Table 5 - Descriptive Statistics

Panel A: Description of variables

	Mean	St. Dev	Min	Median	Max
CI	53.9281	14.1508	23	54	83
Dictionary (1,000)	13.0436	7.5658	.058	11.579	32.024
Length (10,000)	49.2433	31.3729	.1539	42.0675	133.4469
Risk_Ratio	54.9635	12.4325	28.1069	55.1262	90.1566
Tobin's Q	2.6665	1.6689	.2161	2.2916	10.0149
Board_Size	10.0169	3.4588	3	9	24
Independence	.7824	.127	.375	.8	1
Board Education	2.0637	.6074	.5	2.1	4.78
Board Expertise	38.406	21.8243	0	36	89
GenderDivers	.0985	.1005	0	.1	.545
MeetFreq	25.1406	10.366	4	25	70
EquityRemun	.3679	.2477	0	.37	1
InstOwn	.4047	.2175	0	.4018	1
HHI	.1314	.0841	.0101	.1144	.4243
Mgt_Quality	.8022	10.1685	-46.85	0	164.2
CEO_Ownership	1.5588	3.5668	0	.2364	39.237
Debt_Ratio	.2855	.1769	.001	.266	.681
Firm_Size ($1,000,000)	2612.60	4.39	86.03	2454.06	92558.86
Age	30.3616	29.1282	5	20	139

Panel B: Time distribution of firm-year observations

Year	Number of firms	%	Sum of CI	%	Sum of Dictionary	%	Sum of Length	%
1999	41	3.6%	1,383	2.3%	177,703	1.2%	8,405,474	1.5%
2000	43	3.8%	1,512	2.5%	183,987	1.3%	9,169,936	1.7%
2001	47	4.2%	1,818	3.0%	281,233	1.9%	13,168,180	2.4%
2002	50	4.4%	2,040	3.4%	355,644	2.4%	16,256,363	2.9%
2003	55	4.9%	2,412	4.0%	445,991	3.0%	19,565,484	3.5%
2004	58	5.1%	2,902	4.8%	673,702	4.6%	26,844,041	4.8%
2005	71	6.3%	3,596	5.9%	792,518	5.4%	32,998,036	5.9%
2006	74	6.6%	3,786	6.2%	858,268	5.8%	34,240,551	6.2%
2007	76	6.7%	4,115	6.8%	998,410	6.8%	37,078,097	6.7%
2008	76	6.7%	4,341	7.1%	1,081,879	7.4%	39,177,397	7.1%
2009	82	7.3%	4,904	8.1%	1,325,387	9.0%	50,809,459	9.2%
2010	84	7.5%	5,064	8.3%	1,316,594	9.0%	48,453,737	8.7%
2011	93	8.3%	5,732	9.4%	1,600,913	10.9%	56,857,172	10.2%
2012	92	8.2%	5,680	9.3%	1,574,825	10.7%	58,254,739	10.5%
2013	93	8.3%	5,790	9.5%	1,537,258	10.5%	52,919,634	9.5%
2014	92	8.2%	5,702	9.4%	1,495,793	10.2%	50,774,188	9.1%
Sum	1,127	100.0%	60,777	100.0%	14,700,105	100.0%	554,972,488	100.0%

Table 6 - Annual distribution of the filings by representative median firm

	Panel A					Panel B				
	All types of filings excluding Press Releases					Press Releases (Purely Voluntary)				
Year	Number of fillings	Sum of Length	Average Length per Report	Sum of Dictionary	Average Dictionary per Report	Number of fillings	Sum of Length	Average Length per Report	Sum of Dictionary	Average Dictionary per Report
1999	26	68,583	2,638	1,625	63	60	30,290	505	683	11
2000	29	73,233	2,525	1,611	56	48	29,317	611	730	15
2001	26	55,172	2,122	1,500	58	54	32,745	606	661	12
2002	25	71,082	2,843	2,048	82	93	45,207	486	854	9
2003	41	190,724	4,652	5,973	146	45	30,231	672	765	17
2004	38	178,702	4,703	4,744	125	79	36,394	461	748	9
2005	33	227,126	6,883	6,461	196	64	32,854	513	741	12
2006	39	208,649	5,350	7,368	189	31	29,490	951	1,007	32
2007	44	310,443	7,056	10,327	235	36	32,478	902	825	23
2008	29	252,704	8,714	8,006	276	42	39,607	943	1,019	24
2009	23	172,501	7,500	6,403	278	27	31,782	1,177	859	32
2010	29	269,093	9,279	10,469	361	29	32,388	1,117	959	33
2011	29	278,545	9,605	11,087	382	34	44,172	1,299	1,157	34
2012	25	295,867	11,835	11,870	475	31	33,318	1,075	925	30
2013	28	351,269	12,545	13,873	495	24	27,474	1,145	808	34
2014	29	316,862	10,926	12,408	428	25	28,000	1,120	742	30
Mean	30	203,562	6,855	7,172	244	43	32,751	864	823	23
Std. Dev.	6	96,950	3,489	4,179	157	19	5,501	299	151	10

This table shows the number of reports filed at SEDAR each year by the median-size firm, separating mandatory reports from pure voluntary disclosures. Sum of the length, sum of the dictionary values, as well as average values of Length and Dictionary per documents for each year are also depicted.

Table 7 - Pearson Correlation Matrix

	1	2	3	4	5	6	7	8	9
1. CI	1								
2. Dictionary	0.884***	1							
3. Length	0.798***	0.920***	1						
4. Risk Ratio	-0.130***	-0.0725*	-0.0701*	1					
5. Tobin's Q	0.0846*	0.0884*	0.120***	-0.0491	1				
6. Board_Size	0.253***	0.294***	0.326***	-0.0649	-0.00365	1			
7. Independence	0.241***	0.231***	0.237***	-0.0457	-0.0545	-0.00956	1		
8. Education	0.167***	0.132***	0.143***	-0.0722*	-0.0967**	0.248***	0.409***	1	
9. Expertise	0.0301	0.0304	-0.0286	-0.0272	-0.0717*	-0.147***	0.164***	0.144***	1
10. GenderDivers	0.170***	0.140***	0.175***	-0.0640	-0.0500	0.336***	0.0817*	0.305***	-0.159***
11. MeetFreq	0.341***	0.318***	0.285***	-0.0639	-0.0358	0.267***	0.168***	0.157***	-0.0708*
12. EquityRemun	0.239***	0.181***	0.155***	0.0423	0.133***	0.0687*	-0.0199	0.0815*	0.0795*
13. InstOwn	0.363***	0.323***	0.279***	0.00374	0.00882	0.0377	0.152***	0.0627	-0.0661
14. HHI	-0.0387	-0.0523	-0.0725*	-0.00203	-0.00726	0.156***	-0.147***	-0.0531	-0.242***
15. Mgt_Quality	0.0238	0.00607	-0.0150	-0.0456	0.0447	-0.0333	0.0271	-0.0513	0.0197
16. CEO_Ownership	-0.178***	-0.194***	-0.176***	0.0508	0.275***	-0.364***	-0.0525	-0.260***	-0.00267
17. Debt_Ratio	0.112**	0.135***	0.214***	-0.0442	-0.0647	0.129***	0.195***	0.151***	-0.175***
18. P/B Equity Ratio	0.0933**	0.122***	0.154***	-0.0185	0.987***	0.0233	-0.0462	-0.0935**	-0.0615
19. Firm_Size	0.509***	0.556***	0.553***	-0.0983**	-0.0322	0.585***	0.0961**	0.205***	-0.283***
20. Age	0.0668	0.127***	0.188***	-0.0446	0.0951**	0.310***	-0.0649	0.0393	-0.320***

* p<0.10, ** p<0.05, *** p<0.01

Table 7 Cont's

	10	11	12	13	14	15	16	17	18	19	20
1. CI											
2. Dictionary											
3. Length											
4. Risk_Ratio											
5. Tobin's Q											
6. Board_Size											
7. Independence											
8. Education											
9. Expertise											
10. GenderDivers	1										
11. MeetFreq	0.153***	1									
12. EquityRemun	0.0994**	-0.00869	1								
13. InstOwn	0.0690*	0.00670	0.236***	1							
14. HHI	-0.143***	0.0791*	-0.0635	-0.0240	1						
15. Mgt_Quality	0.0703*	-0.0594	-0.00428	0.0317	-0.0395	1					
16. CEO_Ownership	-0.189***	-0.138***	-0.146***	-0.110**	-0.0135	0.0474	1				
17. Debt_Ratio	0.210***	0.0409	-0.0278	-0.0346	-0.0255	-0.0514	-0.109**	1			
18. P/B Equity Ratio	-0.0432	-0.0297	0.137***	-0.00254	-0.00594	0.0459	0.272***	-0.0488	1		
19. Firm_Size	0.350***	0.332***	0.154***	0.254***	0.000399	-0.0164	-0.407***	0.216***	-0.0231	1	
20. Age	0.147***	0.0698*	0.0427	-0.0697*	0.168***	-0.0213	-0.122***	0.177***	0.106**	0.312***	1

* p<0.10, ** p<0.05, *** p<0.01

Table 8 - Univariate Analysis of Deviations from Expected Transparency and deviation from Expected Performance - Pearson Correlation Coefficients and Test of Significance

Transparency Measure	Tobin's Q	Observations
Length	0.1524*** (0.000)	944
Dictionary	0.0960*** (0.006)	944
CI	0.0664* (0.058)	944

This table shows the correlation coefficients between the signs of percentage deviations from the expected level of transparency and deviation from expected level of firm value measured by *Tobin's Q*. Deviations are calculated at t = 0 as deviations from expected levels that are three year moving averages of actual measures (t = -1, -2, -3). The percentage deviations can be positive, negative or zero. *Tobin's Q is* measured as market cap plus book value of total assets minus book value of outstanding equity divided by book value of total asset. Transparency is measured by *Length*, *Dictionary*, and *Communication Index (CI*). *Length* is the number of words used in a document summed over all filings, reports, and press releases during one year for each firm. *Dictionary* is the count of index' dictionary keywords, over all filings, reports, and press releases published and filed at SEDAR during a year for each company. *CI* is the median-based industry-adjusted *Dictionary* score for each firm-year. P-Values are in parentheses. Significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 9 - OLS Regression of Deviation from Expected Tobin's Q on Deviation from Expected Transparency

Panel A	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Dev_Length	0.1242***			0.1709***		
	(3.604)			(5.234)		
Dev_Dictionary		0.0941***			0.1732***	
		(2.645)			(4.547)	
Dev_CI			0.0524			0.2254**
			(1.449)			(2.367)
Risk_Ratio	-0.0020	-0.0027	-0.0032	-0.0010	-0.0012	-0.0015*
	(-0.743)	(-0.993)	(-1.175)	(-1.368)	(-1.591)	(-1.947)
Mgt_Quality	-0.0030	-0.0029	-0.0026	-0.0007	-0.0007	-0.0008
	(-1.001)	(-0.961)	(-0.879)	(-0.878)	(-0.905)	(-0.927)
Debt_Ratio	0.6003***	0.6067***	0.6173***	0.1326**	0.1340**	0.1328**
	(2.692)	(2.710)	(2.750)	(2.164)	(2.177)	(2.137)
Firm_Size	-0.0751**	-0.0765**	-0.0752**	-0.0150*	-0.0142*	-0.0149*
	(-2.502)	(-2.537)	(-2.488)	(-1.816)	(-1.714)	(-1.774)
Age	0.0012	0.0012	0.0013	0.0003	0.0003	0.0003
	(0.923)	(0.931)	(1.000)	(0.835)	(0.792)	(0.851)
CEO_Ownership	0.0056	0.0043	0.0039	0.0016	0.0019	0.0018
	(0.484)	(0.368)	(0.338)	(0.514)	(0.592)	(0.549)
Year & Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	799	799	799	799	799	799
Adj. R-Squared	0.17	0.17	0.16	0.23	0.22	0.20

Panel B	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Lag_Dev_Length	0.1213***			0.0958***		
	(3.333)			(2.901)		
Lag_Dev_Dictionary		0.1201***			0.0824**	
		(3.186)			(2.140)	
Lag_Dev_CI			0.0997***			0.2219**
			(2.585)			(2.262)
Risk_Ratio	-0.0027	-0.0028	-0.0027	-0.0013*	-0.0013*	-0.0012
	(-0.949)	(-0.983)	(-0.951)	(-1.713)	(-1.658)	(-1.559)
Mgt_Quality	-0.0018	-0.0024	-0.0022	-0.0008	-0.0008	-0.0007
	(-0.594)	(-0.775)	(-0.715)	(-0.954)	(-0.935)	(-0.914)
Debt_Ratio	0.5312**	0.5305**	0.5594**	0.1287**	0.1285**	0.1305**
	(2.237)	(2.233)	(2.347)	(2.012)	(2.003)	(2.035)
Firm_Size	-0.0576*	-0.0575*	-0.0569*	-0.0184**	-0.0179**	-0.0181**
	(-1.770)	(-1.765)	(-1.743)	(-2.093)	(-2.038)	(-2.062)
Age	0.0007	0.0006	0.0008	0.0002	0.0002	0.0002
	(0.478)	(0.420)	(0.592)	(0.583)	(0.595)	(0.618)
CEO_Ownership	0.0028	0.0023	0.0027	0.0006	0.0007	0.0008
	(0.216)	(0.176)	(0.209)	(0.171)	(0.201)	(0.219)
Year & Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	706	706	706	706	706	706
Adj. R-Squared	0.18	0.18	0.17	0.22	0.22	0.22

This Table shows the Ordinary Least Squares (OLS) regression results of the percentage deviation from expected Tobin's Q on the percentage deviation from the expected level of transparency. Models 1, 2, and 3 consider the sign of the percentage deviation and Models 4, 5, and 6 consider both sign and the amount of percentage deviations.

In Panel A, Communication measures and Value measures are contemporaneous. In Panel B, Communications measures are lagged for one period. All the models control for Industry and Year Fixed Effects. Standard Errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors. T-Stats are in parenthesis, and significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 10 - 2SLS Regression Results with Tobin's Q as Dependent Variable and Length as Communication Measure

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Length	0.0127***	0.0077**	0.0320*	0.0664***	0.0295***	0.0069*	0.0150***	0.0144***	0.0100**	0.0058*	0.0822***
	(5.734)	(2.294)	(1.736)	(4.681)	(4.065)	(1.709)	(2.897)	(4.571)	(2.305)	(1.717)	(3.220)
Length^2	-0.0001*	-0.0001*	-0.0001**	-0.0001**	-0.0001**	-0.0001*	-0.0001**	-0.0001**	-0.0001	-0.0001*	-0.0002***
	(-1.673)	(-1.647)	(-2.031)	(-2.399)	(-2.035)	(-1.787)	(-1.994)	(-1.981)	(-1.628)	(-1.767)	(-2.778)
Duality	-0.3411**										-0.2865
	(-2.071)										(-1.562)
Length x Duality	-0.0107**										-0.0130**
	(-2.441)										(-2.373)
EquityRemun		0.7784***									0.7404***
		(3.079)									(2.853)
Length x EquityRemun		0.0102									0.0036
		(1.279)									(0.398)
Ln (Board_Size)			0.5925***								0.5777**
			(2.983)								(2.467)
Length x Ln (Board_Size)			-0.0085								-0.0076
			(-1.126)								(-0.958)
Independence				0.1580							0.3160
				(0.369)							(0.588)
Length x Independence				-0.0676***							-0.0484**
				(-4.024)							(-2.452)
Education					-0.0248						-0.0959
					(-0.276)						(-0.881)
Length x Education					-0.0087***						-0.0083**
					(-2.800)						(-2.384)
Expertise						-0.0032					-0.0057*
						(-1.140)					(-1.839)
Length x Expertise						0.0001					0.0001
						(1.306)					(0.691)
MeetFreq							0.0099*				0.0016
							(1.900)				(0.282)
Length x MeetFreq							-0.0001				0.0001
							(-0.792)				(0.281)
GenderDivers								-0.7595			-1.1424*
								(-1.316)			(-1.682)
Length x GenderDivers								-0.0346**			-0.0135
								(-2.017)			(-0.760)
InstOwn									-0.0775		0.0815
									(-0.264)		(0.269)

Table 10 Cont'd

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Length x InstOwn									0.0017		0.0045
									(0.189)		(0.509)
HHI										0.5811	0.2008
										(0.976)	(0.310)
Length x HHI										0.0400*	0.0159
										(1.676)	(0.624)
Risk_Ratio	-0.0050	-0.0059	-0.0038	-0.0042	-0.0046	-0.0056	-0.0051	-0.0053	-0.0053	-0.0047	-0.0034
	(-1.282)	(-1.526)	(-0.940)	(-1.059)	(-1.152)	(-1.419)	(-1.281)	(-1.330)	(-1.334)	(-1.176)	(-0.861)
Mgt_Quality	0.0046	0.0048	0.0049	0.0052	0.0056	0.0046	0.0050	0.0050	0.0046	0.0046	0.0067
	(0.882)	(0.936)	(0.944)	(0.988)	(1.066)	(0.876)	(0.942)	(0.958)	(0.876)	(0.885)	(1.249)
Debt_Ratio	0.1854	0.2209	0.2634	0.3018	0.2487	0.2092	0.3042	0.3382	0.3109	0.3115	-0.0099
	(0.479)	(0.584)	(0.694)	(0.782)	(0.653)	(0.548)	(0.801)	(0.888)	(0.793)	(0.812)	(-0.025)
Firm_Size	-0.0596	-0.0757	-0.1249**	-0.0732	-0.0707	-0.0793	-0.0884*	-0.0528	-0.0619	-0.0597	-0.1362**
	(-1.153)	(-1.463)	(-2.197)	(-1.404)	(-1.335)	(-1.472)	(-1.677)	(-0.978)	(-1.162)	(-1.136)	(-2.203)
Age	0.0089***	0.0076***	0.0081***	0.0078***	0.0086***	0.0079***	0.0084***	0.0085***	0.0081***	0.0081***	0.0079***
	(4.121)	(3.651)	(3.706)	(3.548)	(3.973)	(3.659)	(3.944)	(3.874)	(3.721)	(3.806)	(3.622)
CEO_Ownership	0.1018***	0.1033***	0.1079***	0.0937***	0.0929***	0.0960***	0.0969***	0.0959***	0.0987***	0.0988***	0.0981***
	(4.360)	(4.337)	(4.289)	(3.954)	(3.908)	(4.087)	(4.020)	(4.041)	(4.061)	(4.058)	(4.428)
Year/Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	916	916	916	916	916	916	916	916	916	916	916
Adj. R-Squared	0.19	0.20	0.19	0.20	0.19	0.19	0.19	0.19	0.19	0.19	0.22

This table shows 2SLS regression results of non-linear association between Tobin's Q and "exogenous" portion of *Length*. 2SLS approach is used to control for the endogeneity issues of the communication measure and governance variables in our non-linear model. In the first stage, *Length* is estimated by the governance variables, and in the second stage, the residual of the first stage is included as a regressor reflecting the exogenous portion of *Length*. *Duality* is a dummy with value of one when CEO is has a dual role as the chairman of the board. *EquityRemun* is the portion of CEO's equity-linked compensation relative to his/her total compensation. *Ln (Board_Size)* is the natural logarithm of the total number of board members. *Independence* is the ratio of Non-Executive Directors (NEDs) on the board. *Education* is the average number of degrees and qualifications for NEDs' in each firm-year. *Expertise* is the percentage of industry expert NEDs on the board. *MeetFreq* is the total number of board meetingsin each firm-year. *GenderDivers* is the portion of women on the board in each firm-year. *InstOwn* is measured as sum of percentage of outstanding shares held by institutions per year per firm. *HHI* is Herfindahl Hirschman Index computed using SIC 4-digit codes in Compustat North American Universe. *Risk_Ratio*, is the ratio of idiosyncratic volatility to total risk. Idiosyncratic risk is the annualized monthly idiosyncratic volatility, which is standard deviation of 24-month residuals from rolling regression of capital asset pricing model. Total risk is the annualized standard deviation of monthly stock returns (adjusted for dividends and splits). *Mgt_Quality* is a proxy for management quality measured as 4-year growth rate of industry-adjusted operating income before Interest, Tax, Depreciation, and Amortization. *Debt_Ratio* as a proxy for financial leverage is the ratio of total debt to total assets. *Firm_Size* is natural logarithm of total asset. *Age* is the number of years since the firm's initial public offering (IPO). *CEO_Ownership* is the percentage of common shares owned by CEO in each firm-year. Details of variable definitions and sources of collected data are reported in Table 3. All the models control for Industry and Year Fixed Effects. Standard Errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors. T-Stats are in parenthesis, and significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 11 - 2SLS Regression Results with Tobin's Q as the Dependent Variable and Dictionary as the Communication Measure

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Dictionary	0.0379***	0.0294**	0.0775	0.2119***	0.0935***	0.0309*	0.0414*	0.0376***	0.0199	0.0038	0.2509**
	(4.147)	(2.027)	(1.077)	(3.967)	(3.161)	(1.752)	(1.923)	(2.874)	(1.114)	(0.267)	(2.534)
Dictionary^2	-0.0009	-0.0011	-0.0013	-0.0017*	-0.0013	-0.0010	-0.0013	-0.0011	-0.0009	-0.0013	-0.0026**
	(-1.090)	(-1.209)	(-1.348)	(-1.797)	(-1.443)	(-1.131)	(-1.416)	(-1.203)	(-0.994)	(-1.332)	(-2.472)
Duality	-0.3342**										-0.3369*
	(-2.011)										(-1.785)
Dictionary x Duality	-0.0465**										-0.0536**
	(-2.517)										(-2.418)
EquityRemun		0.7823***									0.7310***
		(3.010)									(2.789)
Dictionary x EquityRemun		0.0145									-0.0188
		(0.421)									(-0.513)
Ln (Board_Size)			0.5278***								0.4644*
			(2.586)								(1.904)
Dictionary x Ln (Board_Size)			-0.0187								-0.0115
			(-0.630)								(-0.371)
Independence				0.0642							0.1424
				(0.150)							(0.263)
Dictionary x Independence				-0.2233***							-0.1493**
				(-3.502)							(-2.012)
Education					-0.0324						-0.0873
					(-0.362)						(-0.795)
Dictionary x Education					-0.0301**						-0.0288*
					(-2.330)						(-1.959)
Expertise						-0.0022					-0.0040
						(-0.785)					(-1.293)
Dictionary x Expertise						-0.0000					-0.0001
						(-0.033)					(-0.271)
MeetFreq							0.0093*				0.0048
							(1.809)				(0.838)
Dictionary x MeetFreq							-0.0003				-0.0001
							(-0.464)				(-0.068)
GenderDivers								-0.8108			-1.2143*
								(-1.395)			(-1.765)
Dictionary x GenderDivers								-0.0832			-0.0497
								(-1.210)			(-0.712)
InstOwn									-0.1142		0.1028
									(-0.382)		(0.322)

Table 11 Cont'd

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Dictionary x InstOwn									0.0200		0.0221
									(0.558)		(0.621)
HHI										0.6941	0.4634
										(1.166)	(0.713)
Dictionary x HHI										0.2011**	0.1051
										(2.035)	(0.992)
Risk_Ratio	-0.0055	-0.0062	-0.0043	-0.0042	-0.0049	-0.0055	-0.0052	-0.0056	-0.0055	-0.0047	-0.0039
	(-1.391)	(-1.575)	(-1.077)	(-1.063)	(-1.228)	(-1.390)	(-1.305)	(-1.399)	(-1.376)	(-1.178)	(-0.993)
Mgt_Quality	0.0039	0.0042	0.0042	0.0043	0.0048	0.0040	0.0044	0.0043	0.0041	0.0040	0.0054
	(0.759)	(0.824)	(0.831)	(0.837)	(0.929)	(0.777)	(0.845)	(0.836)	(0.789)	(0.781)	(1.070)
Debt_Ratio	0.2562	0.2885	0.3405	0.4082	0.3294	0.3146	0.3708	0.3948	0.3832	0.3879	0.1944
	(0.659)	(0.758)	(0.889)	(1.048)	(0.856)	(0.819)	(0.967)	(1.026)	(0.975)	(1.009)	(0.475)
Firm_Size	-0.0483	-0.0633	-0.1045*	-0.0560	-0.0500	-0.0555	-0.0722	-0.0326	-0.0464	-0.0410	-0.0981
	(-0.928)	(-1.211)	(-1.832)	(-1.065)	(-0.938)	(-1.012)	(-1.361)	(-0.598)	(-0.858)	(-0.769)	(-1.558)
Age	0.0096***	0.0082***	0.0084***	0.0085***	0.0090***	0.0086***	0.0090***	0.0089***	0.0086***	0.0084***	0.0088***
	(4.413)	(3.850)	(3.844)	(3.826)	(4.113)	(3.920)	(4.143)	(4.044)	(3.907)	(3.920)	(3.991)
CEO_Ownership	0.1073***	0.1089***	0.1130***	0.1005***	0.1014***	0.1029***	0.1025***	0.1021***	0.1044***	0.1049***	0.1097***
	(4.497)	(4.509)	(4.346)	(4.136)	(4.155)	(4.200)	(4.179)	(4.179)	(4.211)	(4.213)	(4.594)
Year/Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	916	916	916	916	916	916	916	916	916	916	916
Adj. R-Squared	0.18	0.19	0.18	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.20

This table shows 2SLS regression results of non-linear association between Tobin's Q and "exogenous" portion of *Dictionary*. 2SLS approach is used to control for the endogeneity issues of the communication measure and governance variables in our non-linear model. In the first stage, *Dictionary* is estimated by the governance variables, and in the second stage, the residual of the first stage is included as a regressor reflecting the exogenous portion of *Dictionary. Duality* is a dummy with value of one when CEO is has a dual role as the chairman of the board. *EquityRemun* is the portion of CEO's equity-linked compensation relative to his/her total compensation. *Ln (Board_Size)* is the natural logarithm of the total number of board members. *Independence* is the ratio of Non-Executive Directors (NEDs) on the board. *Education* is the average number of degrees and qualifications for NEDs' in each firm-year. *Expertise* is the percentage of industry expert NEDs on the board. *MeetFreq* is the total number of board meetings in each firm-year. *GenderDivers* is the portion of women on the board in each firm-year. *InstOwn* is measured as sum of percentage of outstanding shares held by institutions per year per firm. *HHI* is Herfindahl Hirschman Index computed using SIC 4-digit codes in Compustat North American Universe. *Risk_Ratio*, is the ratio of idiosyncratic volatility to total risk. Idiosyncratic risk is the annualized monthly idiosyncratic volatility, which is standard deviation of 24-month residuals from rolling regression of capital asset pricing model. Total risk is the annualized standard deviation of monthly stock returns (adjusted for dividends and splits). *Mgt_Quality* is a proxy for management quality measured as 4-year growth rate of industry-adjusted operating income before Interest, Tax, Depreciation, and Amortization. *Debt_Ratio* as a proxy for financial leverage is the ratio of total debt to total assets. *Firm_Size* is natural logarithm of total asset. *Age* is the number of years since the firm's initial public offering (IPO). *CEO_Ownership* is the percentage of common shares owned by CEO in each firm-year. Details of variable definitions and sources of collected data are reported in Table 3. All the models control for Industry and Year Fixed Effects. Standard Errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors. T-Stats are in parenthesis, and significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 12 - 2SLS Regression Results with Tobin's Q as the Dependent Variable and CI as the Communication Measure

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
CI	0.0166***	0.0170*	0.0571	0.0413	0.0336**	0.0199**	0.0193*	0.0123*	-0.0033	0.0030	0.0934*
	(3.131)	(1.921)	(1.553)	(1.480)	(2.272)	(2.092)	(1.662)	(1.722)	(-0.330)	(0.371)	(1.724)
CI^2	-0.0006**	-0.0006**	-0.0007***	-0.0006**	-0.0006**	-0.0006**	-0.0007**	-0.0006**	-0.0004	-0.0007**	-0.0008***
	(-2.242)	(-2.359)	(-2.600)	(-2.298)	(-2.244)	(-2.320)	(-2.545)	(-2.165)	(-1.528)	(-2.416)	(-2.649)
Duality	-0.3508**										-0.3378*
	(-2.101)										(-1.760)
CI x Duality	-0.0181*										-0.0196*
	(-1.662)										(-1.765)
EquityRemun		0.7885***									0.7798***
		(2.961)									(2.871)
CI x EquityRemun		-0.0020									-0.0122
		(-0.102)									(-0.595)
Ln (Board_Size)			0.4469**								0.3469
			(2.214)								(1.358)
CI x Ln (Board_Size)			-0.0189								-0.0198
			(-1.240)								(-1.210)
Independence				-0.0770							-0.1840
				(-0.179)							(-0.342)
CI x Independence				-0.0367							-0.0301
				(-1.075)							(-0.710)
Education					-0.0438						-0.0503
					(-0.484)						(-0.457)
CI x Education					-0.0102						-0.0077
					(-1.586)						(-0.990)
Expertise						-0.0014					-0.0028
						(-0.500)					(-0.902)
CI x Expertise						-0.0002					-0.0001
						(-0.948)					(-0.555)
MeetFreq							0.0098*				0.0071
							(1.928)				(1.279)
CI x MeetFreq							-0.0002				-0.0000
							(-0.521)				(-0.091)
GenderDivers								-0.7936			-1.2822*
								(-1.390)			(-1.882)
CI x GenderDivers								-0.0061			0.0272
								(-0.165)			(0.671)
InstOwn									-0.1535		-0.0308
									(-0.517)		(-0.096)

Table 12 Cont'd

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
CI x InstOwn									0.0378*		0.0294
									(1.788)		(1.315)
HHI										0.8253	0.4326
										(1.370)	(0.667)
CI x HHI										0.0711	0.0543
										(1.346)	(0.908)
Risk_Ratio	-0.0043	-0.0048	-0.0031	-0.0040	-0.0041	-0.0043	-0.0040	-0.0047	-0.0045	-0.0041	-0.0034
	(-1.095)	(-1.238)	(-0.777)	(-1.002)	(-1.024)	(-1.068)	(-0.995)	(-1.166)	(-1.127)	(-1.037)	(-0.861)
Mgt_Quality	0.0037	0.0040	0.0041	0.0041	0.0043	0.0039	0.0043	0.0040	0.0036	0.0041	0.0043
	(0.710)	(0.782)	(0.793)	(0.807)	(0.838)	(0.768)	(0.825)	(0.771)	(0.701)	(0.802)	(0.828)
Debt_Ratio	0.2248	0.2617	0.3298	0.3758	0.3266	0.3262	0.3549	0.3631	0.4048	0.3478	0.2197
	(0.573)	(0.681)	(0.853)	(0.949)	(0.835)	(0.846)	(0.920)	(0.936)	(1.024)	(0.897)	(0.527)
Firm_Size	-0.0418	-0.0511	-0.0769	-0.0384	-0.0361	-0.0384	-0.0601	-0.0197	-0.0343	-0.0337	-0.0609
	(-0.822)	(-0.991)	(-1.360)	(-0.741)	(-0.688)	(-0.717)	(-1.160)	(-0.368)	(-0.647)	(-0.646)	(-1.026)
Age	0.0099***	0.0082***	0.0085***	0.0087***	0.0088***	0.0086***	0.0090***	0.0088***	0.0086***	0.0086***	0.0086***
	(4.525)	(3.815)	(3.884)	(3.896)	(4.059)	(3.927)	(4.145)	(4.020)	(3.882)	(3.983)	(3.943)
CEO_Ownership	0.1054***	0.1070***	0.1103***	0.1013***	0.0991***	0.1017***	0.1007***	0.0998***	0.1040***	0.1021***	0.1088***
	(4.400)	(4.408)	(4.258)	(4.093)	(4.044)	(4.053)	(4.065)	(4.023)	(4.131)	(4.096)	(4.491)
Year/Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	916	916	916	916	916	916	916	916	916	916	916
Adj. R-Squared	0.18	0.19	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.19

This table shows 2SLS regression results of non-linear association between Tobin's Q and "exogenous" portion of *CI (Communication Index)*. 2SLS approach is used to control for the endogeneity issues of the communication measure and governance variables in our non-linear model. In the first stage, *CI* is estimated by the governance variables, and in the second stage, the residual of the first stage is included as a regressor reflecting the exogenous portion of *CI*. *Duality* is a dummy with value of one when CEO is has a dual role as the chairman of the board. *EquityRemun* is the portion of CEO's equity-linked compensation relative to his/her total compensation. *Ln (Board_Size)* is the natural logarithm of the total number of board members. *Independence* is the ratio of Non-Executive Directors (NEDs) on the board. *Education* is the average number of degrees and qualifications for NEDs' in each firm-year. *Expertise* is the percentage of industry expert NEDs on the board. *MeetFreq* is the total number of board meetings in each firm-year. *GenderDivers* is the portion of women on the board in each firm-year. *InstOwn* is measured as sum of percentage of outstanding shares held by institutions per year per firm. *HHI* is Herfindahl Hirschman Index computed using SIC 4-digit codes in Compustat North American Universe. *Risk_Ratio*, is the ratio of idiosyncratic volatility to total risk. Idiosyncratic risk is the annualized monthly idiosyncratic volatility, which is standard deviation of 24-month residuals from rolling regression of capital asset pricing model. Total risk is the annualized standard deviation of monthly stock returns (adjusted for dividends and splits). *Mgt_Quality* is a proxy for management quality measured as 4-year growth rate of industry-adjusted operating income before Interest, Tax, Depreciation, and Amortization. *Debt_Ratio* as a proxy for financial leverage is the ratio of total debt to total assets. *Firm_Size* is natural logarithm of total asset. *Age* is the number of years since the firm's initial public offering (IPO). *CEO_Ownership* is the percentage of common shares owned by CEO in each firm-year. Details of variable definitions and sources of collected data are reported in Table 3. All the models control for Industry and Year Fixed Effects. Standard Errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors. T-Stats are in parenthesis, and significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 13 - 2SLS Regression Results with Risk Ratio as the Dependent Variable and Length as the Communication Measure

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Length	-0.0112	-0.0087	-0.4650***	-0.2378**	-0.0995*	-0.0395	-0.0512	-0.0231	-0.0548	0.0463	-0.6971***
	(-0.521)	(-0.266)	(-3.580)	(-2.039)	(-1.845)	(-1.123)	(-0.960)	(-0.843)	(-1.385)	(1.586)	(-3.363)
Length^2	0.0004	0.0004	0.0010**	0.0006	0.0005	0.0004	0.0005	0.0005	0.0005	0.0006	0.0013***
	(0.999)	(0.998)	(2.378)	(1.400)	(1.249)	(1.007)	(1.311)	(1.235)	(1.147)	(1.371)	(2.805)
Duality	-0.0064										-0.8802
	(-0.005)										(-0.651)
Length x Duality	0.0379										0.0617
	(0.866)										(1.286)
EquityRemun		2.5054									3.1745*
		(1.344)									(1.653)
Length x EquityRemun		0.0124									-0.0039
		(0.193)									(-0.056)
Ln (Board_Size)			-5.9226***								-5.8738***
			(-3.200)								(-2.810)
Length x Ln (Board_Size)			0.1898***								0.1873***
			(3.524)								(3.101)
Independence				-1.6376							-3.0118
				(-0.455)							(-0.696)
Length x Independence				0.2813**							0.0968
				(2.029)							(0.568)
Education					-1.0863						-0.2273
					(-1.468)						(-0.265)
Length x Education					0.0424*						0.0417
					(1.819)						(1.542)
Expertise						-0.0223					-0.0167
						(-0.979)					(-0.672)
Length x Expertise						0.0009					0.0010
						(1.207)					(1.146)
MeetFreq							-0.0181				0.0608
							(-0.382)				(1.205)
Length x MeetFreq							0.0016				0.0007
							(0.942)				(0.390)
GenderDivers								-6.3501			-2.1419
								(-1.220)			(-0.353)
Length x GenderDivers								0.1181			-0.0739
								(0.729)			(-0.370)
InstOwn									2.3154		0.4358
									(1.009)		(0.184)

Table 13. Cont'd

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Length x InstOwn									0.1209		0.1725**
									(1.546)		(2.147)
HHI										-0.7105	-1.2900
										(-0.126)	(-0.209)
Length x HHI										-0.4248**	-0.4487**
										(-2.396)	(-2.181)
Mgt_Quality	-0.0361	-0.0346	-0.0375	-0.0374	-0.0438	-0.0348	-0.0365	-0.0373	-0.0356	-0.0346	-0.0382
	(-0.906)	(-0.859)	(-0.936)	(-0.926)	(-1.042)	(-0.876)	(-0.920)	(-0.930)	(-0.907)	(-0.867)	(-0.916)
Debt_Ratio	-2.1187	-2.3980	-1.4920	-2.0594	-1.4958	-2.8016	-2.2097	-2.0975	-2.2219	-2.5851	-1.4807
	(-0.759)	(-0.871)	(-0.546)	(-0.737)	(-0.540)	(-1.005)	(-0.800)	(-0.762)	(-0.798)	(-0.933)	(-0.518)
Firm_Size	-0.2241	-0.2490	0.3446	-0.1718	-0.0915	-0.3246	-0.1472	-0.0350	-0.3479	-0.2373	0.0883
	(-0.589)	(-0.655)	(0.809)	(-0.450)	(-0.239)	(-0.828)	(-0.372)	(-0.087)	(-0.901)	(-0.620)	(0.185)
Age	-0.0152	-0.0176	-0.0195	-0.0148	-0.0194	-0.0178	-0.0161	-0.0166	-0.0129	-0.0151	-0.0178
	(-0.998)	(-1.208)	(-1.329)	(-1.005)	(-1.333)	(-1.205)	(-1.100)	(-1.138)	(-0.884)	(-1.030)	(-1.118)
CEO_Ownership	-0.0499	-0.0359	-0.1452	-0.0336	-0.0638	-0.0714	-0.0439	-0.0717	-0.0541	-0.0608	-0.1052
	(-0.362)	(-0.261)	(-1.051)	(-0.246)	(-0.454)	(-0.516)	(-0.320)	(-0.525)	(-0.394)	(-0.447)	(-0.725)
Year/Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	916	916	916	916	916	916	916	916	916	916	916
Adj. R-Squared	0.02	0.03	0.04	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.05

This table shows 2SLS regression results of non-linear association between *Risk Ratio* and "exogenous" portion of *Length*. Dependent variable, *Risk Ratio*, is the ratio of idiosyncratic volatility to total risk. Idiosyncratic risk is the annualized monthly idiosyncratic volatility, which is standard deviation of 24-month residuals from rolling regression of capital asset pricing model. Total risk is the annualized standard deviation of monthly stock returns (adjusted for dividends and splits). *Length* is the number of words used in a document summed over all filings, reports, and press releases during one year for each firm. 2SLS approach is used to control for the endogeneity issues of the communication measure and governance variables in our non-linear model. In the first stage, *Length* is estimated by the governance variables, and in the second stage, the residual of the first stage is included as a regressor reflecting the exogenous portion of *Length*. *Duality* is a dummy with value of one when CEO is has a dual role as the chairman of the board. *EquityRemun* is the portion of CEO's equity-linked compensation relative to his/her total compensation. *Ln (Board_Size)* is the natural logarithm of the total number of board members. *Independence* is the ratio of Non-Executive Directors (NEDs) on the board. *Education* is the average number of degrees and qualifications for NEDs' in each firm-year. *Expertise* is the percentage of industry expert NEDs on the board. *MeetFreq* is the total number of board meetings in each firm-year. *GenderDivers* is the portion of women on the board in each firm-year. *InstOwn* is measured as sum of percentage of outstanding shares held by institutions per year per firm. *HHI* is Herfindahl Hirschman Index computed using SIC 4-digit codes in Compustat North American Universe. *Mgt_Quality* is a proxy for management quality measured as 4-year growth rate of industry-adjusted operating income before Interest, Tax, Depreciation, and Amortization. *Debt_Ratio* as a proxy for financial leverage is the ratio of total debt to total assets. *Firm_Size* is natural logarithm of total asset. *Age* is the number of years since the firm's initial public offering (IPO). *CEO_Ownership* is the percentage of common shares owned by CEO in each firm-year. Details of variable definitions and sources of collected data are reported in Table 3. All the models control for Industry and Year Fixed Effects. Standard Errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors. T-Stats are in parenthesis, and significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 14 - 2SLS Regression Results with Risk Ratio as the Dependent Variable and Dictionary as the Communication Measure

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Dictionary	0.0106	-0.0582	-1.7254***	-1.2458***	-0.4064*	-0.2269	-0.3891	-0.0500	-0.1159	0.2382*	-3.0406***
	(0.117)	(-0.417)	(-3.342)	(-2.721)	(-1.767)	(-1.434)	(-1.634)	(-0.440)	(-0.652)	(1.909)	(-3.716)
Dictionary^2	0.0174**	0.0180**	0.0254***	0.0223***	0.0192***	0.0184**	0.0214***	0.0184**	0.0167**	0.0198***	0.0349***
	(2.382)	(2.350)	(3.339)	(3.024)	(2.586)	(2.558)	(2.834)	(2.495)	(2.239)	(2.753)	(4.022)
Duality	0.0494										-0.3681
	(0.039)										(-0.274)
Dictionary x Duality	-0.0265										0.0869
	(-0.143)										(0.451)
EquityRemun		2.7209									2.8464
		(1.454)									(1.454)
Dictionary x EquityRemun		0.2148									0.1950
		(0.777)									(0.629)
Ln (Board_Size)			-5.8347***								-5.6851***
			(-3.202)								(-2.738)
Dictionary x Ln (Board_Size)			0.7145***								0.6714***
			(3.360)								(2.773)
Independence				-2.0027							-2.1947
				(-0.559)							(-0.517)
Dictionary x Independence				1.5335***							0.7191
				(2.797)							(1.109)
Education					-0.9820						-0.1251
					(-1.320)						(-0.144)
Dictionary x Education					0.1915*						0.1053
					(1.923)						(0.904)
Expertise						-0.0237					-0.0232
						(-1.057)					(-0.964)
Dictionary x Expertise						0.0061*					0.0064
						(1.831)					(1.637)
MeetFreq							-0.0182				0.0434
							(-0.381)				(0.842)
Dictionary x MeetFreq							0.0141*				0.0102
							(1.778)				(1.137)
GenderDivers								-6.1642			-3.2451
								(-1.183)			(-0.542)
Dictionary x GenderDivers								0.3483			-0.4673
								(0.511)			(-0.578)
InstOwn									2.3945		-0.2558
									(1.025)		(-0.104)

Table 14. Cont'd

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Dictionary x InstOwn									0.3267		0.5934*
									(0.961)		(1.691)
HHI										-1.4162	-3.2072
										(-0.250)	(-0.514)
Dictionary x HHI										-1.8148**	-1.5829*
										(-2.388)	(-1.707)
Mgt_Quality	-0.0349	-0.0338	-0.0350	-0.0359	-0.0429	-0.0354	-0.0371	-0.0363	-0.0351	-0.0337	-0.0339
	(-0.875)	(-0.844)	(-0.860)	(-0.880)	(-1.013)	(-0.894)	(-0.931)	(-0.900)	(-0.887)	(-0.849)	(-0.815)
Debt_Ratio	-2.4687	-2.6823	-1.8701	-2.5949	-1.8565	-3.2457	-2.7953	-2.4008	-2.6546	-2.9713	-2.6054
	(-0.890)	(-0.978)	(-0.684)	(-0.935)	(-0.674)	(-1.170)	(-1.019)	(-0.877)	(-0.957)	(-1.076)	(-0.908)
Firm_Size	-0.3020	-0.3589	0.2331	-0.2509	-0.2097	-0.4641	-0.1829	-0.1377	-0.4180	-0.3580	-0.0014
	(-0.795)	(-0.947)	(0.551)	(-0.660)	(-0.550)	(-1.187)	(-0.464)	(-0.343)	(-1.082)	(-0.937)	(-0.003)
Age	-0.0167	-0.0188	-0.0173	-0.0162	-0.0198	-0.0173	-0.0170	-0.0168	-0.0144	-0.0139	-0.0168
	(-1.102)	(-1.285)	(-1.181)	(-1.110)	(-1.360)	(-1.179)	(-1.158)	(-1.149)	(-0.984)	(-0.934)	(-1.067)
CEO_Ownership	-0.0509	-0.0353	-0.1656	-0.0272	-0.0726	-0.0663	-0.0300	-0.0711	-0.0529	-0.0632	-0.1439
	(-0.368)	(-0.257)	(-1.189)	(-0.198)	(-0.518)	(-0.480)	(-0.220)	(-0.520)	(-0.385)	(-0.464)	(-0.987)
Year/Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	916	916	916	916	916	916	916	916	916	916	916
Adj. R-Squared	0.03	0.03	0.05	0.04	0.04	0.03	0.03	0.03	0.03	0.04	0.05

This table shows 2SLS regression results of non-linear association between *Risk Ratio* and "exogenous" portion of *Dictionary*. Dependent variable, *Risk Ratio*, is the ratio of idiosyncratic volatility to total risk. Idiosyncratic risk is the annualized monthly idiosyncratic volatility, which is standard deviation of 24-month residuals from rolling regression of capital asset pricing model. Total risk is the annualized standard deviation of monthly stock returns (adjusted for dividends and splits). *Dictionary* is the is count of dictionary keywords, over all filings, reports, and press releases published and filed at SEDAR during a year for each company. 2SLS approach is used to control for the endogeneity issues of the communication measure and governance variables in our non-linear model. In the first stage, *Dictionary* is estimated by the governance variables, and in the second stage, the residual of the first stage is included as a regressor reflecting the exogenous portion of *Dictionary*. *Duality* is a dummy with value of one when CEO is has a dual role as the chairman of the board. *EquityRemun* is the portion of CEO's equity-linked compensation relative to his/her total compensation. *Ln (Board_Size)* is the natural logarithm of the total number of board members. *Independence* is the ratio of Non-Executive Directors (NEDs) on the board. *Education* is the average number of degrees and qualifications for NEDs' in each firm-year. *Expertise* is the percentage of industry expert NEDs on the board. *MeetFreq* is the total number of board meetings in each firm-year. *GenderDivers* is the portion of women on the board in each firm-year. *InstOwn* is measured as sum of percentage of outstanding shares held by institutions per year per firm. *HHI* is Herfindahl Hirschman Index computed using SIC 4-digit codes in Compustat North American Universe. *Mgt_Quality* is a proxy for management quality measured as 4-year growth rate of industry-adjusted operating income before Interest, Tax, Depreciation, and Amortization. *Debt_Ratio* as a proxy for financial leverage is the ratio of total debt to total assets. *Firm_Size* is natural logarithm of total asset. *Age* is the number of years since the firm's initial public offering (IPO). *CEO_Ownership* is the percentage of common shares owned by CEO in each firm-year. Details of variable definitions and sources of collected data are reported in Table 3. All the models control for Industry and Year Fixed Effects. Standard Errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors. T-Stats are in parenthesis, and significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 15 - 2SLS Regression Results with Risk Ratio as the Dependent Variable and CI as the Communication Measure

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
CI	-0.0869*	-0.1389*	-0.8518***	-0.6869***	-0.2686**	-0.2013**	-0.3894***	-0.0933	-0.1296	-0.0180	-1.6908***
	(-1.812)	(-1.863)	(-3.211)	(-3.081)	(-2.457)	(-2.463)	(-3.443)	(-1.557)	(-1.475)	(-0.247)	(-4.099)
CI^2	0.0042*	0.0045*	0.0057**	0.0054**	0.0040*	0.0047**	0.0052**	0.0042*	0.0047*	0.0047*	0.0091***
	(1.790)	(1.883)	(2.360)	(2.223)	(1.728)	(1.979)	(2.229)	(1.764)	(1.849)	(1.937)	(3.383)
Duality	0.4619										-0.0949
	(0.367)										(-0.070)
CI x Duality	-0.0353										0.0437
	(-0.349)										(0.429)
EquityRemun		2.1651									2.2979
		(1.140)									(1.159)
CI x EquityRemun		0.1601									0.1687
		(1.017)									(1.006)
Ln (Board_Size)			-5.2551***								-4.5154**
			(-2.852)								(-2.125)
CI x Ln (Board_Size)			0.3258***								0.3154**
			(2.937)								(2.481)
Independence				-1.7065							-0.0355
				(-0.475)							(-0.008)
CI x Independence				0.7609***							0.4585
				(2.712)							(1.343)
Education					-1.0519						-0.0080
					(-1.426)						(-0.009)
CI x Education					0.0852*						0.0316
					(1.723)						(0.522)
Expertise						-0.0272					-0.0271
						(-1.208)					(-1.110)
CI x Expertise						0.0028					0.0035*
						(1.548)					(1.706)
MeetFreq							-0.0242				0.0077
							(-0.511)				(0.149)
CI x MeetFreq							0.0114***				0.0087*
							(2.968)				(1.851)
GenderDivers								-8.3267			-5.9751
								(-1.597)			(-1.019)
CI x GenderDivers								-0.0549			-0.6029
								(-0.154)			(-1.389)
InstOwn									1.7966		-0.5526
									(0.779)		(-0.226)

Table 15. Cont'd

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
CI x InstOwn									0.1242		0.2822
									(0.664)		(1.429)
HHI										-0.7279	-1.6835
										(-0.127)	(-0.270)
CI x HHI										-0.5372	-0.3038
										(-1.242)	(-0.607)
Mgt_Quality	-0.0340	-0.0341	-0.0351	-0.0371	-0.0412	-0.0341	-0.0369	-0.0336	-0.0362	-0.0344	-0.0358
	(-0.839)	(-0.845)	(-0.855)	(-0.890)	(-0.959)	(-0.847)	(-0.918)	(-0.827)	(-0.894)	(-0.850)	(-0.867)
Debt_Ratio	-1.4622	-1.7063	-1.3452	-1.7994	-0.9163	-2.2105	-2.2002	-1.3038	-1.7249	-1.8597	-2.1421
	(-0.528)	(-0.622)	(-0.492)	(-0.646)	(-0.332)	(-0.801)	(-0.798)	(-0.476)	(-0.622)	(-0.672)	(-0.746)
Firm_Size	-0.1395	-0.1939	0.2718	-0.1253	-0.0489	-0.2503	-0.0831	0.0736	-0.2064	-0.1444	0.1496
	(-0.372)	(-0.520)	(0.647)	(-0.335)	(-0.130)	(-0.654)	(-0.216)	(0.186)	(-0.545)	(-0.384)	(0.329)
Age	-0.0119	-0.0115	-0.0084	-0.0116	-0.0137	-0.0114	-0.0097	-0.0108	-0.0097	-0.0102	-0.0079
	(-0.780)	(-0.770)	(-0.564)	(-0.781)	(-0.930)	(-0.770)	(-0.648)	(-0.735)	(-0.657)	(-0.690)	(-0.501)
CEO_Ownership	-0.0057	0.0097	-0.0989	0.0160	-0.0200	-0.0083	0.0174	-0.0227	0.0007	-0.0045	-0.0539
	(-0.042)	(0.072)	(-0.712)	(0.118)	(-0.144)	(-0.061)	(0.130)	(-0.168)	(0.005)	(-0.033)	(-0.373)
Year/Industry FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	916	916	916	916	916	916	916	916	916	916	916
Adj. R-Squared	0.03	0.03	0.05	0.04	0.04	0.03	0.04	0.03	0.03	0.03	0.05

This table shows 2SLS regression results of non-linear association between Risk Ratio and "exogenous" portion of *CI (Communication Index)*. Dependent variable, *Risk Ratio*, is the ratio of idiosyncratic volatility to total risk. Idiosyncratic risk is the annualized monthly idiosyncratic volatility, which is standard deviation of 24-month residuals from rolling regression of capital asset pricing model. Total risk is the annualized standard deviation of monthly stock returns (adjusted for dividends and splits). *CI* is the median-based industry-adjusted *Dictionary* score for each firm-year, where *Dictionary* is the is count of dictionary keywords, over all filings, reports, and press releases published and filed at SEDAR during a year for each company. 2SLS approach is used to control for the endogeneity issues of the communication measure and governance variables in our non-linear model. In the first stage, *CI* is estimated by the governance variables, and in the second stage, the residual of the first stage is included as a regressor reflecting the exogenous portion of *CI*. *Duality* is a dummy with value of one when CEO is has a dual role as the chairman of the board. *EquityRemun* is the portion of CEO's equity-linked compensation relative to his/her total compensation. *Ln (Board_Size)* is the natural logarithm of the total number of board members. *Independence* is the ratio of Non-Executive Directors (NEDs) on the board. *Education* is the average number of degrees and qualifications for NEDs' in each firm-year. *Expertise* is the percentage of industry expert NEDs on the board. *MeetFreq* is the total number of board meetings in each firm-year. *GenderDivers* is the portion of women on the board in each firm-year. *InstOwn* is measured as sum of percentage of outstanding shares held by institutions per year per firm. *HHI* is Herfindahl Hirschman Index computed using SIC 4-digit codes in Compustat North American Universe. *Mgt_Quality* is a proxy for management quality measured as 4-year growth rate of industry-adjusted operating income before Interest, Tax, Depreciation, and Amortization. *Debt_Ratio* as a proxy for financial leverage is the ratio of total debt to total assets. *Firm_Size* is natural logarithm of total asset. *Age* is the number of years since the firm's initial public offering (IPO). *CEO_Ownership* is the percentage of common shares owned by CEO in each firm-year. Details of variable definitions and sources of collected data are reported in Table 3. All the models control for Industry and Year Fixed Effects. Standard Errors are robust to heteroscedasticity, using White Heteroscedasticity Standard Errors. T-Stats are in parenthesis, and significant levels are: *** p<0.01; **p<0.05; *p<0.1.

Table 16 - Variable Definitions

Variable	Description
YTM	Natural logarithm of Cost of Debt, following Sengupta (1998) is the Average of Yield to Maturity (from different tranches of the same issue). Weights are proportion of tranche proceeds to total proceeds. (Percentage). Total proceeds are the sum of all markets' proceeds from debt or equity issues (mil$).
Default_Spread	Natural logarithm of Weighted average of default spreads for all tranches of an issue. Individual default spreads are Excess YTM from Treasury Yield of similar Maturity sold most recent prior to the issue.
R_peg_21	Natural logarithm of Cost of Equity (following Easton (2004)) calculated as: Rpeg = Square Root $((EPS_2 - EPS_1)/P_0)$. Where EPS_t is Consensus Analyst Estimate for EPS in year t. And P0 is the market price at the time of estimation. These values are chosen such that they are the most recent to the time of issue (Percentage).
R_peg_54	Natural logarithm of Cost of Equity (following Botosan and Plumlee (2005)) calculated as: Rpeg = Square Root ((EPS5 – EPS4)/P0). (Percentage).
R_Gordon	Natural logarithm of Estimated return using Gordon Model: R = (D1/P0) + g Where, D1 and g are analysts' consensus estimates for the next annual dividend and long-term growth rate. Estimates are the most updated values published by all analysts covering an issue. The data is from the IBES dataset.
R_Idio	Natural logarithm of Estimated excess return (residuals) from the CAPM model, using 275 trading days prior to the issue, with at least 128 number of days with available data. This variable is a proxy for ambiguity and uncertainty on the day of the issue. The market portfolio is a value-weighted portfolio in the universe of CRSP.
Bid_Ask_Spread	Natural logarithm of the ratio of the difference between ask and bid (Ask - Bid), to the midpoint of the distance between the two ((Ask + Bid)/2). It is computed on the day of, or the earliest available date after the issue.
Period -1	Six months immediately prior to the new issue: (-129, -3) days
Period -2	Six months period between twelve months and six months prior to the new issue: (-260, -130) days
Presentation	Total number of words from Presentation section of meetings/events during Period -1.
Q_And_A	Total number of words from Question & Answer section of meetings/events during Period -1.
QAtoLength	Ratio of the length (word count) of question and answer section to the length (word count) of event over Period -1.

Table 16 Cont'd

Variable	Description
Event	Event Frequency. Total number of events over Period -1 Events are: Analyst Meetings, Earnings Call, Guidance Call, Presentation, Sales Call, Shareholder Meeting, and Special Situation Meetings.
Press	Frequency of Press and News Releases over Period -1.
Slide	Total frequency of slides used in events over Period -1.
Answer	The average length (word count) of each question in the Q&A portion of the event.
Press_Exog	Frequency of exogenous portion of press release which is the estimated error terms of the Two-Stage Least Squares (2SLS) model
Equity-issue	A dummy that takes value of one for equity issues and zero for debt issues.
Low_Transparent	A dummy that takes value of one for firms with bid-ask spread above industry-year median on the issue date and zero for those with bid-ask spread below their industry-year median.
IA_high	A dummy that takes value of one for firms with number of analysts following the firm below industry-year median in the issue year and zero for those with the number of analysts above their industry-year median.
Analyst_Cov	Analyst Coverage. Number of unique analysts covering the firm for one year leading to issue date.
Asset	Total Assets (Mill $), inflation adjusted using 1999 as base year. Following Hutton, Marcus, and Tehranian (2009), we used quarterly data prior to the issue.
Firm_Size	Ln (Total Assets). Quarterly prior to the issue.
Market_Cap	Market Capitalization. Total market value of firm (mill $) computed as the product of outstanding shares and stock price at the end of the quarter prior to the issue.
MB_Ratio	Ratio of market price of common share to book value, at the end of the quarter prior to the issue.
Tangibility	Asset Tangibility, computed as Properties, Plants, Equipment (Net of Depreciation) Scaled by Total Assets - latest quarter prior to the issue.
Innovation	Natural logarithm of R&D expenses scaled by total assets. R&D Expenses are quarterly prior to the issue (mill $).
Leverage	Ratio of total liabilities to total assets. Following Hutton et al. (2009), we used quarterly data prior to the issue.

Table 16 Cont'd

variable	Description
Idio_Vol	Idiosyncratic volatility equal to $\sigma_i^2 - (\beta_i^2\ \sigma_m^2)$, where β is derived from CAPM model estimated using 275 trading days prior to the new issues with at least 128 number of days with available data. This variable is computed to measure ambiguity and uncertainty on the day of issue. Market portfolio is value-weighted portfolio in the universe of CRSP.
Volatility	Total variance of daily returns over last 275 trading days prior to the issue.
Exp_Inflation	Expected inflation rate. 5-Year Forward Expected Inflation Rate (file T5YIFR from Federal Reserve Bank of St Louis).

Table 17 - Sample Selection

Target Sample	S&P1500 firms (S&P600 Small, S&P400 Medium, S&P500 Large Cap) from 1999 to 2018 • Total Number of firms = 7,826
IRSC Data	Source: FactSet Platform Press and News Releases (Date, Time, Headline) • Firms Downloaded = 2,248 • Total number of press = 1,902,592 Corporate Events (Date, Time, Headline) • Firms Downloaded = 2,166 • Events = Earnings Call, Shareholders Meetings, Analysts Meetings, Sales and Revenue Calls, Guidance Call, Special Situations • Total number of events = 199,228 Conference Calls (Date, Time, Headline, Transcript) • Firms Downloaded = 1,996 • Total number of transcripts = 134,744 Slides used in Corporate Events (Date, Headline, Text) • Firms Downloaded = 1,849 • Total number of slides = 43,136 Total number of unique firms = 2,192
New Issues (Debt and Equity)	Source: SDC Platinum All available data in regards to new issues (all types of instruments for years 1999 to 2018, inclusive, in North America) • Debt Issuers: 13,300 (Issues: 259,668) - Filtering for non-debt issues, asset-backed securities, government agencies and municipalities - Filtering for available data on the date, yield to maturity, and proceeds - Combining multiple tranches of one issue into one observation - keeping only those first issues that took place at least after 12 months of the previous issue - Removing shelf-registration - Observations = 15,862 • Equity Issuers: 19,500 (Issues: 282,723) - Filtering for non-common-share issues, and incomplete information on fields such as identifiers and principal amounts - keeping only those first issues that took place at least after 12 months of the previous issue - Removing shelf-registration - Observations = 26,195
Final Sample	**1,190 unique firms**

Table 18 - Summary Statistics

variable	N	Mean	St. Dev.	Min	Median	Max
R_peg_21 (%)	2,977	9.80	4.90	0.00	8.70	30.00
R_peg_54 (%)	2,174	9.50	4.60	0.00	8.90	30.00
R_Gordon (%)	2,955	11.00	6.80	-72.00	11.00	31.00
R_Idio (%)	2,889	-0.13	1.80	-18.00	-0.02	4.30
Bid_Ask_Spread (%)	2,917	2.60	1.50	0.13	2.20	8.80
YTM (%)	2,960	5.60	1.90	0.25	5.60	10.00
Default_Spread (%)	2,929	1.90	1.20	0.20	1.60	4.80
Press (frequency)	1,840	35.00	36.00	1.00	20.00	140.00
Event (frequency)	2,012	3.60	2.10	1.00	3.00	10.00
QAtoLength	1,967	0.40	0.25	0.00	0.46	0.84
Answer (words)	1,944	177.00	40.00	80.00	175.00	292.00
Slide (frequency)	1,502	1.90	1.20	1.00	1.00	6.00
Asset (mil$)	2,889	23,047	64,136	3	5,770	716,937
Tangibility (Ratio)	2,741	0.30	0.28	0.00	0.21	0.97
Innovation (Ratio)	3,023	1.10	1.90	0.00	0.00	9.90
Leverage (Ratio)	2,888	0.64	0.18	0.05	0.64	1.10
MB_Ratio	2,541	3.10	3.00	0.15	2.30	24.00
Analyst Coverage	3,023	13	8	1	12	44
Volatility (%)	2,079	2.40	1.60	0.67	2.00	23.00
Exp_Inflation (%)	2,971	2.30	0.41	0.48	2.40	3.40

This table gives descriptive statistics (mean, standard deviation, minimum and maximum) for the full sample presented in Table 15, if data items are available.

Table 19 - Correlation Matrix

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	R_peg_21	1									
(2)	R_peg_54	0.261***	1								
(3)	R_Gordon	0.074*	0.019	1							
(4)	R_Idio	0.031	-0.065	0.132***	1						
(5)	Bid_Ask_Spread	0.447***	0.316***	0.057	-0.139***	1					
(6)	YTM	0.379***	0.189***	0.031	0.008	0.384***	1				
(7)	Default_Spread	0.320***	0.142***	0.030	-0.024	0.375***	0.679***	1			
(8)	Press	0.131***	0.071*	0.037	0.068*	0.087**	0.165***	0.049	1		
(9)	Event	0.044	-0.041	-0.021	0.026	0.093**	-0.007	0.035	0.063	1	
(10)	QAtoLength	0.090**	0.054	0.056	0.036	0.028	0.018	0.095**	0.051	0.008	1
(11)	Answer	0.019	-0.029	0.053	0.025	-0.100**	-0.181***	-0.091**	-0.082**	0.146***	0.114***
(12)	Slide	0.069*	-0.039	-0.015	0.023	-0.016	0.028	0.061	0.101**	0.201***	0.239***
(13)	Asset	-0.084**	-0.069*	-0.078**	0.007	-0.132***	-0.167***	-0.127***	0.000	-0.034	-0.173***
(14)	Tangibility	0.127***	0.093**	-0.206***	-0.055	0.061	0.152***	0.062	0.078**	-0.000	-0.076*
(15)	Innovation	-0.002	-0.015	0.067*	0.067*	-0.005	-0.074*	-0.082**	-0.069*	0.084**	0.147***
(16)	Leverage	-0.114***	-0.098**	-0.106***	0.017	-0.124***	-0.032	-0.003	0.008	-0.097**	-0.086**
(17)	MB_Ratio	-0.076*	-0.073*	0.139***	0.042	-0.097**	-0.111***	-0.074*	-0.048	0.023	0.020
(18)	Analyst_Cov	-0.034	0.042	-0.071*	0.021	-0.088**	-0.348***	-0.293***	0.039	0.170***	-0.070*
(19)	Volatility	0.417***	0.244***	0.019	-0.006	0.491***	0.473***	0.353***	0.246***	0.080**	0.051
(20)	Exp_Inflation	0.049	-0.002	0.057	0.050	-0.011	0.121***	-0.083**	0.118***	-0.070*	-0.197***

This table shows the Pearson correlation coefficients for the main variables for non-missing data items. Variables are used in subsequent analyses. (see Table 16 for variable descriptions and calculation methods). * p<0.05 ** p<0.01 *** p<0.001.

Table 19 Cont'd

		(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(11)	Answer	1									
(12)	Slide	0.031	1								
(13)	Asset	0.011	-0.047	1							
(14)	Tangibility	-0.068*	0.075*	-0.102**	1						
(15)	Innovation	0.098**	-0.041	-0.085**	-0.284***	1					
(16)	Leverage	-0.038	-0.045	0.277***	-0.080**	-0.068*	1				
(17)	MB_Ratio	0.083**	0.020	-0.019	-0.074*	0.131***	0.206***	1			
(18)	Analyst_Cov	0.025	0.046	0.263***	0.163***	-0.063	-0.039	0.059	1		
(19)	Volatility	-0.142***	0.027	-0.098**	0.049	-0.037	-0.106***	-0.060	-0.148***	1	
(20)	Exp_Inflation	-0.113***	-0.169***	-0.017	0.056	0.038	-0.087**	-0.035	-0.031	-0.013	1

Table 20 - Regression Analysis of combination of Information Asymmetry level and IRSC on Cost of Financing (R_peg_21)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	0.0069					0.0089*	0.1626**					0.1257
	(1.596)					(1.715)	(2.381)					(1.534)
Low_Transparent*Press	0.0027					0.0078	-0.1851**					-0.0269
	(0.528)					(1.210)	(-2.177)					(-0.239)
Event		0.0190				-0.0160		0.0051				-0.0061
		(0.288)				(-0.187)		(0.100)				(-0.080)
Low_Transparent *Event		-0.0489				-0.2981**		-0.0435				-0.0248
		(-0.567)				(-2.018)		(-0.622)				(-0.222)
QAtoLength			0.2101			2.0351**			-0.0537			-0.0463
			(0.337)			(1.992)			(-0.347)			(-0.286)
Low_Transparent *QAtoLength			0.0643			-1.2858			0.0483			0.1679
			(0.096)			(-1.059)			(0.242)			(0.624)
Answer				-0.0005		0.0012				-0.0324		-0.1676
				(-0.144)		(0.297)				(-0.388)		(-1.263)
Low_Transparent *Answer				0.0057		0.0044				0.1230		0.2140
				(1.623)		(0.832)				(1.059)		(1.078)
Slide					0.1821	0.2079					-0.0287	-0.0455
					(1.405)	(1.468)					(-0.541)	(-0.752)
Low_Transparent *Slide					-0.1811	0.0040					0.0585	0.0820
					(-0.948)	(0.018)					(0.794)	(0.986)
Low_Transparent	0.1063***	0.1328***	0.1138***	-0.0093	0.1531***	0.2222**	0.1114***	0.1217***	0.1170***	0.1140***	0.1382***	0.1077***
	(3.287)	(2.981)	(2.594)	(-0.111)	(2.913)	(1.990)	(4.130)	(4.534)	(4.388)	(4.100)	(4.373)	(2.885)
Equity_issue	-0.0033	-0.0134	0.0170	0.0119	-0.0099	-0.0111	-0.0016	-0.0242	0.0259	-0.0048	-0.0346	-0.0971
	(-0.077)	(-0.346)	(0.411)	(0.286)	(-0.179)	(-0.198)	(-0.035)	(-0.533)	(0.618)	(-0.106)	(-0.451)	(-1.038)
Analyst_Cov	0.0016	0.0026	0.0018	0.0021	0.0017	0.0030	0.0015	0.0007	0.0017	0.0023	0.0013	-0.0014
	(0.726)	(1.277)	(0.836)	(1.099)	(0.712)	(1.282)	(0.631)	(0.297)	(0.768)	(1.026)	(0.442)	(-0.429)
Tangibility	0.0292	0.0024	-0.0174	0.0075	0.0143	0.0339	0.0279	-0.0394	-0.0210	-0.0048	0.0195	-0.0195
	(0.489)	(0.042)	(-0.295)	(0.128)	(0.204)	(0.497)	(0.408)	(-0.608)	(-0.350)	(-0.076)	(0.230)	(-0.191)
Innovation	0.0117	0.0061	0.0072	0.0088	0.0088	0.0113	0.0110	0.0056	0.0086	0.0125	0.0149	0.0100
	(1.484)	(0.808)	(0.924)	(1.143)	(0.941)	(1.173)	(1.244)	(0.636)	(1.076)	(1.486)	(1.300)	(0.736)
Volatility	0.0745***	0.0846***	0.0823***	0.0796***	0.1206***	0.1180***	0.1039***	0.0830***	0.0816***	0.0770***	0.1269***	0.1319***
	(3.881)	(3.922)	(3.456)	(3.545)	(5.902)	(5.646)	(5.155)	(3.617)	(3.475)	(2.964)	(4.753)	(4.558)
Exp_Inflation	-0.0835	-0.0409	-0.0836	-0.0807	-0.0103	-0.0090	-0.0878	-0.0777	-0.1093	-0.0962	-0.1305	-0.1485
	(-1.097)	(-0.568)	(-1.145)	(-1.112)	(-0.115)	(-0.094)	(-1.022)	(-0.918)	(-1.468)	(-1.145)	(-1.188)	(-1.055)
MB_Ratio	-0.0090**	-0.0087**	-0.0087**	-0.0109**	-0.0064	-0.0068	-0.0084**	-0.0139***	-0.0091**	-0.0084**	-0.0057	-0.0055
	(-2.137)	(-2.125)	(-2.104)	(-2.508)	(-1.504)	(-1.441)	(-1.968)	(-3.171)	(-2.107)	(-2.034)	(-1.035)	(-0.793)

Table 20 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Firm_Size	-0.0322** (-2.027)	-0.0406*** (-2.892)	-0.0289* (-1.775)	-0.0224 (-1.478)	-0.0263 (-1.510)	-0.0067 (-0.344)	-0.0357** (-2.052)	-0.0316** (-2.025)	-0.0298* (-1.899)	-0.0437*** (-2.697)	-0.0224 (-1.034)	-0.0042 (-0.167)
Leverage	0.2231** (2.554)	0.1916** (2.200)	0.2298*** (2.585)	0.2693*** (3.023)	0.1799* (1.738)	0.1826* (1.725)	0.2082** (2.049)	0.2121** (2.297)	0.2209** (2.432)	0.1945** (2.018)	0.1896 (1.502)	0.1672 (1.159)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	908	1011	984	968	729	636	765	840	940	839	513	402
Adj. R-Squared	0.22	0.23	0.22	0.23	0.26	0.31	0.23	0.22	0.22	0.22	0.26	0.26

OLS Regression analyses of IRSC activities on cost of financing (measured by Ln(*R_peg_21)*) in conjunction with levels of firm's information asymmetry (high compared to low information asymmetry) using interaction variables. *R_peg_21* is cost of capital following Easton (2004) calculated as: Square Root ((EPS2 - EPS1)/P0) at the time of issue. IRSC measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3) days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *Low_Transparent* is a dummy that takes value of one for firms with bid-ask spread above industry-year median on the issue date and zero for those with bid-ask spread below their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * p<0.10, ** p<0.05, *** p<0.01.

Table 21 - Regression Analysis of combination of Information Asymmetry level and IRSC on Cost of Financing (R_Gordon)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	-0.0009					0.0014	0.2070**					0.1594
	(-0.107)					(0.119)	(2.063)					(0.989)
IA_high*Press	0.0025					-0.0053	-0.2438*					0.1166
	(0.269)					(-0.401)	(-1.872)					(0.561)
Event		0.0174				-0.0033		0.0985				-0.0149
		(0.141)				(-0.017)		(1.300)				(-0.112)
IA_high *Event		0.0348				-0.0704		-0.1805*				0.0184
		(0.264)				(-0.343)		(-1.682)				(0.103)
QAtoLength			-1.9098*			-2.0084			-0.4761			-0.0879
			(-1.746)			(-0.914)			(-1.505)			(-0.245)
IA_high *QAtoLength			1.2689			3.0174			0.6543*			0.0505
			(1.032)			(1.062)			(1.766)			(0.116)
Answer				-0.0027		0.0031				0.2459*		0.0525
				(-0.554)		(0.413)				(1.861)		(0.202)
IA_high *Answer				0.0034		-0.0061				0.1018		0.3835
				(0.695)		(-0.751)				(0.549)		(1.025)
Slide					0.2837	0.5143					0.0406	0.0493
					(1.043)	(1.281)					(0.477)	(0.567)
IA_high *Slide					-0.4112	-0.6339					-0.0201	-0.1252
					(-1.321)	(-1.429)					(-0.189)	(-1.019)
IA_high	0.0228	0.0877	-0.0093	-0.0164	0.2089*	0.2626	0.0703	0.0463	0.0429	0.0808	0.1205	0.1322
	(0.318)	(1.013)	(-0.128)	(-0.139)	(1.891)	(1.357)	(0.944)	(0.685)	(0.662)	(1.147)	(1.254)	(1.077)
Equity_issue	-0.0734	-0.0651	-0.0812	-0.0810	-0.1152	-0.1153	-0.0619	-0.0455	-0.0872	-0.0636	0.0136	0.0015
	(-0.803)	(-0.806)	(-0.964)	(-0.950)	(-0.923)	(-0.842)	(-0.618)	(-0.710)	(-1.050)	(-0.665)	(0.145)	(0.014)
Analyst_Cov	0.0045	0.0077**	0.0078**	0.0084**	0.0070*	0.0086**	0.0068*	0.0057	0.0088**	0.0088**	0.0110**	0.0132**
	(1.278)	(2.323)	(2.300)	(2.470)	(1.797)	(1.992)	(1.758)	(1.509)	(2.523)	(2.421)	(2.535)	(2.562)
Tangibility	-0.2095**	-0.2052**	-0.1642*	-0.1841*	-0.2930**	-0.3176**	-0.1387	-0.1747*	-0.1893*	-0.2081*	-0.3072**	-0.3914**
	(-2.085)	(-2.163)	(-1.688)	(-1.821)	(-2.507)	(-2.362)	(-1.267)	(-1.712)	(-1.880)	(-1.963)	(-2.102)	(-2.248)
Innovation	0.0130	0.0058	0.0068	0.0073	0.0002	0.0035	0.0139	-0.0002	0.0067	0.0022	-0.0091	-0.0201
	(1.036)	(0.470)	(0.552)	(0.603)	(0.014)	(0.194)	(0.935)	(-0.017)	(0.529)	(0.154)	(-0.483)	(-0.959)
Volatility	0.0347	0.0427*	0.0347	0.0320	0.0609	0.0512	0.0399	0.0267	0.0321	0.0297	0.0370	0.0053
	(1.287)	(1.778)	(1.344)	(1.264)	(1.371)	(1.029)	(0.804)	(1.059)	(1.300)	(1.125)	(0.494)	(0.062)
Exp_Inflation	-0.2816**	-0.2256**	-0.2322**	-0.2205**	-0.3315**	-0.3725**	-0.2649**	-0.2652**	-0.2464**	-0.3059**	-0.2936*	-0.3086
	(-2.454)	(-2.144)	(-2.319)	(-2.212)	(-2.398)	(-2.466)	(-2.099)	(-2.079)	(-2.392)	(-2.370)	(-1.651)	(-1.429)
MB_Ratio	0.0199***	0.0211***	0.0202***	0.0203***	0.0182***	0.0211***	0.0186***	0.0208***	0.0178***	0.0190***	0.0150**	0.0050
	(3.526)	(4.042)	(3.771)	(3.641)	(3.046)	(2.976)	(3.183)	(3.477)	(3.320)	(3.434)	(2.179)	(0.692)

Table 21 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Firm_Size	-0.0813*** (-2.715)	-0.0618** (-2.373)	-0.1007*** (-3.690)	-0.0933*** (-3.178)	-0.0759** (-2.037)	-0.1052** (-2.390)	-0.0893** (-2.569)	-0.0719*** (-2.782)	-0.0928*** (-3.343)	-0.0883*** (-2.943)	-0.0797* (-1.891)	-0.1074* (-1.943)
Leverage	-0.3276*** (-2.626)	-0.3663*** (-3.103)	-0.3044** (-2.546)	-0.2632** (-2.214)	-0.2900** (-1.965)	-0.2142 (-1.360)	-0.2292* (-1.686)	-0.3313** (-2.494)	-0.3082** (-2.515)	-0.2178* (-1.683)	-0.2691 (-1.454)	-0.1133 (-0.533)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	869	975	944	927	689	605	732	804	901	804	480	377
Adj. R-Squared	0.16	0.17	0.18	0.18	0.14	0.13	0.17	0.16	0.18	0.16	0.11	0.11

OLS Regression analyses of IRSC activities on cost of financing (measured by Ln(*R_Gordon)*) in conjunction with levels of firm's information asymmetry (high compared to low information asymmetry) using interaction variables. *R_Gordon* is the estimated return using Gordon Model: R = (D1/P0) + g, where, D1 and g are analysts' consensus estimates for the next annual dividend and long-term growth rate. IRSC measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3) days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 22 - Regression Analysis of combination of Source of Financing and IRSC on Cost of Financing (R_peg_21)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	0.0110***					0.0152***	0.0989**					0.1074*
	(3.270)					(3.866)	(2.048)					(1.820)
Equity_issue*Press	-0.0067					-0.0120	-0.2496**					0.1246
	(-1.152)					(-1.398)	(-2.310)					(0.424)
Event		0.0122				0.0138		0.0050				0.0055
		(0.218)				(0.186)		(0.132)				(0.103)
Equity_issue*Event		-0.0711				-0.7649***		-0.1617				-0.0904
		(-0.615)				(-2.769)		(-1.414)				(-0.312)
QAtoLength			0.3191			1.2051*			-0.0085			0.1510
			(0.718)			(1.711)			(-0.079)			(1.027)
Equity_issue*QAtoLength			-0.1782			2.7295*			-0.1009			-1.1594
			(-0.261)			(1.762)			(-0.260)			(-0.888)
Answer				0.0023		0.0039				0.0221		-0.0486
				(0.846)		(1.221)				(0.342)		(-0.473)
Equity_issue*Answer				0.0030		0.0046				0.1634		-0.0087
				(0.851)		(0.764)				(0.835)		(-0.018)
Slide					0.0602	0.1294					-0.0033	-0.0104
					(0.495)	(1.083)					(-0.084)	(-0.235)
Equity_issue*Slide					0.0182	0.1291					0.0906	0.1096
					(0.068)	(0.472)					(0.627)	(0.555)
Equity_issue	0.0304	0.0225	0.0282	-0.0606	-0.0188	0.0713	-0.0137	-0.0269	0.0284	-0.0060	-0.0473	-0.1297
	(0.588)	(0.349)	(0.483)	(-0.630)	(-0.183)	(0.525)	(-0.292)	(-0.595)	(0.668)	(-0.134)	(-0.611)	(-1.113)
Low_Transparent	0.1172***	0.1108***	0.1169***	0.1150***	0.1123***	0.1386***	0.1203***	0.1234***	0.1190***	0.1183***	0.1420***	0.1216***
	(4.678)	(4.360)	(4.593)	(4.515)	(3.970)	(4.626)	(4.448)	(4.596)	(4.555)	(4.396)	(4.429)	(3.148)
Analyst_Cov	0.0019	0.0027	0.0019	0.0022	0.0014	0.0027	0.0016	0.0007	0.0017	0.0023	0.0015	-0.0011
	(0.845)	(1.288)	(0.857)	(1.116)	(0.575)	(1.193)	(0.661)	(0.301)	(0.757)	(1.011)	(0.492)	(-0.340)
Tangibility	0.0218	0.0009	-0.0189	0.0091	0.0148	0.0232	0.0269	-0.0363	-0.0208	-0.0046	0.0154	-0.0509
	(0.368)	(0.015)	(-0.326)	(0.156)	(0.211)	(0.351)	(0.393)	(-0.562)	(-0.348)	(-0.073)	(0.182)	(-0.567)
Innovation	0.0106	0.0062	0.0070	0.0083	0.0098	0.0122	0.0113	0.0063	0.0084	0.0120	0.0151	0.0073
	(1.335)	(0.820)	(0.897)	(1.085)	(1.064)	(1.307)	(1.280)	(0.722)	(1.057)	(1.416)	(1.306)	(0.547)
Volatility	0.0740***	0.0853***	0.0827***	0.0800***	0.1190***	0.1253***	0.1009***	0.0845***	0.0812***	0.0770***	0.1269***	0.1355***
	(3.780)	(3.876)	(3.493)	(3.547)	(5.942)	(5.727)	(4.872)	(3.771)	(3.468)	(2.980)	(4.732)	(4.238)
Exp_Inflation	-0.0837	-0.0414	-0.0836	-0.0803	-0.0152	0.0076	-0.0848	-0.0804	-0.1092	-0.0969	-0.1171	-0.1571
	(-1.098)	(-0.574)	(-1.144)	(-1.111)	(-0.170)	(0.084)	(-0.980)	(-0.955)	(-1.478)	(-1.150)	(-1.095)	(-1.226)
MB_Ratio	-0.0092**	-0.0086**	-0.0086**	-0.0111**	-0.0064	-0.0052	-0.0087**	-0.0136***	-0.0091**	-0.0087**	-0.0057	-0.0057
	(-2.170)	(-2.093)	(-2.075)	(-2.558)	(-1.492)	(-1.170)	(-2.089)	(-3.152)	(-2.106)	(-2.089)	(-1.024)	(-0.853)

Table 22 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Firm_Size	-0.0343** (-2.173)	-0.0409*** (-2.906)	-0.0289* (-1.775)	-0.0236 (-1.551)	-0.0255 (-1.467)	-0.0049 (-0.251)	-0.0365** (-2.102)	-0.0317** (-2.042)	-0.0299* (-1.913)	-0.0435*** (-2.696)	-0.0232 (-1.070)	-0.0080 (-0.317)
Leverage	0.2175** (2.497)	0.1844** (2.094)	0.2258** (2.508)	0.2761*** (3.053)	0.1797* (1.748)	0.1002 (0.944)	0.2016** (1.988)	0.2106** (2.283)	0.2204** (2.443)	0.2059** (2.118)	0.1924 (1.516)	0.1589 (1.073)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	908	1011	984	968	729	636	765	840	940	839	513	402
Adj. R-Squared	0.22	0.23	0.22	0.23	0.26	0.33	0.23	0.22	0.22	0.22	0.26	0.27

OLS Regression analyses of IRSC activities on cost of financing (measured by Ln(*R_peg_21)*) in conjunction with source of financing (equity compared to debt financing) using interaction variables. *R_peg_21* is cost of capital following Easton (2004) calculated as: Square Root ((EPS2 - EPS1)/P0) at the time of issue. IRSC measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3) days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *Low_Transparent* is a dummy that takes value of one for firms with bid-ask spread above industry-year median on the issue date and zero for those with bid-ask spread below their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * p<0.10, ** p<0.05, *** p<0.01.

Table 23 - Regression Analysis of combination of Source of Financing and IRSC on Cost of Financing (R_Gordon)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	0.0004					-0.0038	0.1092					0.2317**
	(0.073)					(-0.474)	(1.467)					(1.991)
Equity_issue*Press	0.0005					0.0108	-0.1210					-0.2197
	(0.048)					(0.737)	(-0.644)					(-0.907)
Event		0.0129				-0.1115		0.0191				-0.0407
		(0.143)				(-0.769)		(0.329)				(-0.417)
Equity_issue*Event		0.0763				0.3887		-0.0419				0.1025
		(0.487)				(1.324)		(-0.251)				(0.343)
QAtoLength			-0.8990			-0.6949			-0.0514			-0.0098
			(-1.306)			(-0.494)			(-0.346)			(-0.037)
Equity_issue*QAtoLength			-1.0823			1.2751			-0.8109			-0.2867
			(-1.093)			(0.348)			(-0.876)			(-0.378)
Answer				0.0040		0.0063				0.2707***		0.1923
				(0.961)		(1.004)				(2.855)		(1.089)
Equity_issue*Answer				-0.0066		-0.0234***				0.1681		0.4159
				(-1.314)		(-2.693)				(0.641)		(0.720)
Slide					0.0780	0.1311					0.0579	0.0243
					(0.415)	(0.583)					(0.944)	(0.376)
Equity_issue*Slide					-0.0850	0.0109					-0.2383	-0.2426
					(-0.169)	(0.023)					(-1.513)	(-1.187)
Equity_issue	-0.0746	-0.1014	-0.0064	0.0854	-0.1051	0.1628	-0.0745	-0.0414	-0.0703	-0.0660	0.0522	0.0367
	(-0.594)	(-0.749)	(-0.064)	(0.495)	(-0.450)	(0.505)	(-0.749)	(-0.643)	(-1.003)	(-0.683)	(0.542)	(0.328)
IA_high	0.0324	0.1024*	0.0545	0.0580	0.1155	0.1133	0.0796	0.0512	0.0654	0.0843	0.1237	0.1415
	(0.478)	(1.672)	(0.884)	(0.932)	(1.539)	(1.343)	(1.067)	(0.754)	(1.013)	(1.233)	(1.304)	(1.291)
Analyst_Cov	0.0045	0.0076**	0.0078**	0.0087**	0.0073*	0.0104**	0.0072*	0.0059	0.0081**	0.0087**	0.0110**	0.0134***
	(1.282)	(2.296)	(2.323)	(2.567)	(1.904)	(2.446)	(1.842)	(1.549)	(2.310)	(2.410)	(2.538)	(2.611)
Tangibility	-0.2110**	-0.2040**	-0.1829*	-0.2051**	-0.2887**	-0.3152**	-0.1495	-0.1692*	-0.1973*	-0.2059*	-0.2972**	-0.3490*
	(-2.132)	(-2.184)	(-1.839)	(-2.039)	(-2.464)	(-2.414)	(-1.339)	(-1.647)	(-1.939)	(-1.943)	(-2.030)	(-1.945)
Innovation	0.0129	0.0059	0.0049	0.0059	0.0006	0.0045	0.0147	-0.0003	0.0054	0.0018	-0.0102	-0.0204
	(0.992)	(0.471)	(0.405)	(0.478)	(0.038)	(0.247)	(0.966)	(-0.022)	(0.444)	(0.127)	(-0.541)	(-0.988)
Volatility	0.0346	0.0419*	0.0396	0.0354	0.0589	0.0548	0.0398	0.0273	0.0299	0.0293	0.0417	0.0021
	(1.281)	(1.743)	(1.521)	(1.366)	(1.303)	(1.053)	(0.812)	(1.056)	(1.190)	(1.114)	(0.556)	(0.025)
Exp_Inflation	-0.2824**	-0.2270**	-0.2288**	-0.2141**	-0.3236**	-0.3571**	-0.2601**	-0.2672**	-0.2409**	-0.3082**	-0.3170*	-0.3317
	(-2.453)	(-2.149)	(-2.282)	(-2.154)	(-2.329)	(-2.323)	(-2.049)	(-2.089)	(-2.334)	(-2.427)	(-1.774)	(-1.567)

Table 23 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
MB_Ratio	0.0199***	0.0209***	0.0210***	0.0213***	0.0183***	0.0220***	0.0193***	0.0200***	0.0181***	0.0188***	0.0151**	0.0048
	(3.513)	(4.079)	(3.967)	(3.878)	(3.027)	(3.105)	(3.195)	(3.327)	(3.146)	(3.425)	(2.244)	(0.707)
Firm_Size	-0.0814***	-0.0614**	-0.0992***	-0.0869***	-0.0794**	-0.1074**	-0.0904***	-0.0707***	-0.0899***	-0.0881***	-0.0782*	-0.1056**
	(-2.759)	(-2.369)	(-3.681)	(-2.933)	(-2.115)	(-2.243)	(-2.605)	(-2.726)	(-3.243)	(-2.951)	(-1.861)	(-1.972)
Leverage	-0.3297***	-0.3556***	-0.3444***	-0.3045**	-0.2855*	-0.2480	-0.2430*	-0.3282**	-0.3310***	-0.2114	-0.2640	-0.1211
	(-2.637)	(-2.922)	(-2.878)	(-2.458)	(-1.902)	(-1.436)	(-1.776)	(-2.474)	(-2.698)	(-1.610)	(-1.434)	(-0.564)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	869	975	944	927	689	605	732	804	901	804	480	377
Adj. R-Squared	0.16	0.17	0.18	0.19	0.14	0.14	0.17	0.16	0.18	0.16	0.12	0.11

OLS Regression analyses of IRSC activities on cost of financing (measured by Ln(*R_Gordon)*) in conjunction with source of financing (equity compared to debt financing) using interaction variables. *R_Gordon* is the estimated return using Gordon Model: R = (D1/P0) + g, where, D1 and g are analysts' consensus estimates for the next annual dividend and long-term growth rate. IRSC measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3) days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * p<0.10, ** p<0.05, *** p<0.01

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Table 24 - Regression Analysis of combination of Information Asymmetry level, Source of Financing, and IRSC on Cost of Financing (R_peg_21)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat	Coef/t-stat
Press	0.0101**					0.0158***	0.1508**					0.1686**
	(2.217)					(2.967)	(2.405)					(2.255)
IA_high*Press	0.0018					0.0012	-0.1192					-0.1236
	(0.269)					(0.157)	(-1.269)					(-1.051)
Equity_issue*Press	-0.0239*					-0.0804***	-0.1557					-0.6627
	(-1.926)					(-2.648)	(-0.812)					(-1.245)
IA_high*Equity_issue*Press	0.0169					0.0720**	-0.0738					1.1640*
	(1.176)					(2.254)	(-0.323)					(1.759)
Event		-0.0013				0.0452		0.0689				0.0560
		(-0.019)				(0.554)		(1.490)				(0.848)
IA_high*Event		0.0837				0.0106		-0.1602**				-0.1415
		(0.876)				(0.072)		(-2.069)				(-1.193)
Equity_issue*Event		0.4104				0.1500		-0.1895				-0.2086
		(1.441)				(0.284)		(-0.700)				(-0.300)
IA_high* Equity_issue*Event		-0.5742*				-1.0312*		0.1135				0.2366
		(-1.841)				(-1.677)		(0.379)				(0.315)
QAtoLength			0.3826			1.7486**			-0.0901			0.2217
			(0.664)			(1.986)			(-0.637)			(1.228)
IA_high*QAtoLength			-0.1250			-1.6681			0.2436			-0.1185
			(-0.163)			(-1.272)			(1.139)			(-0.440)
Equity_issue*QAtoLength			2.4190			-1.1758			0.2378			0.9661
			(1.234)			(-0.308)			(0.458)			(0.599)
IA_high* Equity_issue*QAtoLength			-2.8542			4.5864			-0.5530			-2.6512
			(-1.313)			(1.073)			(-0.716)			(-1.269)
Answer				-0.0020		-0.0018				-0.0358		-0.1289
				(-0.581)		(-0.448)				(-0.478)		(-1.055)
IA_high*Answer				0.0089*		0.0107*				0.1136		0.1130
				(1.861)		(1.699)				(0.877)		(0.545)
Equity_issue*Answer				0.0137		-0.0209				0.5769		1.7487
				(1.430)		(-1.493)				(1.109)		(1.110)
IA_high* Equity_issue*Answer				-0.0156		0.0224				-0.4970		-1.8748
				(-1.492)		(1.416)				(-0.855)		(-1.138)
Slide					-0.0191	0.0945					0.0231	0.0166
					(-0.120)	(0.618)					(0.536)	(0.341)

Table 24 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
IA_high*Slide					0.1997	0.0409					-0.0589	-0.0408
					(0.922)	(0.178)					(-0.731)	(-0.432)
Equity_issue*Slide					0.5371	0.7118					-0.1589	-0.4021
					(1.007)	(1.116)					(-0.415)	(-0.857)
IA_high* Equity_issue*Slide					-0.6850	-0.6253					0.3381	0.6773
					(-1.104)	(-0.868)					(0.806)	(1.304)
IA_high*Equity_issue	0.0155	0.2781*	0.1827	0.3201	0.1929	-0.1678	0.0406	-0.0605	0.0527	-0.0370	0.0619	-0.2768
	(0.152)	(1.790)	(1.391)	(1.240)	(0.767)	(-0.464)	(0.362)	(-0.608)	(0.461)	(-0.344)	(0.376)	(-1.398)
IA_high	-0.0508	-0.0544	-0.0369	-0.2198*	-0.0479	-0.1424	-0.0268	-0.0353	-0.0594	-0.0408	0.0017	0.0126
	(-1.184)	(-0.933)	(-0.639)	(-1.886)	(-0.710)	(-0.965)	(-0.681)	(-0.927)	(-1.508)	(-1.030)	(0.037)	(0.223)
Equity_issue	0.0329	-0.2029	-0.1240	-0.2745	-0.1727	0.3290	-0.0354	0.0153	-0.0152	0.0245	-0.1017	0.0530
	(0.396)	(-1.475)	(-1.103)	(-1.189)	(-0.776)	(1.006)	(-0.338)	(0.172)	(-0.142)	(0.255)	(-0.757)	(0.341)
Analyst_Cov	0.0002	0.0017	0.0000	0.0009	0.0014	0.0033	0.0008	-0.0007	-0.0002	0.0007	0.0013	0.0004
	(0.081)	(0.696)	(0.006)	(0.408)	(0.483)	(1.252)	(0.276)	(-0.256)	(-0.094)	(0.252)	(0.367)	(0.110)
Tangibility	0.0297	0.0135	-0.0101	0.0160	0.0246	0.0456	0.0482	-0.0384	-0.0120	-0.0039	0.0121	-0.0319
	(0.500)	(0.232)	(-0.171)	(0.270)	(0.351)	(0.659)	(0.699)	(-0.593)	(-0.195)	(-0.062)	(0.139)	(-0.325)
Innovation	0.0081	0.0044	0.0056	0.0067	0.0077	0.0076	0.0088	0.0037	0.0079	0.0093	0.0106	0.0059
	(1.005)	(0.564)	(0.701)	(0.858)	(0.828)	(0.804)	(0.991)	(0.423)	(0.969)	(1.061)	(0.897)	(0.461)
Volatility	0.0828***	0.0954***	0.0941***	0.0888***	0.1335***	0.1400***	0.1152***	0.0950***	0.0915***	0.0870***	0.1462***	0.1579***
	(3.869)	(4.015)	(3.668)	(3.620)	(6.487)	(6.202)	(5.469)	(3.855)	(3.565)	(3.091)	(5.048)	(4.915)
Exp_Inflation	-0.1009	-0.0623	-0.1037	-0.0995	-0.0408	-0.0492	-0.1066	-0.0994	-0.1312*	-0.1149	-0.1397	-0.1744
	(-1.310)	(-0.857)	(-1.403)	(-1.365)	(-0.468)	(-0.558)	(-1.231)	(-1.154)	(-1.763)	(-1.333)	(-1.339)	(-1.414)
MB_Ratio	-0.0103**	-0.0088**	-0.0092**	-0.0111**	-0.0071	-0.0056	-0.0101**	-0.0138***	-0.0099**	-0.0094**	-0.0074	-0.0074
	(-2.330)	(-2.026)	(-2.103)	(-2.425)	(-1.566)	(-1.167)	(-2.322)	(-3.032)	(-2.142)	(-2.147)	(-1.247)	(-1.061)
Firm_Size	-0.0415***	-0.0456***	-0.0366**	-0.0328**	-0.0307*	-0.0100	-0.0426**	-0.0426***	-0.0406**	-0.0528***	-0.0244	-0.0204
	(-2.623)	(-3.201)	(-2.179)	(-2.061)	(-1.777)	(-0.515)	(-2.437)	(-2.699)	(-2.519)	(-3.185)	(-1.145)	(-0.818)
Leverage	0.2592***	0.2086**	0.2617***	0.3001***	0.2134**	0.1463	0.2457**	0.2413***	0.2598***	0.2490**	0.2609**	0.2293
	(2.937)	(2.330)	(2.895)	(3.311)	(2.081)	(1.381)	(2.423)	(2.604)	(2.832)	(2.542)	(2.050)	(1.586)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	908	1011	984	968	729	636	765	840	940	839	513	402
Adj. R-Squared	0.20	0.21	0.20	0.21	0.24	0.32	0.21	0.20	0.20	0.20	0.23	0.26

OLS Regression analyses of IRSC activities on cost of financing (measured by Ln(*R_peg_21*)) in conjunction with firm's information asymmetry (high to low) and source of financing (equity to debt) using three-way interaction variables. *R_peg_21* is cost of capital following Easton (2004) calculated as: Square Root ((EPS2 - EPS1)/P0) at the time of issue. IRSC measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3)

days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 25 - Regression Analysis of Information Asymmetry level, Source of Financing, and IRSC on Cost of Financing (R_Gordon)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	-0.0038					-0.0017	0.1713*					0.1704
	(-0.428)					(-0.139)	(1.662)					(1.010)
IA_high*Press	0.0101					-0.0006	-0.1374					0.1324
	(0.967)					(-0.047)	(-1.033)					(0.602)
Equity_issue*Press	0.0518					0.4104***	0.5180					-0.2189
	(1.377)					(4.147)	(1.260)					(-0.538)
IA_high*Equity_issue*Press	-0.0593					-0.4038***	-0.7559*					0.0771
	(-1.590)					(-4.019)	(-1.684)					(0.133)
Event		-0.0686				-0.1064		0.0720				-0.0354
		(-0.557)				(-0.569)		(0.912)				(-0.256)
IA_high*Event		0.1798				-0.0054		-0.1243				-0.0199
		(1.263)				(-0.024)		(-1.080)				(-0.109)
Equity_issue*Event		1.5157				5.4876***		0.2181				0.1657
		(1.542)				(4.563)		(0.959)				(0.434)
IA_high*Equity_issue*Event		-1.6218*				-5.4220***		-0.3447				-0.1440
		(-1.677)				(-4.421)		(-1.103)				(-0.281)
QAtoLength			-1.5016			-1.1347			-0.2630			-0.0287
			(-1.492)			(-0.569)			(-1.249)			(-0.078)
IA_high*QAtoLength			1.2894			0.6285			0.5131*			0.0547
			(1.077)			(0.245)			(1.861)			(0.129)
Equity_issue*QAtoLength			-5.9935			-49.9302***			-2.6571			1.9471
			(-1.098)			(-4.421)			(-0.996)			(0.978)
IA_high* Equity_issue*QAtoLength			4.9095			54.8609***			2.3641			-2.0816
			(0.887)			(4.715)			(0.872)			(-0.961)
Answer				-0.0026		0.0036				0.2359*		0.0441
				(-0.508)		(0.481)				(1.757)		(0.167)
IA_high*Answer				0.0126**		0.0076				0.0762		0.4257
				(2.186)		(0.822)				(0.397)		(1.167)
Equity_issue*Answer				0.0127		-0.0066				0.4623		2.6709**
				(0.636)		(-0.117)				(0.553)		(2.129)
IA_high* Equity_issue*Answer				-0.0259		-0.0213				-0.3294		-2.5324*
				(-1.264)		(-0.375)				(-0.371)		(-1.907)
Slide					0.1977	0.3802					0.0176	0.0233
					(0.730)	(0.968)					(0.204)	(0.261)

Table 25 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
IA_high*Slide					-0.2302	-0.4577					0.0918	0.0070
					(-0.718)	(-1.025)					(0.846)	(0.058)
Equity_issue*Slide					1.9731	1.6626					0.4931	0.3452
					(1.022)	(1.009)					(1.530)	(1.411)
IA_high* Equity_issue*Slide					-2.2357	-1.7199					-0.9331**	-0.7976**
					(-1.167)	(-1.017)					(-2.534)	(-2.471)
IA_high*Equity_issue	0.1332	0.7458	-0.2573	0.5299	0.6104	1.5994*	-0.1495	-0.2578**	-0.0645	-0.1057	-0.0889	-0.5035*
	(0.390)	(1.185)	(-1.372)	(0.945)	(0.801)	(1.651)	(-0.578)	(-2.119)	(-0.344)	(-0.377)	(-0.493)	(-1.676)
IA_high	0.0034	0.0314	-0.0107	-0.2199	0.1591	0.0054	0.0866	0.0772	0.0446	0.0906	0.1214	0.1496
	(0.044)	(0.344)	(-0.139)	(-1.542)	(1.389)	(0.025)	(1.098)	(1.115)	(0.645)	(1.181)	(1.241)	(1.202)
Equity_issue	-0.1906	-0.7469	0.2321	-0.2987	-0.6249	-1.3619	0.0691	0.1344	-0.0113	0.0143	0.1253	0.4705*
	(-0.550)	(-1.183)	(1.465)	(-0.544)	(-0.819)	(-1.469)	(0.273)	(1.271)	(-0.062)	(0.051)	(0.902)	(1.815)
Analyst_Cov	0.0045	0.0076**	0.0080**	0.0085**	0.0064	0.0093**	0.0067*	0.0065*	0.0080**	0.0089**	0.0115***	0.0141***
	(1.259)	(2.226)	(2.305)	(2.436)	(1.544)	(2.124)	(1.670)	(1.703)	(2.189)	(2.378)	(2.606)	(2.630)
Tangibility	-0.2151**	-0.1893**	-0.1808*	-0.2087**	-0.2952**	-0.3213**	-0.1435	-0.1852*	-0.1956*	-0.2124**	-0.3102**	-0.3678**
	(-2.197)	(-2.095)	(-1.831)	(-2.067)	(-2.555)	(-2.581)	(-1.339)	(-1.798)	(-1.945)	(-2.035)	(-2.111)	(-2.044)
Innovation	0.0128	0.0044	0.0061	0.0050	-0.0009	-0.0045	0.0135	-0.0005	0.0052	0.0016	-0.0091	-0.0184
	(0.966)	(0.376)	(0.498)	(0.412)	(-0.060)	(-0.285)	(0.908)	(-0.045)	(0.444)	(0.108)	(-0.479)	(-0.873)
Volatility	0.0362	0.0431*	0.0368	0.0329	0.0618	0.0710	0.0379	0.0312	0.0314	0.0303	0.0484	0.0131
	(1.310)	(1.762)	(1.392)	(1.265)	(1.372)	(1.378)	(0.751)	(1.209)	(1.268)	(1.146)	(0.640)	(0.162)
Exp_Inflation	-0.2731**	-0.2394**	-0.2270**	-0.2174**	-0.3684**	-0.3300**	-0.2672**	-0.2531**	-0.2467**	-0.3053**	-0.3028*	-0.2954
	(-2.376)	(-2.239)	(-2.257)	(-2.182)	(-2.492)	(-2.128)	(-2.103)	(-1.975)	(-2.380)	(-2.368)	(-1.676)	(-1.303)
MB_Ratio	0.0204***	0.0215***	0.0208***	0.0223***	0.0170***	0.0229***	0.0191***	0.0214***	0.0169***	0.0191***	0.0153**	0.0057
	(3.635)	(4.196)	(3.924)	(3.991)	(2.875)	(3.354)	(3.323)	(3.557)	(3.148)	(3.489)	(2.266)	(0.829)
Firm_Size	-0.0817***	-0.0581**	-0.1013***	-0.0910***	-0.0719**	-0.0872**	-0.0860***	-0.0743***	-0.0898***	-0.0890***	-0.0862**	-0.1159**
	(-2.870)	(-2.421)	(-3.885)	(-3.109)	(-2.076)	(-2.209)	(-2.639)	(-2.867)	(-3.580)	(-3.061)	(-2.009)	(-2.015)
Leverage	-0.3567***	-0.3558***	-0.3486***	-0.3074**	-0.2883*	-0.3424**	-0.2499*	-0.3585***	-0.3194**	-0.2171	-0.2824	-0.1276
	(-2.843)	(-2.844)	(-2.905)	(-2.437)	(-1.915)	(-2.036)	(-1.817)	(-2.685)	(-2.572)	(-1.634)	(-1.551)	(-0.585)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	869	975	944	927	689	605	732	804	901	804	480	377
Adj. R-Squared	0.16	0.18	0.18	0.19	0.14	0.22	0.17	0.16	0.19	0.16	0.12	0.11

OLS Regression analyses of IRSC activities on cost of financing (measured by Ln(*R_Gordon*)) in conjunction with firm's information asymmetry (high to low) and source of financing (equity to debt) using three-way interaction variables. *R_Gordon* is the estimated return using Gordon Model: R = (D1/P0) + g, where, D1 and g are analysts' consensus estimates for the next annual dividend and long-term growth rate. IRSC measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3) days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* ((-260,-130) days before issue) compared to

Period -1. *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 26 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_peg_21 and YTM) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	R_peg_21	YTM	Difference	R_peg_21	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	-0.0173	-0.0029	-0.0144	0.1389**	0.0666*	0.0723
	(-0.691)	(-0.263)	(0.577)	(2.195)	(1.762)	(0.310)
Press*IA_high	0.0212	0.0023	0.0189	-0.1773**	-0.0579	-0.1194
	(0.861)	(0.207)	(0.456)	(-2.001)	(-1.095)	(0.232)
IA_high	-0.2678	0.0360	-0.3038	-0.0355	0.0129	-0.0484
	(-1.240)	(0.375)	(0.174)	(-0.745)	(0.452)	(0.368)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	134	910		134	763	
R-Squared	0.38	0.51		0.25	0.49	
Panel B		**Model 1**			**Model 2**	
	R_peg_21	YTM	Difference	R_peg_21	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	-0.0424	0.0156	-0.0579	0.0462	0.2634	-0.2172
	(-0.804)	(0.608)	(0.318)	(0.033)	(0.422)	(0.882)
Press_Exog* IA_high	0.0398	-0.0146	0.0544	-2.1365	-1.6490*	-0.4875
	(0.750)	(-0.566)	(0.351)	(-1.073)	(-1.849)	(0.816)
Event	0.0379	1.0659**	-1.0280	0.0590	0.0996	-0.0406
	(0.037)	(2.141)	(0.361)	(0.282)	(1.064)	(0.854)
Event* IA_high	-0.6423	-1.1637**	0.5214	-0.3047	-0.1878	-0.1168
	(-0.627)	(-2.340)	(0.642)	(-1.043)	(-1.435)	(0.704)
QAtoLength	3.1762	-8.0432**	11.2194	1.1052**	0.2227	0.8825*
	(0.459)	(-2.395)	(0.143)	(2.479)	(1.115)	(0.062)
QAtoLength* IA_high	-0.6702	8.6609**	-9.3311	-2.1467***	0.0511	-2.1978***
	(-0.095)	(2.530)	(0.230)	(-3.508)	(0.186)	(0.001)
Answer	-0.0038	-0.0489**	0.0450	-0.6128*	0.2332	-0.8459**
	(-0.084)	(-2.195)	(0.371)	(-1.840)	(1.563)	(0.017)
Answer* IA_high	0.0178	0.0499**	-0.0321	0.1729	-0.0133	0.1862
	(0.374)	(2.155)	(0.539)	(0.384)	(-0.066)	(0.694)
Slide	1.0783	1.2337**	-0.1554	-0.0874	0.1586**	-0.2459
	(0.983)	(2.316)	(0.897)	(-0.574)	(2.327)	(0.127)
Slide* IA_high	-0.8112	-1.2408**	0.4296	0.1543	-0.1829*	0.3373
	(-0.702)	(-2.209)	(0.734)	(0.741)	(-1.962)	(0.126)
IA_high	0.2194	-0.5253	0.7447	0.0207	0.0582	-0.0375
	(0.296)	(-1.460)	(0.360)	(0.152)	(0.957)	(0.793)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	80	645		80	645	
R-Squared	0.62	0.48		0.62	0.48	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_peg_21)* for equity issues and Ln(*YTM)* for debt issues in conjunction with levels of information asymmetry (high information asymmetry compared to low) using interaction variables. *R_peg_21* is cost of capital following Easton (2004) calculated as: Square Root ((EPS2 - EPS1)/P0) at the time of issue. *YTM* is the weighted average of yield to maturity (from different tranches of the same issue). Independent variables in Model 1 are levels of IRSC and their interaction with *IA_high*. Model 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2*

((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 27 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_Gordon and YTM) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	R_Gordon	YTM	Difference	R_Gordon	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	0.0590	-0.0009	0.0598	0.2082**	0.0700*	0.1382
	(1.448)	(-0.077)	(0.128)	(2.100)	(1.811)	(0.185)
Press* IA_high	-0.0493	-0.0013	-0.0480	-0.2436*	-0.0759	-0.1677
	(-1.232)	(-0.124)	(0.213)	(-1.771)	(-1.416)	(0.246)
IA_high	0.1476	0.0903	0.0573	0.0675	0.0229	0.0447
	(0.403)	(0.909)	(0.871)	(0.898)	(0.781)	(0.572)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	129	910		129	763	
R-Squared	0.33	0.51		0.21	0.49	
Panel B		**Model 1**			**Model 2**	
	R_Gordon	YTM	Difference	R_Gordon	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	0.3308***	0.0325	0.2982***	-0.4019	0.3183	-0.7202
	(4.102)	(1.132)	(0.001)	(-0.222)	(0.426)	(0.711)
Press_Exog* IA_high	-0.3059***	-0.0315	-0.2744***	1.8687	-1.6261*	3.4948
	(-3.801)	(-1.098)	(0.002)	(0.821)	(-1.732)	(0.155)
Event	7.4344***	1.1733**	6.2610***	-0.0288	0.0787	-0.1075
	(5.225)	(2.312)	(0.000)	(-0.112)	(0.743)	(0.697)
Event* IA_high	-7.5374***	-1.2750**	-6.2625***	0.2377	-0.1886	0.4262
	(-5.282)	(-2.505)	(0.000)	(0.668)	(-1.286)	(0.266)
QAtoLength	-56.5785***	-8.9418**	-47.6366***	0.7499	0.2040	0.5459
	(-5.631)	(-2.496)	(0.000)	(1.404)	(0.926)	(0.343)
QAtoLength* IA_high	62.7207***	9.5185**	53.2022***	-1.3046*	0.0396	-1.3442*
	(6.029)	(2.566)	(0.000)	(-1.844)	(0.136)	(0.079)
Answer	0.0450	-0.0324	0.0774	0.5834	0.2748	0.3085
	(0.549)	(-1.110)	(0.365)	(1.423)	(1.626)	(0.484)
Answer* IA_high	-0.0709	0.0330	-0.1039	-0.5779	-0.0518	-0.5261
	(-0.848)	(1.106)	(0.235)	(-1.100)	(-0.239)	(0.353)
Slide	3.8188*	0.9480	2.8708	-0.1608	0.1549**	-0.3156*
	(1.845)	(1.284)	(0.186)	(-0.909)	(2.124)	(0.099)
Slide* IA_high	-2.7178	-0.9172	-1.8007	0.2390	-0.1936*	0.4326*
	(-1.284)	(-1.215)	(0.414)	(1.005)	(-1.974)	(0.093)
IA_high	0.9754	-0.2984	1.2738	0.1603	0.0547	0.1057
	(0.806)	(-0.692)	(0.313)	(0.994)	(0.822)	(0.542)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	75	645		130	138	
R-Squared	0.74	0.48		0.30	0.63	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_Gordon)* for equity issues and Ln(*YTM)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *R_Gordon* is the estimated return using Gordon Model: R = (D1/P0) + g, where, D1 and g are analysts' consensus estimates for the next annual dividend and long-term growth rate. *YTM* is the weighted average of yield to maturity (from different tranches of the same issue). Independent variables in Model 1 are levels of IRSC and their interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before

issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 28 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_peg_21 and Default_Spread) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	R_peg_21	Default_Spread	Difference	R_peg_21	Default_Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	-0.0175	-0.0033	-0.0141	0.1393**	0.0347	0.1046
	(-0.677)	(-0.189)	(0.650)	(2.192)	(0.619)	(0.207)
Press* IA_high	0.0208	-0.0005	0.0214	-0.1776**	-0.0326	-0.1450
	(0.825)	(-0.031)	(0.482)	(-1.988)	(-0.413)	(0.213)
IA_high	-0.2894	-0.1824	-0.1070	-0.0281	0.0098	-0.0380
	(-1.285)	(-1.180)	(0.693)	(-0.588)	(0.233)	(0.543)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	129	901		129	757	
R-Squared	0.37	0.31		0.25	0.35	
Panel B		**Model 1**			**Model 2**	
	R_peg_21	Default Spread	Difference	R_peg_21	Default Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	-0.0527	0.0453	-0.0980	-0.0424	-0.4200	0.3775
	(-0.936)	(1.248)	(0.138)	(-0.030)	(-0.443)	(0.814)
Press_Exog* IA_high	0.0494	-0.0449	0.0943	-2.1373	-0.9259	-1.2114
	(0.872)	(-1.230)	(0.155)	(-1.061)	(-0.682)	(0.598)
Event	-0.0413	1.1772	-1.2185	0.0589	0.1265	-0.0677
	(-0.037)	(1.652)	(0.343)	(0.279)	(0.889)	(0.779)
Event* IA_high	-0.4786	-1.1662	0.6876	-0.3006	-0.1823	-0.1183
	(-0.425)	(-1.606)	(0.598)	(-1.017)	(-0.916)	(0.725)
QAtoLength	3.4129	-9.9800**	13.3929	1.1247**	-0.1016	1.2263**
	(0.448)	(-2.028)	(0.134)	(2.497)	(-0.335)	(0.018)
QAtoLength* IA_high	1.2302	8.6716*	-7.4414	-2.2369***	0.7753*	-3.0122***
	(0.161)	(1.757)	(0.402)	(-3.598)	(1.852)	(0.000)
Answer	0.0032	-0.0447	0.0479	-0.6185*	0.4892**	-1.1077***
	(0.067)	(-1.439)	(0.392)	(-1.839)	(2.159)	(0.005)
Answer* IA_high	0.0106	0.0443	-0.0337	0.1446	-0.1234	0.2680
	(0.211)	(1.366)	(0.563)	(0.318)	(-0.403)	(0.605)
Slide	1.2332	1.8202**	-0.5870	-0.0840	0.0441	-0.1282
	(1.057)	(2.417)	(0.664)	(-0.547)	(0.426)	(0.465)
Slide* IA_high	-1.0441	-1.8729**	0.8288	0.1330	-0.1058	0.2389
	(-0.834)	(-2.318)	(0.568)	(0.631)	(-0.745)	(0.321)
IA_high	0.2960	-0.5387	0.8347	0.0236	0.0577	-0.0341
	(0.382)	(-1.078)	(0.354)	(0.172)	(0.625)	(0.827)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	75	635		133	635	
R-Squared	0.62	0.32		0.39	0.59	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_peg_21)* for equity issues and Ln(*Default_Spread)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *R_peg_21* is cost of capital following Easton (2004) calculated as: Square Root ((EPS2 - EPS1)/P0) at the time of issue. *Default_Spread is* the weighted average of default spreads for all tranches of an issue. Individual default spreads are Excess YTM from Treasury Yield of similar Maturity sold most recent prior to the issue. Independent variables in Model 1 are levels of IRSC proxies and their interaction with *High-IA*. Models 2 includes the percentage

change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 29 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_Gordon and Default_Spread) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	R_Gordon	Default_Spread	Difference	R_Gordon	Default_Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	0.0635	-0.0032	0.0667*	0.2182**	0.0299	0.1882*
	(1.563)	(-0.179)	(0.099)	(2.191)	(0.518)	(0.094)
Press* IA_high	-0.0526	-0.0015	-0.0511	-0.2332*	-0.0567	-0.1765
	(-1.319)	(-0.084)	(0.196)	(-1.681)	(-0.704)	(0.259)
IA_high	0.2060	-0.1852	0.3913	0.0632	0.0174	0.0458
	(0.553)	(-1.137)	(0.289)	(0.838)	(0.398)	(0.590)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	126	601		126	757	
R-Squared	0.35	0.31		0.21	0.34	
Panel B		**Model 1**			**Model 2**	
	R_Gordon	Default Spread	Difference	R_Gordon	Default Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	0.3346***	0.0639	0.2706***	-0.1232	0.3593	-0.4825
	(4.065)	(1.680)	(0.003)	(-0.067)	(0.319)	(0.816)
Press_Exog* IA_high	-0.3086***	-0.0665*	-0.2421***	2.0121	-0.8870	2.8992
	(-3.751)	(-1.750)	(0.007)	(0.876)	(-0.633)	(0.262)
Event	7.2586***	1.5669**	5.6918***	-0.0426	0.0434	-0.0861
	(4.898)	(2.287)	(0.001)	(-0.165)	(0.275)	(0.767)
Event* IA_high	-7.3699***	-1.5433**	-5.8266***	0.2536	-0.1204	0.3740
	(-4.942)	(-2.239)	(0.001)	(0.707)	(-0.550)	(0.354)
QAtoLength	-54.3628***	-11.7385**	-42.6243***	0.7817	-0.0440	0.8256
	(-5.145)	(-2.403)	(0.000)	(1.448)	(-0.133)	(0.175)
QAtoLength* IA_high	60.4170***	8.3225	52.0945***	-1.3843*	0.6519	-2.0362**
	(5.595)	(1.667)	(0.000)	(-1.918)	(1.480)	(0.013)
Answer	0.0484	-0.0537	0.1021	0.5766	0.5445**	0.0321
	(0.572)	(-1.371)	(0.248)	(1.397)	(2.162)	(0.945)
Answer* IA_high	-0.0748	0.0516	-0.1265	-0.6013	-0.2228	-0.3785
	(-0.864)	(1.290)	(0.163)	(-1.132)	(-0.687)	(0.526)
Slide	3.3739	1.9842*	1.3897	-0.1690	0.0136	-0.1826
	(1.535)	(1.953)	(0.542)	(-0.947)	(0.125)	(0.363)
Slide* IA_high	-2.1159	-1.9862*	-0.1297	0.2329	-0.1281	0.3611
	(-0.928)	(-1.885)	(0.956)	(0.970)	(-0.875)	(0.182)
IA_high	0.9213	-0.5822	1.5035	0.1575	0.0673	0.0902
	(0.744)	(-1.017)	(0.245)	(0.969)	(0.679)	(0.621)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	126	601		126	757	
R-Squared	0.35	0.31		0.21	0.34	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_Gordon)* for equity issues and Ln(*Default_Spread)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *R_Gordon* is the estimated return using Gordon Model: R = (D1/P0) + g, where, D1 and g are analysts' consensus estimates for the next annual dividend and long-term growth rate. *Default_Spread is* the weighted average of default spreads for all tranches of an issue. Individual default spreads are Excess YTM from Treasury Yield of similar Maturity sold most recent prior to the issue. Independent

variables in Model 1 are levels of IRSC and their interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 30 - Regression Analysis of combination of Information Asymmetry level, Source of Financing, and IRSC on Cost of Financing (R_peg_54)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	-0.0027					-0.0032	-0.0528					-0.0712
	(-0.447)					(-0.407)	(-0.762)					(-0.779)
IA_high *Press	0.0152*					0.0207*	0.0538					0.1551
	(1.664)					(1.728)	(0.448)					(1.031)
Equity_issue*Press	-0.0236*					0.0249	0.0750					0.2300
	(-1.846)					(0.952)	(0.345)					(0.996)
IA_high*Equity_issue*Press	0.0315**					-0.0482	-0.0867					-0.0368
	(1.972)					(-1.435)	(-0.313)					(-0.110)
Event		-0.1579**				-0.1109		-0.0429				-0.0035
		(-2.210)				(-1.072)		(-0.704)				(-0.036)
IA_high*Event		0.0109				-0.0899		-0.0538				-0.1582
		(0.087)				(-0.498)		(-0.441)				(-0.894)
Equity_issue*Event		0.2164				0.2399		-0.1527				-0.4912**
		(0.673)				(0.623)		(-0.899)				(-1.977)
IA_high*Equity_issue*Event		0.0869				-0.1339		0.1246				0.6131*
		(0.247)				(-0.289)		(0.502)				(1.832)
QAtoLength			0.0995			1.3127			0.0394			0.1303
			(0.141)			(1.399)			(0.268)			(0.553)
IA_high*QAtoLength			-0.9986			-3.2196**			0.0248			0.0616
			(-1.021)			(-2.004)			(0.091)			(0.151)
Equity_issue*QAtoLength			4.1392**			-3.1758			0.2856			-2.8548***
			(2.020)			(-1.233)			(0.697)			(-3.169)
IA_high*Equity_issue*QAtoLength			-0.9373			7.4982**			-0.0689			3.1706***
			(-0.408)			(2.060)			(-0.114)			(2.760)
Answer				-0.0018		-0.0013				0.0256		-0.2321
				(-0.340)		(-0.208)				(0.262)		(-1.534)
IA_high*Answer				0.0073		0.0079				0.0553		0.1820
				(1.212)		(0.981)				(0.318)		(0.626)
Equity_issue*Answer				0.0263**		0.0085				0.9079**		-0.3130
				(2.060)		(0.578)				(2.098)		(-0.578)
IA_high*Equity_issue*Answer				-0.0272**		-0.0126				-0.7166		0.5596
				(-2.002)		(-0.766)				(-1.445)		(0.876)
Slide					-0.5935***	-0.6007**					0.0638	0.1239*
					(-3.141)	(-2.490)					(1.154)	(1.956)

Table 30 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
IA_high*Slide					0.0335	0.1688					0.0398	0.0797
					(0.108)	(0.453)					(0.387)	(0.644)
Equity_issue*Slide					0.5706	0.4782					0.2237	0.0664
					(1.223)	(1.007)					(1.511)	(0.478)
IA_high*Equity_issue*Slide					-0.0849	-0.2727					-0.1500	-0.1751
					(-0.138)	(-0.383)					(-0.737)	(-0.739)
IA_high*Equity_issue	-0.0422	0.0505	0.0662	0.6232**	0.0533	0.0672	0.1056	0.0878	0.0774	0.1300	0.1248	0.2949*
	(-0.415)	(0.324)	(0.426)	(2.043)	(0.298)	(0.184)	(0.970)	(0.851)	(0.750)	(1.506)	(1.069)	(1.685)
IA_high	-0.0732	-0.0645	0.0345	-0.1916	-0.0380	-0.0779	-0.0291	-0.0362	-0.0336	-0.0538	-0.0752	-0.1103
	(-1.260)	(-0.900)	(0.515)	(-1.458)	(-0.486)	(-0.419)	(-0.462)	(-0.620)	(-0.617)	(-1.038)	(-1.124)	(-1.416)
Equity_issue	0.1446*	-0.0644	-0.1772	-0.5145*	-0.0679	-0.1931	0.0564	0.0646	0.0458	0.0533	0.0119	-0.1035
	(1.948)	(-0.515)	(-1.475)	(-1.912)	(-0.534)	(-0.636)	(0.667)	(0.850)	(0.558)	(0.827)	(0.139)	(-0.696)
Analyst_Cov	0.0041	0.0030	0.0034	0.0035	0.0011	0.0007	0.0044	0.0047	0.0049	0.0002	-0.0012	-0.0023
	(1.111)	(0.853)	(0.902)	(0.963)	(0.291)	(0.173)	(1.039)	(1.107)	(1.305)	(0.047)	(-0.278)	(-0.430)
Tangibility	-0.0869	-0.1161	-0.0766	-0.0654	-0.1204	-0.1024	-0.1238	-0.1029	-0.0997	-0.1142	-0.1738*	-0.1908
	(-1.118)	(-1.482)	(-0.957)	(-0.804)	(-1.423)	(-1.056)	(-1.370)	(-1.179)	(-1.214)	(-1.478)	(-1.821)	(-1.609)
Innovation	0.0046	-0.0013	0.0029	0.0012	-0.0043	0.0000	0.0048	-0.0029	0.0042	-0.0011	0.0041	0.0101
	(0.412)	(-0.114)	(0.258)	(0.111)	(-0.377)	(0.001)	(0.391)	(-0.227)	(0.377)	(-0.090)	(0.275)	(0.581)
Volatility	0.0642***	0.0526***	0.0734***	0.0688***	0.0730***	0.0693***	0.0793***	0.0749***	0.0746***	0.0767***	0.0731**	0.0708**
	(3.810)	(3.346)	(4.043)	(3.678)	(3.107)	(2.644)	(3.684)	(4.004)	(3.958)	(3.382)	(2.465)	(2.241)
Exp_Inflation	-0.2107***	-0.1770**	-0.1998**	-0.2092***	-0.1992**	-0.2239**	-0.2089**	-0.1877**	-0.1972**	-0.1829**	-0.2678**	-0.3301**
	(-2.595)	(-2.237)	(-2.534)	(-2.660)	(-2.173)	(-2.168)	(-2.272)	(-2.094)	(-2.468)	(-2.065)	(-2.285)	(-2.313)
MB_Ratio	-0.0125***	-0.0128***	-0.0134***	-0.0134***	-0.0096**	-0.0113**	-0.0130***	-0.0095**	-0.0133***	-0.0111***	-0.0106**	-0.0064
	(-2.799)	(-2.858)	(-3.095)	(-3.146)	(-2.261)	(-2.469)	(-2.906)	(-2.059)	(-3.022)	(-2.874)	(-2.265)	(-0.996)
Firm_Size	-0.0218	-0.0234	-0.0074	-0.0112	-0.0292	-0.0199	-0.0140	-0.0162	-0.0215	-0.0062	-0.0039	0.0146
	(-1.310)	(-1.459)	(-0.409)	(-0.545)	(-1.638)	(-0.744)	(-0.769)	(-0.938)	(-1.267)	(-0.381)	(-0.184)	(0.526)
Leverage	0.3096**	0.3022***	0.3424***	0.2919**	0.2884**	0.3052**	0.2525*	0.3036**	0.3036**	0.2509**	0.3835***	0.3358**
	(2.577)	(2.619)	(2.832)	(2.358)	(2.171)	(2.119)	(1.936)	(2.426)	(2.480)	(2.214)	(2.755)	(2.044)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	819	924	895	882	720	631	716	771	853	790	510	399
Adj. R-Squared	0.18	0.19	0.14	0.14	0.17	0.15	0.16	0.18	0.13	0.19	0.21	0.22

OLS Regression analyses of IRSC activities on cost of financing (measured by Ln(*R_peg_54*)) in conjunction with firm's information asymmetry (high to low) and source of financing (equity to debt) using three-way interaction. Following Botosan and Plumlee (2005), *R_peg_54* is cost of capital calculated as: Square Root ((EPS5 – EPS4)/P0) at the time of issue. IRSC

measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3) days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is the frequency of press and news releases. *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 31 - Regression Analysis of combination of Information Asymmetry level, Source of Financing, and IRSC on Cost of Financing (R_Idio)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	0.0175					0.0169	0.0382					0.1883
	(1.318)					(0.975)	(0.210)					(0.836)
IA_high *Press	0.0065					0.0031	0.0080					-0.2067
	(0.406)					(0.145)	(0.032)					(-0.614)
Equity_issue*Press	0.0190					0.3380	1.6803***					2.7339***
	(0.421)					(0.969)	(3.353)					(2.689)
IA_high * Equity_issue*Press	-0.0276					-0.3696	-1.5903***					-1.0052
	(-0.576)					(-1.059)	(-2.664)					(-0.878)
Event		0.1200				-0.1736		0.1322				0.1867
		(0.548)				(-0.523)		(0.832)				(0.810)
IA_high *Event		0.3206				0.2952		-0.0558				-0.2778
		(1.106)				(0.610)		(-0.227)				(-0.659)
Equity_issue*Event		-0.0703				4.4641		0.6057				-1.0127
		(-0.082)				(1.035)		(1.375)				(-1.384)
IA_high * Equity_issue*Event		-0.1171				-4.9985		-0.8944				1.0165
		(-0.133)				(-1.147)		(-1.624)				(1.155)
QAtoLength			-0.2557			0.0118			-0.4188			0.1878
			(-0.138)			(0.004)			(-1.096)			(0.360)
IA_high *QAtoLength			2.7017			1.5465			1.2435**			0.4512
			(1.134)			(0.305)			(2.185)			(0.525)
Equity_issue*QAtoLength			0.2475			-35.0028			-0.7446			-4.3596
			(0.038)			(-0.771)			(-0.694)			(-0.900)
IA_high * Equity_issue*QAtoLength			-1.2227			36.8871			1.0177			3.6563
			(-0.170)			(0.805)			(0.738)			(0.735)
Answer				0.0132		0.0099				0.0237		-0.0545
				(1.104)		(0.662)				(0.092)		(-0.156)
IA_high *Answer				0.0009		-0.0055				-0.1082		0.1441
				(0.065)		(-0.253)				(-0.277)		(0.259)
Equity_issue*Answer				-0.0193		-0.1120*				1.3916		1.7746
				(-0.718)		(-1.782)				(1.275)		(0.764)
IA_high * Equity_issue*Answer				0.0102		0.1222*				-1.4277		-1.2029
				(0.351)		(1.814)				(-1.146)		(-0.488)
Slide					0.1221	0.1601					-0.0844	-0.2398
					(0.270)	(0.304)					(-0.540)	(-1.448)

Table 31 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
IA_high *Slide					0.2446	-0.0695					0.5123**	0.7919***
					(0.429)	(-0.104)					(2.401)	(3.524)
Equity_issue*Slide					0.1404	5.9262					0.5216	0.0229
					(0.068)	(1.229)					(0.754)	(0.041)
IA_high * Equity_issue*Slide					0.1460	-5.6647					-0.9773	-0.5367
					(0.067)	(-1.154)					(-1.290)	(-0.843)
IA_high *Equity_issue	-0.0066	-0.0319	0.0038	-0.2104	-0.1988	0.0794	-0.5034**	0.1275	0.0263	-0.2299	0.0490	-0.9439
	(-0.019)	(-0.080)	(0.010)	(-0.341)	(-0.383)	(0.049)	(-2.391)	(0.472)	(0.101)	(-0.851)	(0.104)	(-1.275)
IA_high	0.1358	0.0013	-0.0627	0.0704	0.0987	0.1053	0.2096	0.0101	0.0314	0.1791	0.0807	-0.0403
	(0.877)	(0.008)	(-0.387)	(0.213)	(0.509)	(0.209)	(1.530)	(0.077)	(0.248)	(1.387)	(0.481)	(-0.218)
Equity_issue	-0.0929	0.0432	-0.0166	0.3953	-0.0437	-0.3459	0.3594**	-0.1685	-0.1337	0.1629	-0.1319	0.5984
	(-0.294)	(0.121)	(-0.054)	(0.738)	(-0.098)	(-0.228)	(2.150)	(-0.703)	(-0.587)	(0.682)	(-0.306)	(0.827)
Analyst_Cov	0.0084	0.0077	0.0086	0.0096	0.0092	0.0070	0.0119	0.0027	0.0110	0.0121	0.0030	-0.0018
	(1.122)	(1.033)	(1.175)	(1.319)	(1.085)	(0.757)	(1.439)	(0.326)	(1.449)	(1.554)	(0.327)	(-0.162)
Tangibility	-0.0237	0.0116	0.0159	0.0390	0.0498	0.0543	0.0212	-0.1266	-0.0252	-0.0485	0.0518	0.0197
	(-0.139)	(0.072)	(0.096)	(0.234)	(0.284)	(0.268)	(0.111)	(-0.714)	(-0.150)	(-0.287)	(0.224)	(0.067)
Innovation	-0.0041	0.0170	0.0047	0.0039	-0.0044	-0.0096	0.0025	0.0040	0.0038	-0.0024	0.0058	0.0152
	(-0.186)	(0.763)	(0.212)	(0.176)	(-0.172)	(-0.330)	(0.102)	(0.170)	(0.176)	(-0.100)	(0.188)	(0.439)
Volatility	0.0938**	0.0567	0.0786	0.0848	0.1783***	0.2010***	0.1809***	0.0547	0.0761	0.0896*	0.2533***	0.3324***
	(1.991)	(1.584)	(1.507)	(1.601)	(5.145)	(4.590)	(3.706)	(1.372)	(1.508)	(1.866)	(4.494)	(5.037)
Exp_Inflation	-0.0211	-0.0493	-0.1081	-0.0970	0.0994	-0.0042	-0.0041	-0.0270	-0.0711	0.0428	-0.1712	0.3988
	(-0.093)	(-0.234)	(-0.523)	(-0.470)	(0.389)	(-0.015)	(-0.016)	(-0.112)	(-0.333)	(0.183)	(-0.556)	(1.035)
MB_Ratio	0.0073	0.0024	0.0108	0.0101	0.0202*	0.0136	0.0083	0.0076	0.0133	0.0059	0.0218	0.0161
	(0.633)	(0.212)	(0.987)	(0.905)	(1.714)	(1.032)	(0.718)	(0.594)	(1.154)	(0.559)	(1.316)	(0.825)
Firm_Size	0.0217	-0.0111	-0.0186	0.0064	0.0432	0.0957	0.0308	-0.0214	-0.0588	-0.0296	0.0846	0.0718
	(0.484)	(-0.278)	(-0.426)	(0.139)	(0.936)	(1.610)	(0.634)	(-0.469)	(-1.400)	(-0.653)	(1.349)	(1.016)
Leverage	-0.4328	-0.2615	-0.3703	-0.3818	-0.4802	-0.4277	-0.4190	-0.4053	-0.3367	-0.2550	-0.6315	-0.2804
	(-1.501)	(-0.975)	(-1.418)	(-1.400)	(-1.543)	(-1.167)	(-1.428)	(-1.393)	(-1.251)	(-0.906)	(-1.598)	(-0.621)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	706	786	762	747	569	497	598	646	725	652	404	318
Adj. R-Squared	0.01	0.01	0.02	0.02	0.03	0.00	0.02	0.02	0.03	0.01	0.05	0.08

OLS Regression analyses of IRSC on cost of financing (measured by Ln(*R_Idio*)) in conjunction with firm's information asymmetry (high to low) and source of financing (equity to debt) using three-way interaction. *R_Idio* is estimated excess return (residuals) from CAPM model, using 275 trading days prior to the issue, with at least 128 number of days with available

data. IRSC measures are size-adjusted, using the book value of total assets in all models. Models 1 to 6 use the level of IRSC measures in *Period -1* ((-129,-3) days before issue). Models 7 to 12 include the percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is the frequency of press and news releases. *Press* is frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is frequency of all the events. *QAtoLength* is ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is the firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are all computed by heteroskedastic robust standard errors. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 32 - Regression Analysis of Information Asymmetry level, Source of Financing, and IRSC on Cost of Financing (Bid_Ask_Spread)

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
Press	-0.0013					0.0023	-0.0202					-0.0564
	(-0.293)					(0.410)	(-0.383)					(-0.740)
IA_high *Press	0.0012					0.0008	0.0074					0.2083*
	(0.202)					(0.102)	(0.089)					(1.705)
Equity_issue*Press	-0.0178					-0.0656***	0.1288					0.3126
	(-1.381)					(-3.723)	(0.646)					(0.943)
IA_high * Equity_issue*Press	0.0258*					0.0618**	-0.0553					0.0969
	(1.744)					(2.521)	(-0.234)					(0.223)
Event		0.0665				0.0854		-0.0029				-0.0249
		(1.189)				(1.040)		(-0.062)				(-0.347)
IA_high *Event		0.0437				0.0850		-0.0964				-0.2742**
		(0.518)				(0.636)		(-1.370)				(-2.524)
Equity_issue*Event		-0.3884				-0.1450		-0.0446				-0.1132
		(-1.482)				(-0.394)		(-0.245)				(-0.323)
IA_high * Equity_issue*Event		0.3755				0.0026		0.2110				0.5009
		(1.329)				(0.006)		(0.906)				(1.212)
QAtoLength			0.4411			0.4011			-0.1533			-0.0279
			(0.832)			(0.529)			(-1.528)			(-0.169)
IA_high *QAtoLength			-1.6372**			-1.5385			0.2444			0.1612
			(-2.235)			(-1.386)			(1.495)			(0.682)
Equity_issue*QAtoLength			-1.1659			0.1420			0.6708*			-1.2155
			(-0.654)			(0.068)			(1.937)			(-1.280)
IA_high * Equity_issue*QAtoLength			3.3016*			1.9630			-0.9086*			0.9648
			(1.689)			(0.628)			(-1.849)			(0.838)
Answer				-0.0026		-0.0046				-0.1512**		-0.1425
				(-0.764)		(-1.074)				(-2.108)		(-1.214)
IA_high *Answer				-0.0036		-0.0049				0.1411		0.1824
				(-0.830)		(-0.914)				(1.175)		(0.983)
Equity_issue*Answer				-0.0002		-0.0151				0.2714		0.1884
				(-0.014)		(-1.025)				(0.523)		(0.254)
IA_high * Equity_issue*Answer				0.0064		0.0262				-0.2598		0.1354
				(0.437)		(1.572)				(-0.466)		(0.167)
Slide					0.1132	0.0640					0.0415	0.0398
					(0.871)	(0.426)					(0.885)	(0.718)

Table 32 Cont'd

	Model 1 Coef/t-stat	Model 2 Coef/t-stat	Model 3 Coef/t-stat	Model 4 Coef/t-stat	Model 5 Coef/t-stat	Model 6 Coef/t-stat	Model 7 Coef/t-stat	Model 8 Coef/t-stat	Model 9 Coef/t-stat	Model 10 Coef/t-stat	Model 11 Coef/t-stat	Model 12 Coef/t-stat
IA_high *Slide					-0.5424***	-0.4014*					-0.0541	0.0144
					(-2.988)	(-1.920)					(-0.829)	(0.183)
Equity_issue*Slide					0.3246	0.2547					-0.1526	-0.3907*
					(0.604)	(0.539)					(-0.838)	(-1.698)
IA_high * Equity_issue*Slide					-0.4053	-0.4974					0.1484	0.2327
					(-0.646)	(-0.841)					(0.595)	(0.767)
IA_high *Equity_issue	-0.0328	-0.1056	-0.0857	-0.0451	0.2011	-0.6252**	0.0570	0.0711	0.1199	0.1015	0.0366	-0.2066
	(-0.348)	(-0.682)	(-0.631)	(-0.139)	(1.091)	(-2.106)	(0.575)	(0.879)	(1.479)	(1.186)	(0.297)	(-1.468)
IA_high	-0.0802*	-0.0351	0.0571	0.0420	0.0944*	0.2054	-0.0692*	-0.0534	-0.0238	-0.0568	-0.0353	-0.0524
	(-1.890)	(-0.698)	(1.107)	(0.411)	(1.699)	(1.516)	(-1.725)	(-1.467)	(-0.652)	(-1.529)	(-0.759)	(-0.965)
Equity_issue	0.0455	0.1650	0.0119	-0.0369	-0.1408	0.3885*	-0.0089	-0.0141	-0.0739	-0.0305	-0.0068	0.0700
	(0.604)	(1.209)	(0.103)	(-0.124)	(-0.974)	(1.671)	(-0.104)	(-0.216)	(-1.092)	(-0.431)	(-0.078)	(0.607)
Analyst_Cov	-0.0004	0.0003	0.0003	0.0000	0.0007	-0.0011	0.0012	-0.0005	0.0015	-0.0005	-0.0001	-0.0001
	(-0.204)	(0.159)	(0.158)	(0.015)	(0.303)	(-0.424)	(0.477)	(-0.211)	(0.697)	(-0.208)	(-0.019)	(-0.026)
Tangibility	0.0502	0.0154	0.0385	0.0699	-0.0132	0.0536	0.0781	-0.0075	0.0270	0.0134	0.0222	0.0626
	(0.855)	(0.282)	(0.675)	(1.237)	(-0.209)	(0.796)	(1.204)	(-0.125)	(0.466)	(0.225)	(0.287)	(0.670)
Innovation	-0.0124*	-0.0088	-0.0081	-0.0071	-0.0100	-0.0106	-0.0083	-0.0120	-0.0076	-0.0105	-0.0179*	-0.0098
	(-1.716)	(-1.242)	(-1.157)	(-1.004)	(-1.155)	(-1.124)	(-1.070)	(-1.544)	(-1.061)	(-1.282)	(-1.742)	(-0.802)
Volatility	0.1288***	0.1284***	0.1318***	0.1313***	0.1488***	0.1400***	0.1363***	0.1390***	0.1318***	0.1371***	0.1387***	0.1603***
	(7.160)	(8.184)	(6.972)	(6.996)	(6.814)	(5.784)	(6.191)	(6.734)	(7.092)	(5.862)	(4.759)	(6.365)
Exp_Inflation	-0.0532	-0.0087	-0.0468	-0.0459	-0.0629	-0.1235	-0.0867	-0.0584	-0.0563	-0.0661	-0.0407	-0.0563
	(-0.796)	(-0.134)	(-0.733)	(-0.713)	(-0.823)	(-1.401)	(-1.190)	(-0.817)	(-0.872)	(-0.954)	(-0.479)	(-0.514)
MB_Ratio	-0.0083*	-0.0050	-0.0059	-0.0081**	-0.0052	-0.0118***	-0.0084*	-0.0064	-0.0052	-0.0064	-0.0106*	-0.0088
	(-1.876)	(-1.278)	(-1.427)	(-2.208)	(-1.217)	(-2.723)	(-1.722)	(-1.288)	(-1.192)	(-1.499)	(-1.816)	(-1.098)
Firm_Size	-0.0482***	-0.0392***	-0.0463***	-0.0549***	-0.0373**	-0.0483***	-0.0561***	-0.0463***	-0.0534***	-0.0487***	-0.0319*	-0.0405**
	(-3.871)	(-3.310)	(-3.598)	(-4.029)	(-2.505)	(-2.734)	(-4.143)	(-3.499)	(-4.282)	(-3.650)	(-1.745)	(-2.041)
Leverage	0.2105**	0.1923**	0.2212***	0.2224***	0.2228**	0.3150***	0.2309**	0.2249***	0.2081**	0.2772***	0.3539***	0.2968**
	(2.498)	(2.496)	(2.761)	(2.749)	(2.265)	(2.839)	(2.491)	(2.623)	(2.538)	(3.254)	(3.163)	(2.269)
FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	892	994	964	948	716	624	750	828	921	825	503	395
Adj. R-Squared	0.33	0.32	0.32	0.31	0.30	0.31	0.31	0.32	0.32	0.33	0.30	0.33

OLS Regression analyses of IRSC on cost of financing (measured by Ln(*Bid_Ask_Spread*)) in conjunction with firm's information asymmetry (high to low) and source of financing (equity to debt) using three-way interaction. *Bid_Ask_Spread* is the ratio of difference between ask and bid (Ask - Bid), to midpoint of the distance between the two ((Ask + Bid)/2) on day of the issue. IRSC measures are size-adjusted, using book value of total assets in all models. Models 1 to 6 use level of IRSC measures in *Period -1* ((-129,-3) days before

issue). Models 7 to 12 include percentage change of IRSC elements in *Period -2* compared to *Period -1* ((-260,-130) days before issue). *Press* is frequency of press and news releases. *Press* is the frequency of press and news releases. IRSC measures include *Event*, *QAtoLength, Answer,* and *Slide*. *Event* is frequency of all the events. *QAtoLength* is ratio of length of question and answer section of event to the total length of event. *Answer* is the average length of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *Equity_issue* dummy which takes value of one for equity issues and zero for debt issues. *IA_high* is a dummy that takes value of one for firms with number of analysts below industry-year median over the issue year and zero for those with number of analysts above their industry-year median. *Analyst_Cov* is number of unique analysts covering the firm. *Tangibility* is asset tangibility, computed as properties, plants, equipment (net of depreciation) scaled by total assets. *Innovation* is natural logarithm of R&D expenses scaled by total assets. *Volatility* is firm's total stock price variance over last 275 trading days of the new issues. *Exp_Inflation* is the 5-year forward inflation expectation rate. *MB_Ratio* is market value per share divided by book value per share. *Firm_Size* is natural logarithm of total assets. *Leverage* is the ratio of total liabilities to total assets. All models include Year and Industry Fixed Effects. Industries denoted by SIC 4-digit Codes. t-stats are computed by heteroskedastic robust standard errors. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 33 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_peg_54 and YTM) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	R_peg_54	YTM	Difference	R_peg_54	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	-0.0443	-0.0010	-0.0434	-0.0610	0.0629	-0.1240
	(-1.586)	(-0.081)	(0.133)	(-0.808)	(1.640)	(0.153)
Press* IA_high	0.0491*	0.0026	0.0464	0.0595	-0.1010*	0.1605
	(1.795)	(0.221)	(0.100)	(0.546)	(-1.825)	(0.200)
IA_high	-0.3249	-0.0253	-0.2996	-0.0221	0.0166	-0.0387
	(-1.257)	(-0.226)	(0.259)	(-0.383)	(0.568)	(0.559)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	115	910		115	763	
R-Squared	0.45	0.53		0.20	0.46	
Panel B		**Model 1**			**Model 2**	
	R_peg_54	YTM	Difference	R_peg_54	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	0.0198	0.0197	0.0000	1.0747	0.2317	0.8430
	(0.312)	(0.765)	(1.000)	(0.934)	(0.368)	(0.542)
Press_Exog* IA_high	-0.0123	-0.0190	0.0067	-1.5911	-1.6995*	0.1084
	(-0.193)	(-0.732)	(0.916)	(-0.966)	(-1.886)	(0.956)
Event	0.9792	1.1804**	-0.2012	0.3014*	0.1033	0.1981
	(0.814)	(2.409)	(0.867)	(1.745)	(1.093)	(0.340)
Event* IA_high	-1.0186	-1.2722**	0.2537	-0.5179**	-0.1930	-0.3248
	(-0.851)	(-2.611)	(0.832)	(-2.145)	(-1.461)	(0.264)
QAtoLength	-3.1432	-8.7415**	5.5983	-0.4355	0.2215	-0.6569
	(-0.374)	(-2.555)	(0.506)	(-1.183)	(1.100)	(0.139)
QAtoLength* IA_high	5.0226	9.2544**	-4.2318	0.0438	0.0403	0.0035
	(0.586)	(2.652)	(0.621)	(0.087)	(0.146)	(0.995)
Answer	-0.0354	-0.0493**	0.0139	-0.2329	0.2350	-0.4679
	(-0.656)	(-2.246)	(0.796)	(-0.847)	(1.562)	(0.158)
Answer* IA_high	0.0296	0.0507**	-0.0211	0.0786	-0.0144	0.0930
	(0.527)	(2.215)	(0.707)	(0.212)	(-0.071)	(0.835)
Slide	0.7282	1.3189**	-0.5908	-0.1842	0.1610**	-0.3453**
	(0.551)	(2.449)	(0.655)	(-1.466)	(2.342)	(0.024)
Slide* IA_high	-0.3903	-1.3300**	0.9397	0.3216*	-0.1862*	0.5078**
	(-0.280)	(-2.343)	(0.501)	(1.871)	(-1.979)	(0.015)
IA_high	-0.6243	-0.5615	-0.0628	-0.1024	0.0594	-0.1617
	(-0.715)	(-1.580)	(0.943)	(-0.913)	(0.967)	(0.231)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	78	645		134	138	
R-Squared	0.40	0.48		0.53	0.59	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_peg_54)* for equity issues and Ln(*YTM)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *R_peg_54* is cost of capital following Botosan and Plumlee (2005) calculated as: Square Root ((EPS5 – EPS4)/P0) at the time of issue. *YTM* is the weighted average of yield to maturity (from different tranches of the same issue). Independent variables in Model 1 are levels of IRSC and their interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared

to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 34 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_Idio and YTM) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	R_Idio	YTM	Difference	R_Idio	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	0.0381	-0.0024	0.0405	0.1413	0.0533	0.0880
	(0.687)	(-0.199)	(0.476)	(0.826)	(1.323)	(0.615)
Press* IA_high	-0.0513	-0.0004	-0.0509	-0.0640	-0.0742	0.0102
	(-0.959)	(-0.037)	(0.355)	(-0.271)	(-1.334)	(0.966)
IA_high	1.1846*	0.0036	1.1810*	0.1863	0.0007	0.1856
	(1.973)	(0.027)	(0.058)	(1.428)	(0.022)	(0.164)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	92	910		92	763	
R-Squared	0.36	0.51		0.07	0.50	
Panel B		**Model 1**			**Model 2**	
	Idio_R	YTM	Difference	Idio_R	YTM	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	-0.8094**	-0.1464	-0.6630*	-9.0066**	0.4512	-9.4578**
	(-2.486)	(-1.427)	(0.057)	(-2.471)	(0.569)	(0.013)
Press_Exog* IA_high	0.7831**	0.1432	0.6399*	5.5453	-1.4426	6.9879
	(2.391)	(1.388)	(0.066)	(1.013)	(-1.211)	(0.212)
Event	-14.7543*	-3.2322	-11.5221	-0.0161	0.0884	-0.1044
	(-1.806)	(-1.256)	(0.177)	(-0.029)	(0.722)	(0.855)
Event* IA_high	13.7312	3.1232	10.6080	-1.0385	-0.1700	-0.8686
	(1.680)	(1.213)	(0.212)	(-1.339)	(-1.007)	(0.273)
QAtoLength	108.4086**	12.0710	96.3376*	-0.3802	0.2017	-0.5819
	(2.329)	(0.823)	(0.053)	(-0.319)	(0.779)	(0.632)
QAtoLength* IA_high	-112.6232**	-14.2286	-98.3947**	-0.0810	-0.0741	-0.0069
	(-2.471)	(-0.991)	(0.044)	(-0.053)	(-0.221)	(0.996)
Answer	-0.0560	-0.0814**	0.0254	-0.0129	0.1651	-0.1780
	(-0.518)	(-2.389)	(0.818)	(-0.014)	(0.856)	(0.844)
Answer* IA_high	0.0755	0.0829**	-0.0074	0.5433	0.0314	0.5119
	(0.687)	(2.394)	(0.947)	(0.456)	(0.121)	(0.673)
Slide	-7.2709	-0.8894	-6.3815	-0.8690**	0.1426*	-1.0117***
	(-1.462)	(-0.568)	(0.217)	(-2.329)	(1.757)	(0.009)
Slide* IA_high	8.5967	0.7461	7.8506	1.5565***	-0.2177*	1.7741***
	(1.712)	(0.472)	(0.136)	(2.717)	(-1.747)	(0.003)
IA_high	-4.5180*	-2.2508***	-2.2672	0.3951	0.0128	0.3823
	(-1.874)	(-2.964)	(0.361)	(1.091)	(0.162)	(0.302)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	55	645		106	138	
R-Squared	0.79	0.48		0.35	0.61	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_Idio)* for equity issues and Ln(*YTM)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *R_Idio* is estimated excess return (residuals) from CAPM model, using 275 trading days prior to the issue, with at least 128 number of days with available data. *YTM* is the weighted average of yield to maturity (from different tranches of the same issue). Independent variables in Model 1 are levels of IRSC and their

interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 35 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (Bid_Ask_Spread and YTM) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	Bid_Ask_Spread Coef/t-stat	YTM Coef/t-stat	Difference Coef/P-Val	Bid_Ask_Spread Coef/t-stat	YTM Coef/t-stat	Difference Coef/P-Val
Press	-0.0286	-0.0033	-0.0253	-0.0205	0.0623	-0.0828
	(-1.303)	(-0.290)	(0.226)	(-0.385)	(1.623)	(0.183)
Press* IA_high	0.0369*	-0.0011	0.0381*	0.0237	-0.0624	0.0860
	(1.697)	(-0.100)	(0.068)	(0.317)	(-1.156)	(0.324)
IA_high	-0.4281**	0.0374	-0.4655**	-0.0625	0.0141	-0.0766
	(-2.197)	(0.368)	(0.013)	(-1.572)	(0.491)	(0.100)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	118	910		118	763	
R-Squared	0.51	0.51		0.35	0.48	
Panel B		**Model 1**			**Model 2**	
	Bid_Ask_Spread Coef/t-stat	YTM Coef/t-stat	Difference Coef/P-Val	Bid_Ask_Spread Coef/t-stat	YTM Coef/t-stat	Difference Coef/P-Val
Press_Exog	-0.0432	0.0021	-0.0453	-0.9519	0.2595	-1.2113
	(-0.751)	(0.066)	(0.402)	(-0.872)	(0.411)	(0.325)
Press_Exog* IA_high	0.0356	-0.0122	0.0478	0.7093	-1.6185*	2.3277
	(0.600)	(-0.379)	(0.391)	(0.455)	(-1.791)	(0.187)
Event	0.3735	0.4734	-0.0999	0.3136*	0.0962	0.2175
	(0.278)	(0.650)	(0.937)	(1.886)	(0.998)	(0.247)
Event* IA_high	-0.2039	-0.6665	0.4626	-0.5907**	-0.1500	-0.4407
	(-0.152)	(-0.914)	(0.713)	(-2.417)	(-1.060)	(0.111)
QAtoLength	-0.7427	-7.8310**	7.0883	0.1961	0.2339	-0.0378
	(-0.120)	(-2.341)	(0.223)	(0.563)	(1.159)	(0.923)
QAtoLength* IA_high	1.7427	6.7420*	-4.9993	0.0636	0.0441	0.0195
	(0.271)	(1.930)	(0.408)	(0.131)	(0.157)	(0.972)
Answer	-0.0141	-0.0494**	0.0353	-0.2424	0.2124	-0.4549
	(-0.349)	(-2.254)	(0.352)	(-0.921)	(1.393)	(0.127)
Answer* IA_high	0.0195	0.0529**	-0.0335	0.2587	-0.0046	0.2634
	(0.468)	(2.347)	(0.391)	(0.703)	(-0.022)	(0.525)
Slide	0.8325	0.7317	0.1008	0.0716	0.1587**	-0.0871
	(0.768)	(1.244)	(0.921)	(0.603)	(2.307)	(0.515)
Slide* IA_high	-1.6473	-1.2003**	-0.4470	0.1381	-0.2175**	0.3557*
	(-1.533)	(-2.059)	(0.656)	(0.731)	(-1.988)	(0.097)
IA_high	-0.2295	-0.7109*	0.4815	-0.1090	0.0519	-0.1609
	(-0.313)	(-1.787)	(0.483)	(-1.022)	(0.840)	(0.182)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	71	645		135	138	
R-Squared	0.64	0.48		0.42	0.62	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*Bid_Ask_Spread)* for equity issues and Ln(*YTM)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *Bid_Ask_Spread* is the ratio of difference between ask and bid (Ask - Bid), to the midpoint of the distance between the two ((Ask + Bid)/2) on the day of the issue. *YTM* is the weighted average of yield to maturity (from different tranches of the same

issue). Independent variables in Model 1 are levels of IRSC and their interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 36 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_peg_54 and Default_Spread) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	R_peg_54	Default Spread	Difference	R_peg_54	Default Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	-0.0446	0.0042	-0.0488	-0.0660	0.0240	-0.0900
	(-1.560)	(0.226)	(0.121)	(-0.872)	(0.428)	(0.344)
Press* IA_high	0.0496*	-0.0044	0.0540*	0.0545	-0.0108	0.0653
	(1.782)	(-0.243)	(0.078)	(0.500)	(-0.134)	(0.634)
IA_high	-0.3237	-0.1632	-0.1604	-0.0152	0.0132	-0.0284
	(-1.223)	(-0.949)	(0.579)	(-0.264)	(0.309)	(0.695)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	112	901		112	757	
R-Squared	0.44	0.31		0.20	0.36	
Panel B		**Model 1**			**Model 2**	
	R_peg_54	Default Spread	Difference	R_peg_54	Default Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	0.0102	0.0480	-0.0378	1.0483	-0.4200	1.4683
	(0.152)	(1.297)	(0.565)	(0.918)	(-0.443)	(0.341)
Press_Exog* IA_high	-0.0027	-0.0483	0.0457	-1.5614	-0.9259	-0.6355
	(-0.040)	(-1.301)	(0.489)	(-0.956)	(-0.682)	(0.773)
Event	0.9028	1.3768*	-0.4740	0.2939*	0.1265	0.1674
	(0.712)	(1.966)	(0.703)	(1.716)	(0.889)	(0.469)
Event* IA_high	-0.8991	-1.3846*	0.4855	-0.5091**	-0.1823	-0.3268
	(-0.700)	(-1.953)	(0.699)	(-2.126)	(-0.916)	(0.312)
QAtoLength	-2.7343	-10.3019**	7.5676	-0.4179	-0.1016	-0.3163
	(-0.300)	(-2.049)	(0.397)	(-1.145)	(-0.335)	(0.521)
QAtoLength* IA_high	5.6879	8.4881	-2.8003	-0.0427	0.7753*	-0.8180
	(0.619)	(1.674)	(0.755)	(-0.085)	(1.852)	(0.230)
Answer	-0.0320	-0.0520	0.0200	-0.2391	0.4892**	-0.7282*
	(-0.570)	(-1.677)	(0.716)	(-0.877)	(2.159)	(0.050)
Answer* IA_high	0.0256	0.0520	-0.0264	0.0553	-0.1234	0.1787
	(0.437)	(1.608)	(0.645)	(0.150)	(-0.403)	(0.719)
Slide	0.7227	1.7614**	-1.0387	-0.1843	0.0441	-0.2284
	(0.521)	(2.297)	(0.446)	(-1.479)	(0.426)	(0.176)
Slide* IA_high	-0.4176	-1.8203**	1.4027	0.3035*	-0.1058	0.4093*
	(-0.280)	(-2.213)	(0.338)	(1.776)	(-0.745)	(0.078)
IA_high	-0.6056	-0.6248	0.0192	-0.1037	0.0577	-0.1614
	(-0.668)	(-1.248)	(0.983)	(-0.932)	(0.625)	(0.283)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	75	635	635	133	133	
R-Squared	0.38	0.32	0.32	0.55	0.59	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_peg_54)* for equity issues and Ln(*Default_Spread)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *R_peg_54* is cost

of capital following Botosan and Plumlee (2005) calculated as: Square Root ((EPS5 – EPS4)/P0) at the time of issue. *Default_Spread is* the weighted average of default spreads for all tranches of an issue. Individual default spreads are Excess YTM from Treasury Yield of similar Maturity sold most recent prior to the issue. Independent variables in Model 1 are levels of IRSC and their interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 37 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (R_Idio and Default_Spread) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	Idio_R	Default Spread	Difference	Idio_R	Default Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press	0.0333	0.0039	0.0294	0.1625	0.0362	0.1262
	(0.598)	(0.175)	(0.629)	(0.965)	(0.582)	(0.481)
Press* IA_high	-0.0498	-0.0068	-0.0430	-0.0618	-0.0380	-0.0238
	(-0.927)	(-0.317)	(0.465)	(-0.265)	(-0.441)	(0.923)
IA_high	1.1952*	-0.2692	1.4643**	0.1436	-0.0111	0.1546
	(1.990)	(-1.122)	(0.029)	(1.118)	(-0.233)	(0.258)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	90	901		90	757	
R-Squared	0.37	0.31		0.07	0.35	
Panel B		**Model 1**			**Model 2**	
	Idio_R	Default Spread	Difference	Idio_R	Default Spread	Difference
	Coef/t-stat	Coef/t-stat	Coef/P-Val	Coef/t-stat	Coef/t-stat	Coef/P-Val
Press_Exog	-0.9054**	0.0518	-0.9572***	-9.0991**	0.0175	-9.1166**
	(-2.714)	(0.375)	(0.008)	(-2.476)	(0.015)	(0.019)
Press_Exog* IA_high	0.8781**	-0.0640	0.9421***	5.6005	-0.4521	6.0527
	(2.619)	(-0.462)	(0.009)	(1.017)	(-0.266)	(0.293)
Event	-16.3415*	0.5269	-16.8684**	-0.0135	0.0624	-0.0759
	(-1.987)	(0.155)	(0.046)	(-0.024)	(0.357)	(0.897)
Event* IA_high	15.4219*	-0.6471	16.0690*	-1.0400	-0.1766	-0.8634
	(1.871)	(-0.190)	(0.057)	(-1.333)	(-0.733)	(0.289)
QAtoLength	115.6898**	-12.1754	127.8652**	-0.3794	-0.0489	-0.3305
	(2.482)	(-0.632)	(0.010)	(-0.317)	(-0.132)	(0.791)
QAtoLength* IA_high	-117.1952**	7.0312	-124.2264**	-0.1240	0.6014	-0.7254
	(-2.582)	(0.374)	(0.010)	(-0.080)	(1.250)	(0.654)
Answer	-0.0174	-0.1153**	0.0979	-0.0153	0.2108	-0.2261
	(-0.155)	(-2.481)	(0.376)	(-0.017)	(0.765)	(0.807)
Answer* IA_high	0.0334	0.1250**	-0.0916	0.5408	0.2251	0.3157
	(0.291)	(2.627)	(0.418)	(0.451)	(0.608)	(0.800)
Slide	-8.2055	2.1587	-10.3643**	-0.8656**	-0.0008	-0.8648**
	(-1.641)	(1.044)	(0.044)	(-2.305)	(-0.007)	(0.029)
Slide* IA_high	9.2642*	-2.6021	11.8663**	1.5482***	-0.0860	1.6343***
	(1.847)	(-1.254)	(0.024)	(2.685)	(-0.483)	(0.008)
IA_high	-4.4656*	-1.8388*	-2.6268	0.3923	-0.0109	0.4032
	(-1.867)	(-1.859)	(0.268)	(1.077)	(-0.097)	(0.289)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	53	635		104	133	
R-Squared	0.80	0.32		0.33	0.59	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*R_Idio)* for equity issues and Ln(*Default_Spread)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *R_Idio* is estimated excess return (residuals) from CAPM model, using 275 trading days prior to the issue, with at least 128

number of days with available data. *Default_Spread is* the weighted average of default spreads for all tranches of an issue. Individual default spreads are Excess YTM from Treasury Yield of similar Maturity sold most recent prior to the issue. Independent variables in Model 1 are levels of IRSC and their interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 38 - Multivariate Multiple Regression Analysis of Combination of Cost of Financing (Bid_Ask_Spread and Default_Spread) and Information Asymmetry level

	Column1	Column2	Column3	Column4	Column5	Column6
Panel A		**Model 1**			**Model 2**	
	Bid_Ask Spread Coef/t-stat	Default Spread Coef/t-stat	Difference Coef/P-Val	Bid_Ask Spread Coef/t-stat	Default Spread Coef/t-stat	Difference Coef/P-Val
Press	-0.0266	-0.0069	-0.0196	-0.0052	0.0187	-0.0240
	(-1.206)	(-0.384)	(0.433)	(-0.097)	(0.328)	(0.744)
Press* IA_high	0.0367*	-0.0035	0.0402	0.0041	-0.0513	0.0553
	(1.685)	(-0.194)	(0.107)	(0.053)	(-0.636)	(0.593)
IA_high	-0.4883**	-0.1933	-0.2950	-0.0641	0.0153	-0.0794
	(-2.459)	(-1.183)	(0.193)	(-1.593)	(0.357)	(0.149)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	115	901		115	757	
R-Squared	0.51	0.31		0.34	0.32	
Panel B		**Model 1**			**Model 2**	
	Bid_Ask Spread Coef/t-stat	Default Spread Coef/t-stat	Difference Coef/P-Val	Bid_Ask Spread Coef/t-stat	Default Spread Coef/t-stat	Difference Coef/P-Val
Press_Exog	-0.0413	0.0301	-0.0714	-1.0208	-0.4574	-0.5634
	(-0.695)	(0.855)	(0.179)	(-0.921)	(-0.477)	(0.704)
Press_Exog* IA_high	0.0336	-0.0496	0.0832	0.6442	-0.8271	1.4713
	(0.548)	(-1.365)	(0.130)	(0.407)	(-0.603)	(0.488)
Event	0.3877	0.4802	-0.0925	0.3194*	0.1333	0.1861
	(0.280)	(0.585)	(0.940)	(1.892)	(0.913)	(0.411)
Event* IA_high	-0.2230	-0.5654	0.3424	-0.5933**	-0.1380	-0.4553
	(-0.161)	(-0.689)	(0.779)	(-2.392)	(-0.643)	(0.172)
QAtoLength	-0.6272	-10.0683**	9.4411	0.2006	-0.0849	0.2855
	(-0.094)	(-2.550)	(0.115)	(0.567)	(-0.278)	(0.546)
QAtoLength* IA_high	1.3057	3.8769	-2.5712	0.0347	0.7532*	-0.7184
	(0.189)	(0.947)	(0.673)	(0.070)	(1.761)	(0.279)
Answer	-0.0159	-0.0590**	0.0431	-0.2423	0.4622**	-0.7045*
	(-0.380)	(-2.379)	(0.247)	(-0.908)	(2.001)	(0.051)
Answer* IA_high	0.0213	0.0610**	-0.0397	0.2505	-0.1524	0.4029
	(0.494)	(2.387)	(0.300)	(0.671)	(-0.472)	(0.420)
Slide	0.8214	1.0413	-0.2199	0.0758	0.0431	0.0327
	(0.726)	(1.554)	(0.826)	(0.629)	(0.413)	(0.839)
Slide* IA_high	-1.6010	-1.7239**	0.1228	0.1270	-0.1358	0.2628
	(-1.402)	(-2.547)	(0.903)	(0.660)	(-0.816)	(0.308)
IA_high	-0.2619	-0.9788**	0.7168	-0.1058	0.0484	-0.1542
	(-0.344)	(-2.171)	(0.289)	(-0.978)	(0.517)	(0.288)
Controls, FE, Cons.	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	68	635		130	133	
R-Squared	0.62	0.32		0.40	0.58	

Following Zellner's Seemingly Unrelated Regression Models (1962), this table shows the simultaneous regression analysis of Ln(*Bid_Ask_Spread)* for equity issues and Ln(*Default_Spread)* for debt issues in conjunction with levels of information asymmetry (high compared to low information asymmetry) using interaction variables. *Bid_Ask_Spread* is the ratio of difference between ask and bid (Ask - Bid), to the midpoint of the distance between

the two ((Ask + Bid)/2) on the day of the issue. *Default_Spread is* the weighted average of default spreads for all tranches of an issue. Individual default spreads are Excess YTM from Treasury Yield of similar Maturity sold most recent prior to the issue. Independent variables in Model 1 are levels of IRSC and their interaction with *High-IA*. Models 2 includes the percentage change of IRSC elements in *Period -1* ((-129,-3) days before issue) compared to *Period -2* ((-260,-130) days before issue). IRSC measures are size-adjusted, using the book value of total assets in all models. Explanatory variables: *Press* in Panel A, *Press_Exog*, *Event*, *QAtoLength*, *Answer*, and *Slide* in Panel B. *Press* is the frequency of press and news releases. *Press_Exog* is the exogenous portion of *Press* which is computed through 2SLS method on existing IRSC variables. *Event* is the frequency of all the events. *QAtoLength* is the ratio of the length (word count) of question and answer section of the event to the total length of event. *Answer* is the average length (words count) of each question in the Q&A portion of the event. *Slide* is the frequency of slides used in events. *IA_high* is a dummy that takes value of one for firms with number of analysts below the industry-year median over the issue year and zero for those with number of analysts above their industry-year median. Control Variables: *Equity_issue, Analyst_Cov, Tangibility, Innovation, Volatility, Exp_Inflation, MB_Ratio, Firm_Size, Leverage*. Variables are defined in Table 16. All models are with Year and Industry Fixed Effects. Industry Fixed Effects are SIC 4 digit Codes. F-test is used for the difference of IRSC coefficients in equity issues compared to debt issues. Significant levels are * $p<0.10$, ** $p<0.05$, *** $p<0.01$.

Table 39 - Table of Coefficient Signs for Key Terms across all Models - Significant Level 90% and above

				Level					Change				
Hyp.	Table	Dependent Var	Model	Press	Event	QAtoLength	Answer	Slide	Press	Event	QAtoLength	Answer	Slide
1	20	Rpeg21	Low Transparency * IRSC		−				−				
1	21	R Gordon	IA high * IRSC						−	−	+		
2	22	Rpeg21	Equity * IRSC		−	+			−				
2	23	R Gordon	Equity * IRSC				−						
3	24	Rpeg21	IA high * Equity * IRSC	+	−				+				
3	25	R Gordon	IA high * Equity * IRSC	−	−	+			−			−	−
3	30	Rpeg54	IA high * Equity * IRSC	+		+	−			+	+		
3	31	R idio	IA high * Equity * IRSC				+		−				
3	32	Bid Ask Spread	IA high * Equity * IRSC	+		+					−		
3	26	Rpeg21 - YTM	IA high * IRSC								−		
3	27	R Gordon - YTM	IA high * IRSC	−	−	+					−		+
3	33	Rpeg54 - YTM	IA high * IRSC										+
3	34	R idio - YTM	IA high * IRSC	+		−							+
3	35	Bid Ask Spread - YTM	IA high * IRSC										+
3	28	Rpeg21 - Default Spread	IA high * IRSC								−		
3	29	R Gordon - Default Spread	IA high * IRSC	−	−	+					−		
3	36	Rpeg54 - Default Spread	IA high * IRSC										+
3	37	R idio - Default Spread	IA high * IRSC	+	+	−		+					+
3	38	Bid Ask Spread - Default Spread	IA high * IRSC										
Sum				2	-5	4	-1	1	-4	0	-3	-1	5

Table 40 - Table of Coefficient Signs for Key Terms across all Models - Significant Level 95% and above

				Level					Change				
Hyp.	Table	Dependent Var	Model	Press	Event	QAtoLength	Answer	Slide	Press	Event	QAtoLength	Answer	Slide
1	20	Rpeg21	Low Transparency * IRSC		−				−				
1	21	R Gordon	IA high * IRSC										
2	22	Rpeg21	Equity * IRSC		−				−				
2	23	R Gordon	Equity * IRSC				−						
3	24	Rpeg21	IA high * Equity * IRSC	+									
3	25	R Gordon	IA high * Equity * IRSC	−	−	+							−
3	30	Rpeg54	IA high * Equity * IRSC	+		+	−				+		
3	31	R idio	IA high * Equity * IRSC						−				
3	32	Bid Ask Spread	IA high * Equity * IRSC	+									
3	26	Rpeg21 - YTM	IA high * IRSC								−		
3	27	R Gordon - YTM	IA high * IRSC	−	−	+							
3	33	Rpeg54 - YTM	IA high * IRSC										+
3	34	R idio - YTM	IA high * IRSC			−							+
3	35	Bid Ask Spread - YTM	IA high * IRSC										
3	28	Rpeg21 - Default Spread	IA high * IRSC								−		
3	29	R Gordon - Default Spread	IA high * IRSC	−	−	+					−		
3	36	Rpeg54 - Default Spread	IA high * IRSC										+
3	37	R idio - Default Spread	IA high * IRSC	+		−		+					+
3	38	Bid Ask Spread - Default Spread	IA high * IRSC										
Sum				1	-5	2	-2	1	-3	0	-2	0	3

Appendix A. Dictionary's Categories, Sub-Categories, Words and Phrases

Business and Financials		
#	Sub-Category	Words & Phrases
1	Financial Information	Financial issues, financial performance reviews, economic capital reviews, credit rating, security rating, performance report, performance assessment, segmented information, project updates, growth statistics, balanced-contract portfolio long-term contract portfolio, tax contingencies
2	Analyst report	Analyst report, analyst coverage, analyst opinion, analyst ranking
3	Awards	Awards, achievements, recognition, organization awards
4	Brands/trademarks description	Brand equity, brand description, trademark, patent
5	Changes in variables: sales, costs, inventory, market share	Changes in crucial variables, adjusted results, discontinued operation, adjusted variables
6	Company history	Company history, company background, who we are, company overview, about us
7	Current strategy	Current strategy, enterprise-wide strategy, corporate vision, core strategy
8	Customer analysis (by type / geographic area)	Customer analysis, customer demographics, customer breakdown, geographic distribution
9	General Policies	Dividend policy, dividend reinvestment plan, accounting policies, supply agreement, guiding principles, vision, mission, investment policies, priorities, off-balance sheet arrangements, accounting standards, prospectus, company aspirations, operating philosophy, progress

10	Financing (debt & equity or capital structure)	Financing, liquidity, capital resources, capital structure, discounted future cash flow, cash flow requirements, debt, equity capital, property debt
11	Industry statistics	Industry statistics, market statistics, industry breakdown, market players
12	Internal control system	Internal control system, transactions with key management personnel
13	Key figures and ratios	Key figures and ratios, value measures, earnings coverage ratios, revenues reconciliation
14	Legal problems	Legal problems, proceedings, disputes, lawsuit, settlement
15	Letter from Management	Letter from Management, management accountability, management responsibility
16	M&A/partnership	Merger, partnership, acquisition, business acquisitions, M&A, joint venture
17	Market capitalization	Market capitalization, share capital, largest shareholder
18	Markets share/competition analysis	Markets share, competition analysis, competitive condition, lead, seasonal, competitors, major players, market leader
19	Organizational chart/structure	Organizational chart, organizational structure
20	Products/services descriptions	Products descriptions, services descriptions, production history, product categories, service categories, lines of business, business structure, infrastructure, undeveloped reserves, oil & gas properties, exploration license, leases, discovery license, upstream, downstream, refinery, gross production, reservoir, qualification certificate, property operations, proactive leasing, redevelopment initiates, number of sites, asset under management, occupancy levels

21	R&D/innovation expenses	R&D expenses, innovation expenses, capital expenditure, capital improvement projects, research and development
22	Regulation affecting the business	Regulation affecting the business, regulation changes, statement of compliance, regulatory development, regulated power plants
23	Risk analysis	Risk analysis, contract expiry date, impairments, risk evaluation
24	Significant events of the year	Significant events of the year, subsequent events, major events, highlights of the year
25	Weighted Average Cost of Capital	Weighted Average Cost of Capital, WACC, cost of capital, cost of debt, abandonment cost, reclamation cost, suspended exploratory wells costs
Risk Management		
26	Information about risks related to the company's reputation	Reputational risk, environmental risk, social risk, reputational challenges, reputation management
27	Information about risks related to the competitive environment	Competitive environment risk, level of competition, market risk, currency rate risk, interest rate risk, liquidity risk, funding risk, energy commodity price risk
28	Information about risks related to the compliance with industry/antitrust regulations	Compliance with industry regulations risk, compliance with antitrust regulations risk, regulatory compliance practices
29	Information about risks related to the customers	Customers risk, general economic and market conditions in countries that we conduct business, customer demographic shift, market risk, market shift
30	Information about risks related to the frauds/crimes	Frauds committed by employees, crimes committed by employees, legal proceedings, credit risk, counterparty risk

	committed by employees	
31	Information about risks related to the human resources/relationship with trade unions	Human resources risk, relationship with trade unions, union challenges, employee risk, union risk
32	Information about risks related to the impact of the firm's operations on the natural environment	Natural risk, environment risk, environmental instability, environmental damages
33	Information about risks related to the IT/information systems/data security	IT risk, information systems risk, data security risk, infrastructure risk, technological risk, technological challenges, information system security
34	Information about risks related to the economic scenario	Macro-economic scenarios, economic changes, economic shifts, micro-economic scenarios, economic instability, economic uncertainty
35	Information about risks related to the production/logistics	Production risk, logistics risk, operational risk, business risk, model risk, strategic risk, generation equipment and technology risk
36	Information about risks related to the reporting	Reporting risk, reporting consistency, reporting risk guidelines, reporting mandate

37	Information about the firm's risk management system	Risk management system, financial commitment, risk culture, risk governance, risk appetite, risk principles, risk review, risk monitoring, line of defense, stress testing, collateral management, risk management committee, risk management framework, approach to risk management
38	Other risk-related Information	Sensitivity, sensitivity of assumptions, hedge, impaired, default risk, risk exposure, significant judgements, estimates and assumptions, material risks, material assumptions, significant factors, uncertainty, value at risk, risk that may affect future results, measurement inaccuracies, forfeiture, property related risk, financing risk, lease roll-over, tax risk, revenue recognition risk, preleased risk
Investor Communication		
39	Accessibility (contact info)	Contact information, additional information, telephone, fax, email, supplementary information, Q&A, frequently asked questions
40	Calendar of events for investors	Calendar of events, upcoming events, future events, investor meeting
41	Consistency in information provided	Disclosure, disclosure policy, documents you can request, easy navigation, glossary of financial terms
42	Investor communication policy	Investor communication policy, communications executive, investor relations, social media channels, spokesperson, communication and escalation channels, information sharing
43	Investor rights	Investor rights, investor protection, investor activism, investor protection responsibilities, investor protection obligations
44	Shareholder engagement	Shareholder engagement, shareholder concerns, shareholder value
45	Shareholder information	Shareholder information, institutional investor, major shareholders
CSR, Environmental and sustainability		

46	Climate change policy and targets	Climate change policy, climate change targets, climate change, temperature change, weather change,
47	Community involvement (social activities)	Community, social activities, community membership, community involvement
48	CSR policy	Corporate social responsibility, CSR, CSR policy, CSR guidelines
49	CSR/Sustainability -SMART targets	Sustainability, Corporate social responsibility, SMART targets, sustainability initiatives
50	Energy consumption	Energy consumption, energy efficiency, energy waste, energy inefficiency, sustainable energy
51	Environmental and sustainability policy	Environmental and sustainability policy, environmental matters, environmental footprint, air pollutant, emissions, emissions to the air, discharges to surface, discharges to surface and subsurface waters, waste products
52	Environmental sustainability performance indicators	Environmental sustainability performance indicators, energy footprint, renewable energy, energy consumption, energy efficiency, business sustainability performance report
53	Environmental legal issues	Environmental legal challenges, environmental protection laws, environmental safety issues
54	Product safety info/policy	Product safety, product safety policy, product testing, safe products
55	Social sustainability performance indicators	Social sustainability performance, social sustainability, social responsibility, sustainability criticism
56	Stakeholders map/info	Stakeholders data, stakeholders' names, stakeholder's description, stakeholders
57	Waste management	Waste management, waste avoidance, waste disposal

Corporate Governance		
58	Anti-bribery and anti-corruption	Anti-bribery, anti-corruption, fraud policy, theft prevention, bribery prevention, corruption prevention, whistleblower policy, fraud detection
59	Board and management independence standards	Board and management independence standards, indebtedness, material transaction, independent auditor report, independence mechanism, independence of committees, election process, board diversity, reason for non-independent status, interlocking directorship
60	Board of Directors structures and procedures	Board of Directors structures, Board of Directors selection procedures, leadership structure, board member biography, board meeting attendance, changes to board
61	Board member experience	Advisory firm, management solutions, board resource, governance resource guide, governance expertise, board expertise
62	Board orientation and education program	Board orientation, board education, board development, new board member education, board evaluation
63	Code of Conduct	Code of Conduct, Code of ethics, questionable activities, illegal, legal, violations, ethics hotline, bribes, kickbacks, unethical business practices, insider trading, lobby, misuse, conflict of interest, stealing, identity theft, forgery, fraud, discrimination, harassment, business conduct program, anti-fraud program, competition law compliance policy, mineral reserve and resource policy, political donation standards
64	Management/ Committees details	Committees details, committee structure, committee responsibilities, committee reports, mandate, charter, executive officer information, management information, management stock ownership, positions held by officers, relevant education and experience, skills and experience, equity ownership, non-profit sector affiliation, age, government relations, PhD, Master, MBA,

		Bachelor, regional association, leadership, tenure, stewardship, director's at risk shareholdings
65	Governance guidelines	Governance guidelines, board level policies, board stock ownership, corporate governance policies, governance manual, corporate governance
66	Management compensation	Management compensation, fixed vs. variable compensation, executive compensation, director compensation, compensation changes, board compensation, relationship of executive compensation to risk, competitive benchmarking, benchmarking peer group, short term incentive plan, long term incentive plan, compensation components, fixed versus variable compensation
67	Management control system	Management control system, disclosure controls, disclosure procedures, internal control, financial reporting, enhanced disclosure task force, financial stability board, compliance functions, conflicts of interest, role of management in compensation decisions, role of independent advisor in compensation decisions
Labor Practices		
68	# of employees	Number of employees, employee information
69	Accidents at work policy	Accidents at work, accidents, accidents policy, reporting accidents, workplace accident policy, incident reporting, safety policy
70	Employee Ethics guidelines	Employee Ethics, Code of ethics, employee guidelines
71	Employee Health and safety	Employee Health and safety, occupational health, workplace safety committee
72	Employee productivity	Employee productivity indicator, employee productivity, personnel productivity
73	Employee satisfactory survey/mechanism	Employee satisfactory, corporate citizenship, employee benefits, benefit plans, loyalty, employee agreement

74	Employee turnover	Employee turnover, rotation programs, turnover plans, rotation policy
75	Labour diversity policy	Labour diversity policy, gender diversity, workplace diversity, inclusion and diversity, inclusiveness policy, equality
76	Labour Training and development	Labour Training, personnel training, professional program, Labour development, employee training, training program, active personnel
77	Labour-management communication	Labour-management communication, employee engagement, employee communication, human resource management, human resource communication
Forward-looking Information		
78	Future Audit/non-audit fees	Audit fee changes, non-audit fees, expected audit fees, audit fees
79	Future Capital expenditures and/or R&D expenditure	Capital expenditures forecast, R&D expenditure forecast, expansion projects
80	Future Financial	Cash flow forecast, accounting estimates, production estimates, financial forecasts, tax changes, financing developments, contractual obligations, critical accounting estimates
81	Future Dividend	Dividend forecast, future dividend, expected dividend
82	Future Market share	Forecasted market share, expected market share, market share changes, future market share
83	Future Strategy and LT objectives (>1yr)	Future Strategy, long term objectives, strategic priorities, medium-term financial objectives
84	Impact of interest rate change on current results	interest rate change, interest rate impact, future interest rate, interest change impact

85	Impact of foreign currency change on current results	foreign currency change, exchange rate impact, future exchange rate, currency change impact
86	Impact of future strategy on current results	future strategy, future policy, upcoming strategy, future strategy impact, future policy impact
87	Future M&A/partnership plans	Partnership plans, M&A plans, strategic partnerships, mergers and acquisitions plans
88	New developments	New developments, economic developments, outlook, forecast, regulatory changes, growth, improvements, expansions
89	Profit/earning forecast	Profit forecast, earning forecast, future development costs, expected earnings
90	Sales forecast	Sales forecast, product sales forecast, service sales forecast, sales prediction, estimated sales revenue
Other Common Informative Words		
91	Growth, compared, forecasted, expected, important information, diagram, accomplishments, present, communication, change, five-year average, improve, estimated, discounted, chart, achievements, disclosure, developed, trend, graph, realizations, focus, avoidance, adjusted, assumptions, table, review, ranked, transparency, impact, 5 year average, weakened, uncertainty, weighted average, benchmark, challenges, disclose, strengthened, progress, decade, results, outlook, discussion, decrease, 3 year average, increase, three-year average, comparison, projected	

Appendix B. Document Types

This table shows different types of documents that were filed by firms and retrieved from SEDAR to be used in this study.

Audited annual financial statements	Directors' circular	Minutes of last annual meeting of shareholders
Acceptance of Prospectus Supplement	Disqualification report	MRRS Decision Document
Alternative monthly report	Documents affecting rights of security holders	NI 44-101 Notice of intent to qualify
Amended & restated technical report	Documents incorporated by reference	Notice
Amendment to (or amended) final prospectus	Early warning report	Notice indicating result of issuer bid (QC)
Annual financial statements - letter from foreign issuer	Engineering report and certificate of qualification	Notice of Acceptance for Filing
Annual information form	Escrow agreement	Notice of change or variation
Annual Participation Fee for Reporting Issuers	Exempt issuer bid material	Notice of intention
Application letter	Exemption Order	Oil and gas annual disclosure filing
Asset and earnings coverage calculations	Exhibits and other supporting material	Oil and gas reports
Auditors' comfort letter	Filing statement	Other material contract(s) not previously filed
Auditors' negative assurance letter	Final exchange offering prospectus	Other security holders' documents
BC Form 51-901F	Final prospectus	Other supporting documents
Business acquisition report	Financial statements of operating entity	Other undertakings

Certificate / notice(s) re proceeds of distribution	First Response Letter	Press release
Certificate of POP eligibility	Form of proxy	Prior valuation
Certificate of qualified person	Formal valuation	Prospectus supplement
Certificate re-dissemination to shareholders	Information circular	Proxy/information circular
Certification of annual filings	Information circular for the solicitation of proxies	Qualification certificate
Certification of filings with voluntarily filed AIF	Information document	Report of exempt issuer bid
Certification of interim filings	IPO/RTO/ Becoming Non-venture issuer	Report of exempt take-over bid
Certification of refiled annual filings	Issuer bid circular	Report of proxy voting results
Certified resolutions approving final prospectus	Issuer's submission to jurisdiction and appointment of agent	Rights certificate
Certified resolutions approving offering documents	Letter concerning the addition of a recipient agency	Rights offering circular
Certified resolutions approving supplement	Letter from former auditor	Statement of Executive Compensation
Code of conduct	Letter from successor auditor	Stock exchange issuer bid notice
Confirmation re-review by audit committee or board of directors	Lock-up agreement (QC)	Summary of any changes in control
Consent letter	Management information circular	Take-over bid circular

Consent letter of issuer's legal counsel	Management proxy materials	Technical report
Consent letter of underwriters' legal counsel	Marketing materials	U.S. registration statement and exhibits
Consent letter(s) of expert(s)	Material change report	Undertaking re breakdown of sales and payment of fees (BC)
Consent of qualified person (NI 43-101)	Material contracts - Credit agreements	Undertaking re novel derivatives or asset-backed securities
Cross-reference sheet	MD&A	Underwriters' certificate
Decision Document (Final)	Mining reports	Underwriting or agency agreement

Appendix C. Overview of the Models derived from Dividend Discount Model of Cost of equity Capital

Botosan and Plumlee (2005) compared the following alternative methods for calculating expected cost of equity capital according to their consistency and predictability regarding market risk, leverage risk, information risk, residual risk and growth. We provide the name of the method, its reference, the final formula that includes the expected cost of equity capital along with its underlying assumptions. In their empirical analyses, Botosan and Plumlee (2005) examine the expected risk premium by deducting the risk free rate form the expected costs. All the models are derived from the dividend discount formula as below:

$$P_0 = \sum_{t=1}^{\infty} (1 + r)^{-t} E_0(dps_t)$$

where:

P_0 = price at time $t = 0$;
r = estimated cost of equity capital;
$E_0(\cdot)$ = the expectations operator; and
dps_t = dividends per share.

C.1 Target Price Method

(Botosan & Plumlee, 2002)

$$P_0 = \sum_{t=1}^{5} (1 + r_{DIV})^{-t}(dps_t) + (1 + r_{DIV})^{-5}(P_5)$$

where:

P_5 = price at time $t = 5$; and
r_{DIV} = estimated cost of equity capital.

Primary assumption(s):

- Analysts' forecasts of dividend per share over the forecast period and the stock price at the end of that period reflects their market's expectations.

C.2 Industry Method (GLS)

(Gebhardt, Lee, & Swaminathan, 2001)

$$P_0 = b_0 + \sum_{t=1}^{11} (1 + r_{GLS})^{-t}((ROE_t - r_{GLS})b_{t-1}) + (r_{GLS}(1 + r_{GLS})^{11})^{-1}((ROE_{12} - r_{GLS})b_{11})$$

where:

ROE_t = return on equity for period $t = \frac{eps_t}{b_{t-1}}$;
eps_t = forecasted earnings per share, year t;
b_t = book value per share, year t; and
r_{GLS} = estimated cost of equity capital.

Primary assumption(s):

- For the first three years (out of twelve years forecast horizon), analysts' forecasts of EPS and book value per share reflects market's expectations.
- For the next nine years, firms' Return on Equity (ROE) moves closer to the industry median.
- Beyond the investment horizon, ROE remains unchanged and dividend payout ratio is 100 percent.

C.3 Finite Horizon Method (Gordon Growth Model)

(Gordon & Gordon, 1997)

$$P_0 = \sum_{t=1}^{4} (1 + r_{GOR})^{-t}(dps_t) + (r_{GOR}(1 + r_{GOR})^4)^{-1}(eps_5)$$

where:

r_{GOR} = estimated cost of equity capital.

Primary assumption(s):

- Firm's ROE returns to its cost of equity capital after the forecast horizon.
- Analysts' forecasts of short-term dividends and long-term EPS reflects market's expectations.

C.4 Economy-Wide Growth Method (OJ Model)

(Ohlson & Juettner-Nauroth, 2005)

This model was operationalized by Gode and Mohanram (2003) as below:

$$r_{OJN} = A + \sqrt{A^2 + \frac{eps_1}{P_0} * \left(\frac{\frac{eps_3 - eps_2}{eps_2} + \frac{eps_5 - eps_4}{eps_4}}{2} - (\gamma - 1) \right)}.$$

Where:

$(\gamma - 1)$ = (infinite) economy-wide growth after the forecast horizon.

$$A = \frac{1}{2}\left((\gamma - 1) + \frac{dps_1}{P_0} \right).$$

Primary assumption(s):

- After the forecast horizon, firm's abnormal earnings growth converges to the economy-wide level.

C.5 PEG Ratio Method

(Ohlson & Juettner-Nauroth, 2005)

This model was operationalized by Easton (2004) as below:

$$r_{PEG} = \sqrt{\frac{eps_2 - eps_1}{P_0}}.$$

Primary assumption(s):

- After the forecast horizon, firm's abnormal earnings growth is zero ($\gamma = 1$).
- $dps_1 = 0$

Appendix D. Regression Diagnostics

In this section we conduct regression diagnostics analysis for the robustness of the estimates and of the statistical inference – investigating the underlying assumptions that the errors are additive, normal and independent and have zero mean and constant variance. Unless there are substantive reasons to expect a linear relationship between the response and predictor variables, linear regression provides a convenient approximation of the true relationship. However, if the residuals are large and show a systematic trend, there may be a lack of fit between the model and the true relationship. The rest of this section is organized as bellow: First we visually investigate the relationship between response and predictor variables and to uncover patterns that may exist in the data; Second, we investigate the existences of influential data points affecting the estimation of coefficients. Third, we check the normality of the distribution of residuals and if we need to transform the dependent variable to cope with potential problems. Fourth, we test the homogeneity of variance of residuals. Fifth, we investigate whether there is multicollinearity problem. And finally, we investigate if the relationship between response variable and the predictors is not linear. Methodology used is borrowed from "Greene, W. H. (7th Edition 2011). *Econometric analysis*. Pearson Education India". We utilized statistical software "Stata 15" to conduct the above analyses.

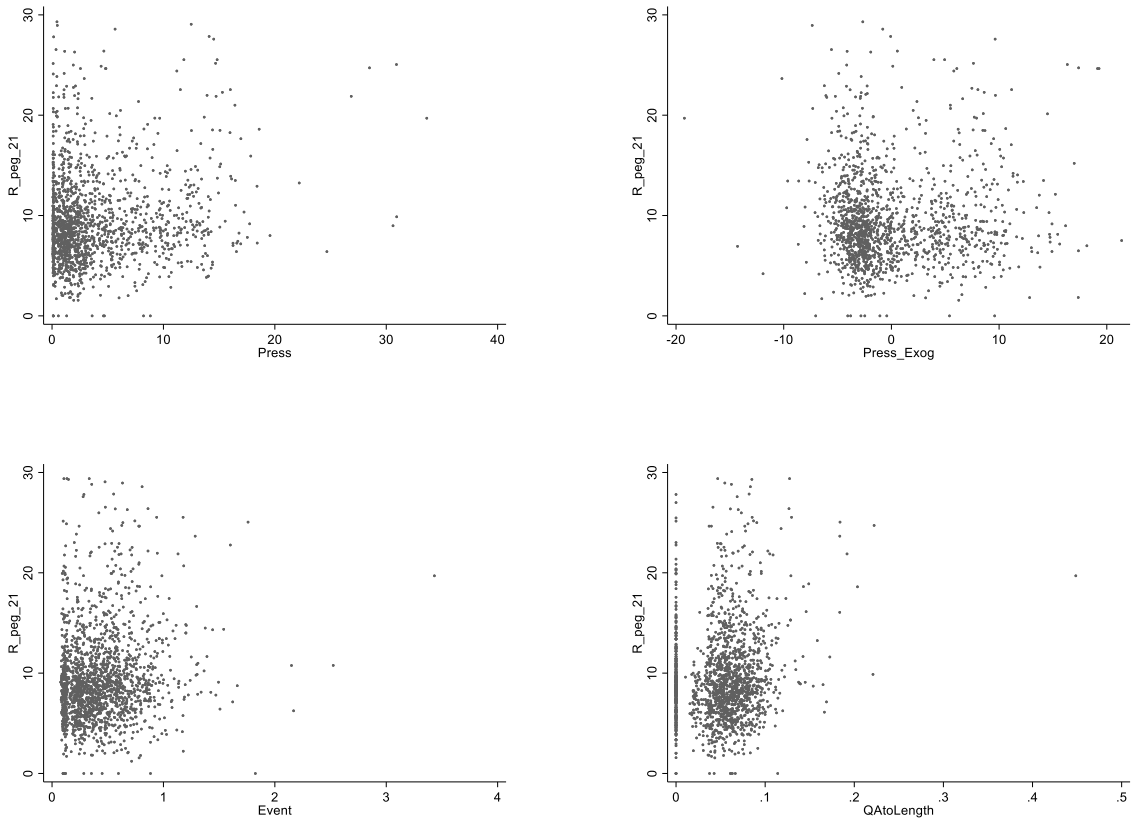
D.1 Visual representation of relationship between response and predictor variables

Figure 1 shows two-way scatter plots of main dependent variable (R_peg_21) on different dimensions of investor relation and stakeholder communication (IRSC) activities that are frequency of Press and News Releases (Press), exogeneous portion of press and news releases (Press_Exog), frequency of investors meetings and events (Event), relative portion of Q&A section to the length of the meeting or event (QAtoLength), average length of answers to each question in number of words (Answer), and frequency of slides used in events and meetings (Slide). Note that IRSC variables are all scaled by size.

The purpose of this visual analysis is to better understand the distribution, the underlying pattern (if any), and the characteristics that may lead to potential problems in the usage of a specific methodology. We can see from Figure 1, that there are some observations along the dimensions of IRSC that are located relatively far from the rest of the data. Since IRSC dimensions are our major predictors, these deviations are considered high leveraged points and

may signal about the existence of a few but influential observations. Observations with large influence on the estimated coefficients, contribute to non-normality of the residuals. These effects may lead to wrong generalizations and invalidity of inference tests. Although normality of data, is not required for Ordinary Least Square method to deliver Best Linear Unbiased Estimate (BLUE), it is required for the validity of F-test for the model, and t-tests for the coefficients. Graphs in Figure 1 assert the merit of further analysis between other dependent variables and predictors. Such analysis is depicted by matrix of scatter plots graphed in Figure 2.

Figure 1) Two-way Scatter Plots of Main Dependent Variable (R_peg_21) on Dimensions of IRSC (Press, Event, QAtoLength, Answer, Slide)



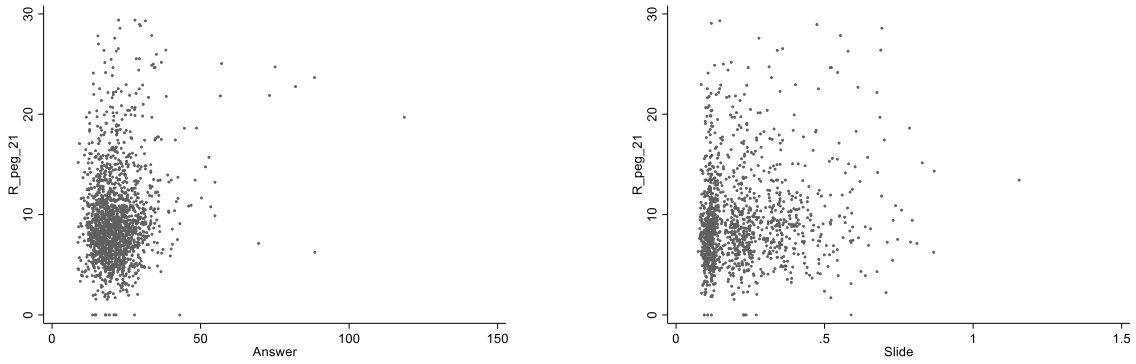


Figure 2) Matrix of scatter plots depicting pairwise relationships among predictors and response variables

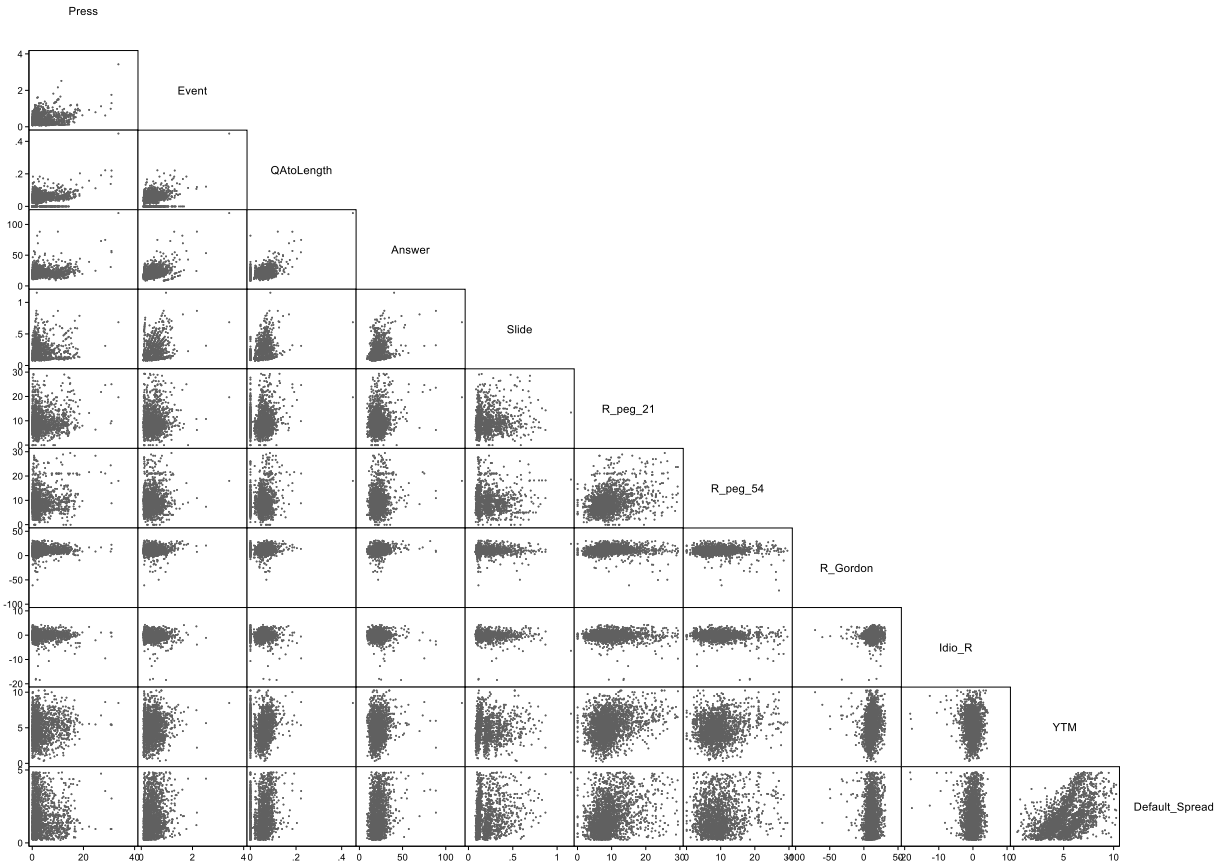


Figure 2 is a lower half of the matrix of pairwise scatter plots that shows two-way relationships between dependent variables and predictors. Dependent variables are R_peg_21, R_peg_54, R_Gordon, R_Idio, Bid_Ask_Spread, YTM, and Default Spread. Predictors are IRSC variables. Figure 2 shows the similar pattern to Figure 1, and suggest further analysis on outliers,

influential points, normality of residuals, and non-linearity of the relationship between dependent variable and predictors.

D.2 Influential observations (outliers and high leverage data points)

A single observation that is substantially different from all other observations can make a large difference in the results of regression analysis. There are three ways that an observation can be unusual.

1- Outliers: In linear regression, an outlier is an observation with large residual. In other words, it is an observation whose dependent-variable value is unusual given its values on the predictor variables. Although an outlier may indicate a data entry error or other problems, it may also indicate sample peculiarity.

2- Leverage: An observation with an extreme value on a predictor variable is called a point with high leverage. Leverage is a measure of how far an observation deviates from the mean of that variable. These leverage points can have substantial effect on the estimate of regression coefficients.

3- Influence: An observation is said to be influential if removing the observation substantially changes the estimate of coefficients. Influence can be thought of as the product of leverage and outlierness.

Using scatter plot of leverage on normalized residuals, we can visually check if data suffers from influential observations that have large leverage and large outlierness. Figure 3 is the graph produced by lvr2plot command in Stata 15. This graph uses residual squared instead of residual itself, the graph is restricted to the first quadrant and the relative positions of data points are preserved. The two reference lines are the means for leverage, horizontal, and for the normalized residual squared, vertical. This is a post estimate analysis and needs a regression model first to be estimated. We use our main model, bellow, to estimate the residuals and leverage values:

$$R\_peg\_21 = \beta_0 + \beta_1 Press + \beta_2 Event + \beta_3 QAtoLength + \beta_4 Answer + \beta_5 Slide + \beta_6 Analyst\_Cov + \beta_7 Tangibility + \beta_8 Innovation + \beta_9 Volatility + \beta_{10} Exp\_Inflation + \beta_{11} MB\_Ratio + \beta_{12} Firm\_Size + \beta_{13} Leverage + \beta_{14} equity\_issue + \beta_{15} Low\_Transparent + \varepsilon$$

Note that the above model lacks year and industry fixed effects and is not estimated using standard errors that are robust to heteroskedasticity.

Figure 3) Scatter plot of predicted leverage on normalized residual squared

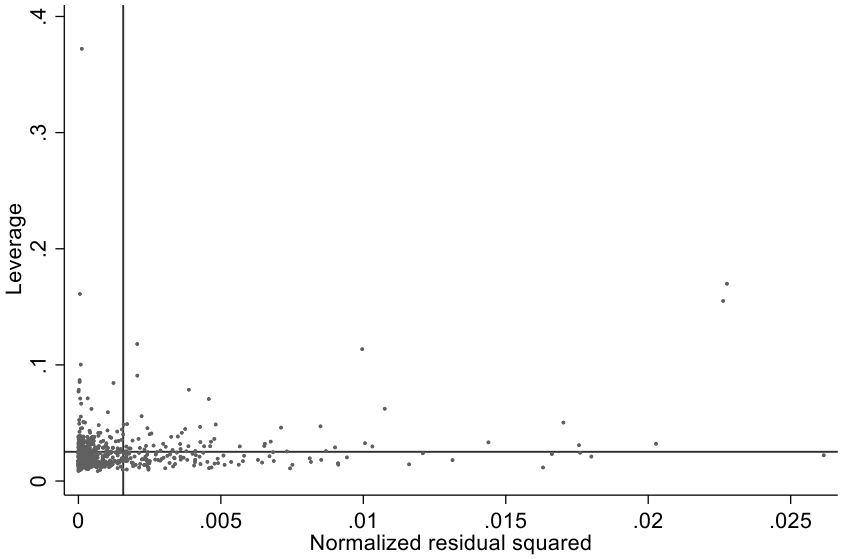
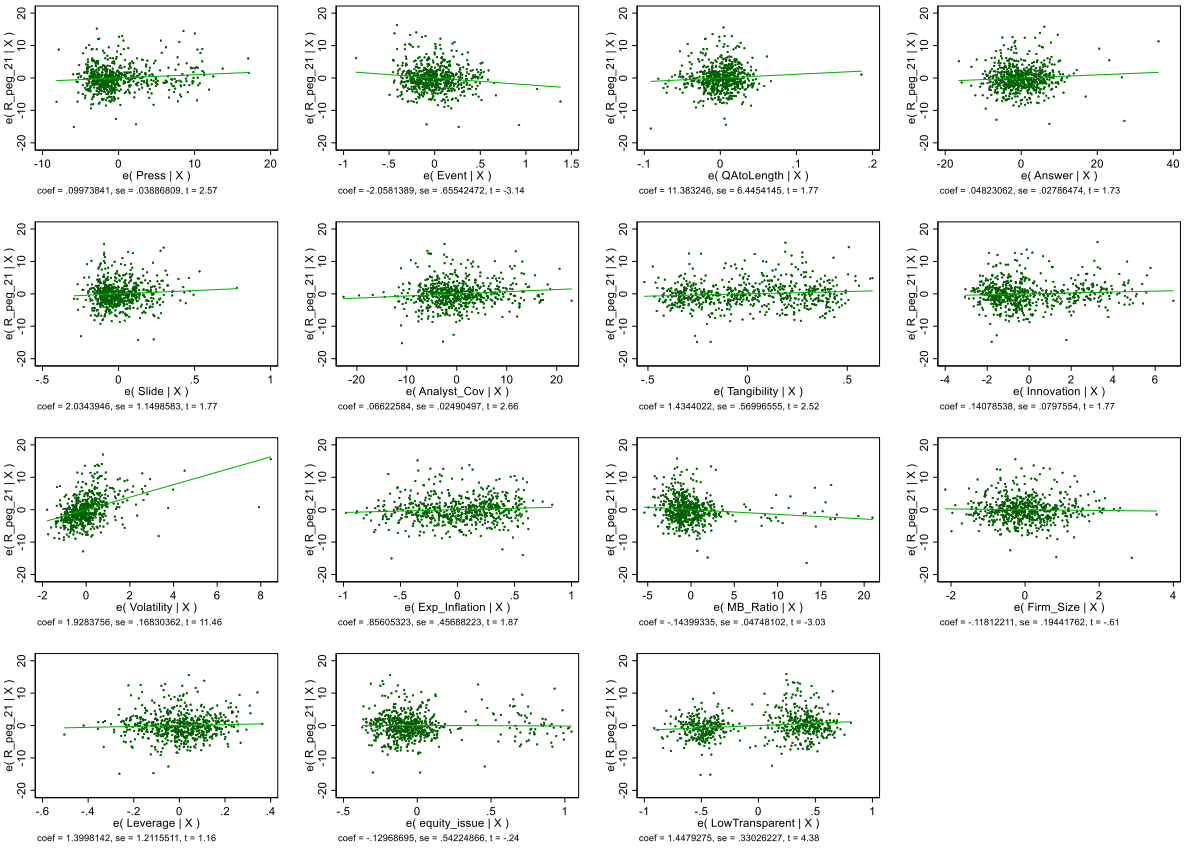


Figure 4) Partial Regressions and Added Variable Plots



Aside from the existence of influential points regarding a couple of dimensions, some interesting patterns are also uncovered by these graphs. For example, a strong positive slope for volatility and a bipolar distribution for transparency are worth investigating further.
We tend to keep all the observations at this stage, and check for the normality of the data. If it turns out that the data does not follow Gaussians properties, we will use transformation of dependent variables and Winsorizing to satisfy the Gaussian properties for our analysis.

D.3 Normality

Normality of residuals is not among the assumptions of OLS regression models. In another words it is not the condition that satisfies ordinary least squares deliver the best unbiased estimators. None the less, it is required for the validity of the model (F-test, and T-tests). We investigate the normality graphically and numerically.

Graphical examination is done by three approaches: 1) plotting kernel density function of residuals while overlaying normal probability distribution (Figure 5), 2) plotting the standardized residuals against standardized normal distribution – PP Plot (Figure 6 –). This plot is sensitive to non-normality in the middle range of data, and 3) plotting quantiles of residuals against quantiles of normal distribution – QQ Plot (Figure 7). This plot is sensitive to non-normality towards the tails. Based on previous graphs and the existence of influential observation we expect to see some degree of deviation from normal distribution closer to the tails of distribution.

Numerically, we investigate the normality by two tests: First, Inter-quartile range test (Figure 8). This test assumes the symmetry in the distribution and counts severe outliers. Sever outliers consist of those points that are either 3 inter-quartile-ranges below the first quartile or 3 inter-quartile-ranges above the third quartile. The presence of severe outliers should be sufficient evidence to reject normality at a 5% significance level. Mild outliers are common in samples of any size. Second, Shapiro-Wilk w test for normality (Figure 9). The p-value for the test statistics of Shapiro-Wilk is based on the assumption that the distribution is normal.

Figure 5) Kernel density for normality of residuals

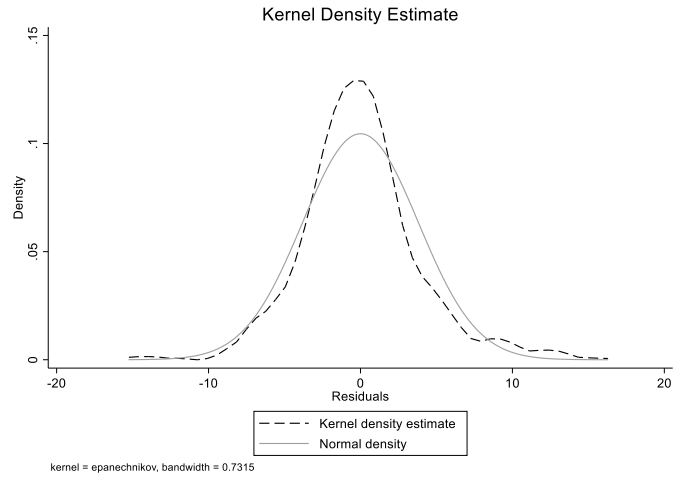


Figure 6) Standardized normal probability plot (PP Plot)

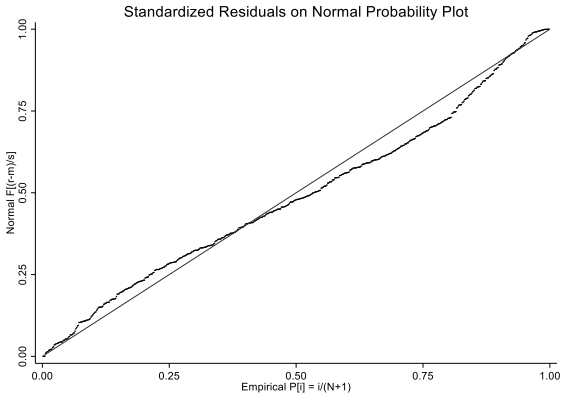
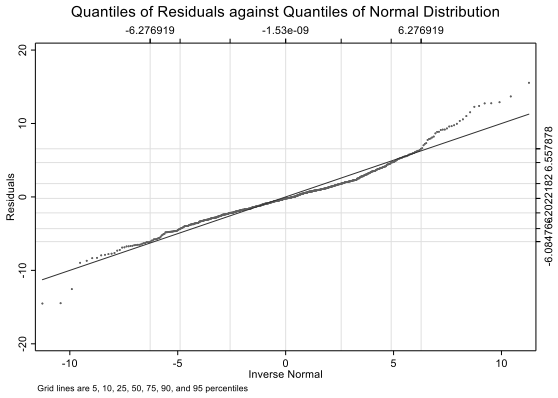


Figure 7) Quantiles of residuals against quantiles of normal distribution (QQ Plot)



Kernel density graph shows that the distribution of residuals is deviated from normal distribution both in middle range and towards the tails. Observed deviation is validated by PP Plot which points to the non-normality in the middle range, and by QQ Plot that points to the non-normality in the tails.

Figure 8 shows the results of iqr command in Stata 15 that performs inter quartile range test. Test statistics are based on the counts of mild and sever outliers in the data. According to Figure 8, 0.31% of residuals are severely (more than 3 inter-quartile-ranges) bellow the first

quartile, and 0.16% above the third quartile. The presence of these outliers is evidence for asymmetry distribution and suffices the rejection of normality hypothesis at 95% confidence level.

Figure 8) Inter Quartile Test of Outliers

```
   mean= -1.5e-09         std.dev.=  3.816          (n= 636)
 median= -.2022    pseudo std.dev.=  2.956        (IQR=  3.987)
10 trim= -.1608

                                          low         high
                                    -------------------
                          inner fences  -8.151       7.798
                       # mild outliers  5           25
                       % mild outliers  0.79%       3.93%

                          outer fences  -14.13       13.78
                       # severe outliers  2          1
                       % severe outliers  0.31%      0.16%
```

Figure 9 shows the results of Shapiro-Wilk W-test of normality. Low p-value shows that we should reject the null hypothesis that the data is residuals are normally distributed.

Figure 9) Shapiro-Wilk Test of Normality

```
                    Shapiro-Wilk W test for normal data

    Variable |        Obs       W           V         z       Prob>z
-------------+-------------------------------------------------------
           r |        636     0.96749     13.593     6.340     0.00000

Note: The normal approximation to the sampling distribution of W'
      is valid for 4<=n<=2000.
```

In order to solve this problem, we decided to transform the dependent variable by taking natural logarithm of 1 plus the value of R_peg_21, and winsorize data at +/- 3% level. Log transformation is a common method for normalizing data, and it is heavily used in finance literature in transforming variables that are positively skewed such as stock returns. Our dependent variables that are used as proxies for cost of information asymmetry are essentially market returns of underlying instruments. Proposed changes helped us reach a normally distributed data. Figure 10

shows kernel density graph for the transformed data, Figure 11, PP-Plot, Figure 12, QQ-Plot, Figure 13, inter quartile range test results, and Figure 14, Shapiro-Wilks W-test of normality.

Figure 10) Kernel density for normality of residuals after transformation and winsorization

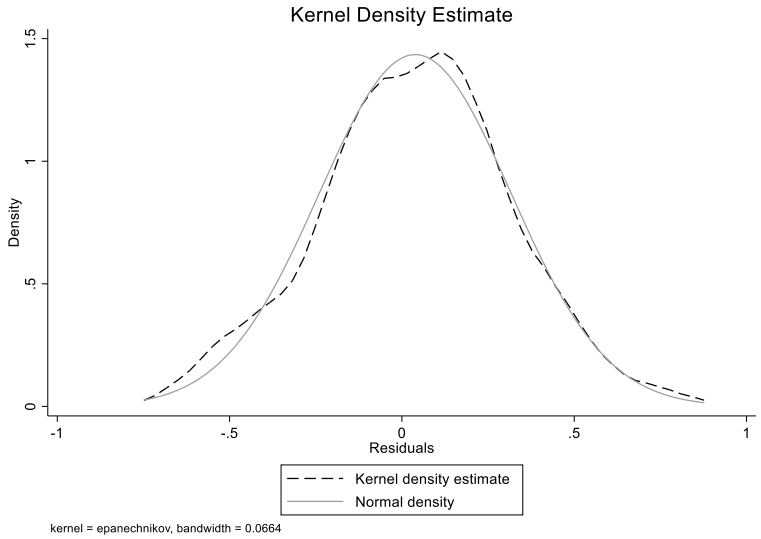


Figure 11) Standardized normal probability plot (PP Plot) after transformation and winsorization

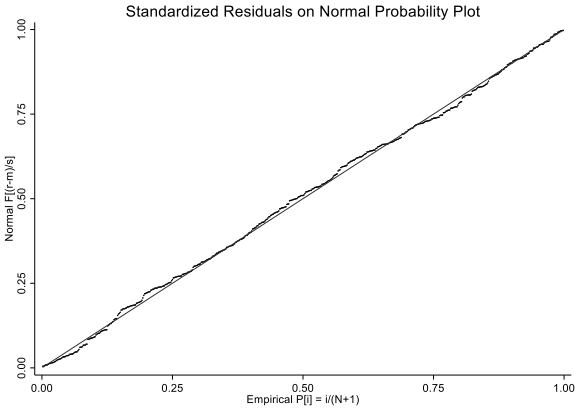


Figure 12) Figure 7) Quantiles of residuals against quantiles of normal distribution (QQ Plot) after transformation and winsorization

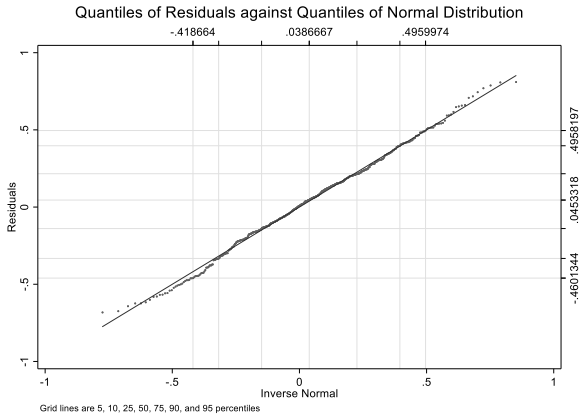
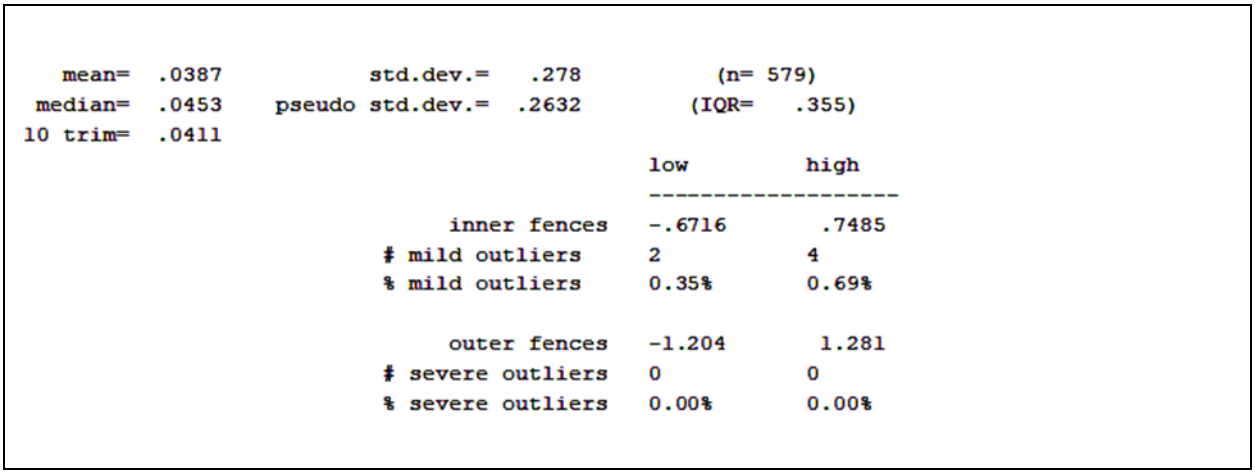


Figure 13) Inter quartile range test after transformation and winsorization

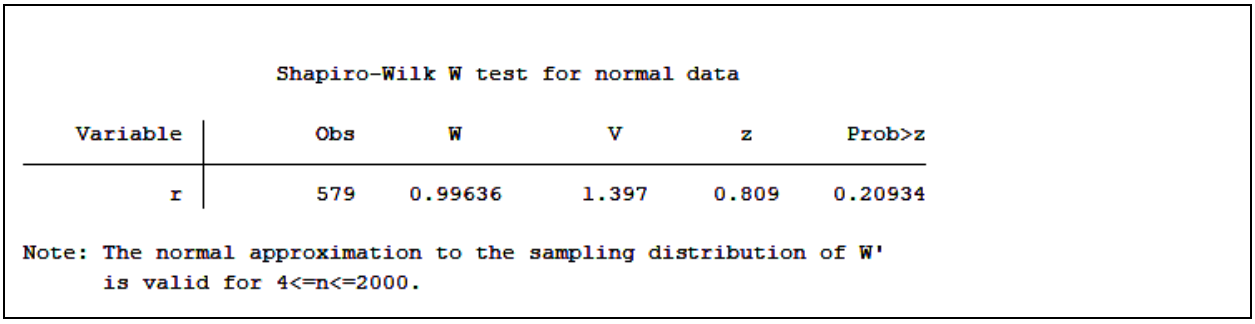


```
   mean=   .0387          std.dev.=   .278          (n= 579)
 median=   .0453    pseudo std.dev.=  .2632       (IQR=   .355)
10 trim=   .0411

                                        low         high
                                    -------------------
                          inner fences  -.6716       .7485
                       # mild outliers  2           4
                       % mild outliers  0.35%       0.69%

                          outer fences  -1.204       1.281
                       # severe outliers  0           0
                       % severe outliers  0.00%       0.00%
```

Figure 14) Shapiro-Wilk Test of normality after transformation and winsorization



Shapiro-Wilk W test for normal data

Variable	Obs	W	V	z	Prob>z
r	579	0.99636	1.397	0.809	0.20934

Note: The normal approximation to the sampling distribution of W' is valid for 4<=n<=2000.

D.4 Homogeneity of variance (homoscedasticity)

One of the main assumptions for the ordinary least squared regression is the homogeneity of variance of the residuals. Heteroskedasticity does not result in biased parameter estimates, however, OLS is no longer BLUE, that is the OLS estimates does not have the smallest variances among other methods.

If the model is well-fitted, there should be no pattern to the residuals plotted against the fitted values. If the variance of the residuals is non-constant, then the residual variance is said to be "heteroscedastic." There are graphical and non-graphical methods for detecting heteroskedasticity. A commonly used graphical method is to plot the residuals versus fitted (predicted) values. Figure 15 shows the scatter plot of residuals against predicted the following model after transformation and winsorization:

$$Ln(R\_peg\_21) = \beta_0 + \beta_1\ Press + \beta_2\ Event + \beta_3\ QAtoLength + \beta_4\ Answer + \beta_5\ Slide + \beta_6\ Analyst\_Cov + \beta_7\ Tangibility + \beta_8\ Innovation + \beta_9\ Volatility + \beta_{10}\ Exp\_Inflation + \beta_{11}\ MB\_Ratio + \beta_{12}\ Firm\_Size + \beta_{13}\ Leverage + \beta_{14}\ equity\_issue + \beta_{15}\ Low\_Transparent + \varepsilon$$

Note that predictors are not transformed, and the model still lacks the fixed effects. According to the scatter plot, one can trace lower variance towards both ends of the range of predicted values. Although having larger variances in the middle range is normal for small samples, the variation in plotted residuals are sever enough to warrant concern, and therefore we will test the homogeneity of variance in more formal (numerical) ways.

Figure 15) Scatter plot of residuals versus fitted values after transformation and winsorization

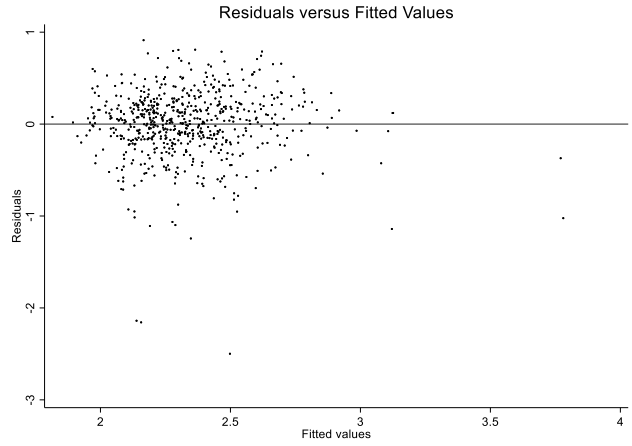


Figure 16) Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of R_peg_21

         chi2(1)      =     6.24
         Prob > chi2  =   0.0125
```

Heteroskedasticity can also be numerically examined using Breusch-Pagan / Cook-Weisberg test (Figure 16) and White – IM – test for heteroskedasticity (Figure 17).

The Breusch-Pagan test is designed to detect any linear form of heteroskedasticity. Null hypothesis states that the error variances are all equal versus the alternative that the error variances are a multiplicative function of one or more variables.

Large chi-square indicates that heteroskedasticity exists. Null hypothesis is defined as constant variance, therefore, according to the p-value, we reject the null hypothesis, and it means there is heteroskedasticity problem. Empirical researchers tend to validate the results of Breusch-Pagan test with White test for heteroskedasticity. White's general test is a special case of the Breusch-Pagan test, where the assumption of normally distributed errors has been relaxed and an auxiliary variable list (i.e. the Xs, the Xs squared and the cross-product/interaction terms) is specified. This test is more appropriate for distributions in which variance increases towards the ends.

Figure 17) White's test (first line) and Cameron & Trivedi's decomposition of IM-test

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	131.30	133	0.5254
Skewness	26.13	15	0.0367
Kurtosis	3.33	1	0.0681
Total	160.76	149	0.2412

According to White's test (first line in Figure 17), we cannot reject the null hypothesis that is "homoskedasticity", this result is different from Breusch-Pagan test. According to this inconsistency, and the fact that larger variances in residuals are accepted for smaller samples, we conclude that heteroskedasticity is a mild problem (if any), and we will address this issue by running our OLS regressions using "robust standard errors to heteroskedasticity" – vce(robust) option in regression command in Stata 15.

D.5 Multicollinearity

When there is a perfect linear relationship among the predictors, the estimates for a regression model cannot be uniquely computed. The primary concern is that as the degree of

multicollinearity increases, the regression model estimates of the coefficients become unstable and the standard errors for the coefficients can get wildly inflated. In this section we investigate whether our analysis is contaminated with multicollinearity. We use Variance Inflation Factor (VIF) to see if there are predictors that are linear combination of others. A value of 1 indicates that there is no correlation between independent variable and any others. VIFs between 1 and 5 suggest that there is a moderate correlation, but it is not severe enough to warrant corrective measures. VIFs greater than 5 represent critical levels of multicollinearity where the coefficients are poorly estimated, and the p-values are questionable.

Table below shows the VIF values (in descending order) for each of the predictors (main and controls) in the model.

Variable	VIF	1/VIF
Firm_Size	3.94	0.25
Answer	2.68	0.37
QAtoLength	2.01	0.50
Analyst_Cov	1.98	0.51
Leverage	1.70	0.59
Event	1.68	0.59
Volatility	1.48	0.68
Equity_issue	1.35	0.74
Slide	1.29	0.78
MB_Ratio	1.21	0.83
Tangibility	1.18	0.85
Innovation	1.18	0.85
Press	1.17	0.85
Exp_Inflation	1.15	0.87
Low_Transparent	1.14	0.88
Mean VIF	1.68	

As it is shown, all VIFs are lower than 5, which means there is no multicollinearity among predictor variables.

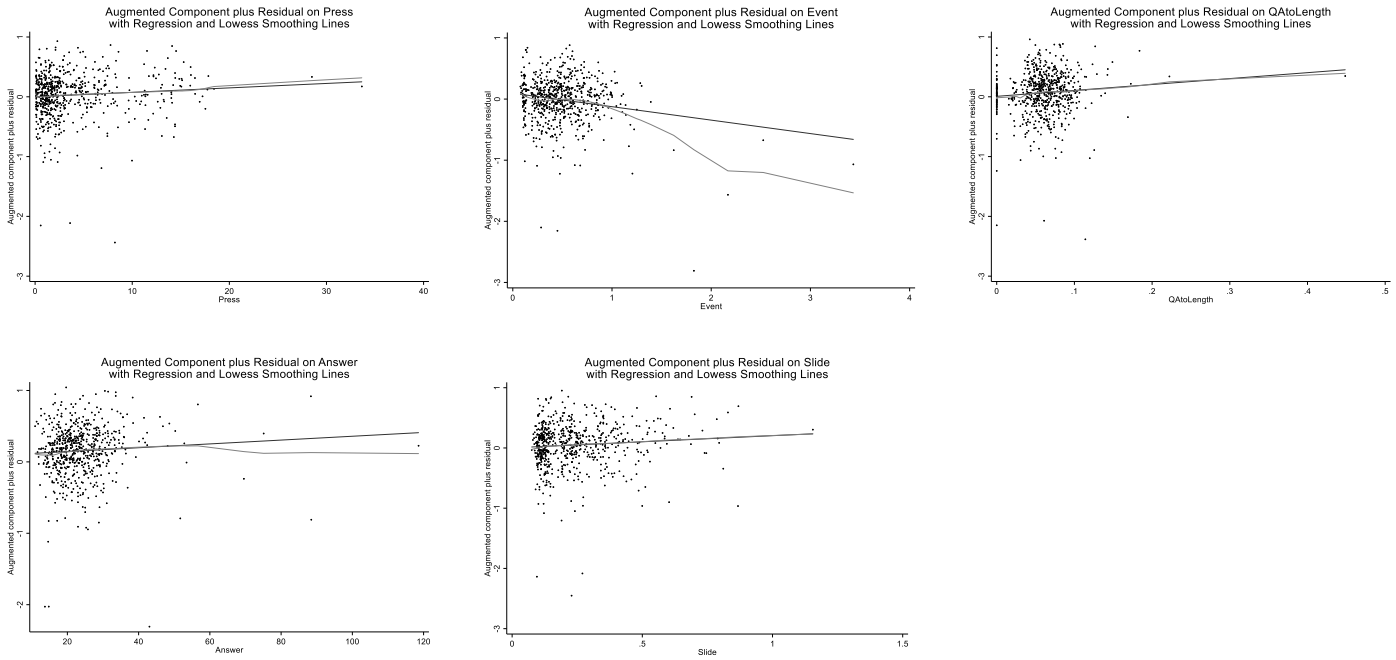
D.6 Linearity

One of the assumptions of linear regression models is that the relationship between predictors and response variables is linear. If it is not true, then regression estimates are essentially meaningless, as it would mean fitting a straight line to data that does not follow a straight line. In multivariate regression models the most straightforward thing to do is to plot the standardized residuals against each of the predictor variables in the regression model. If there is a clear nonlinear pattern, there is a problem of nonlinearity. Otherwise, we should see for each of the plots just a random scatter of points. The command we use for detecting non-linearity is “acprplot”. This Stata 15 command

graphs an augmented component-plus-residual plot, a.k.a. augmented partial residual plot with respect to each of the main independent variables. It can be used to identify nonlinearities, especially when it is equipped with Locally Weighted Scatterplot Smoothing (for short "lowess"). Curved or wave-shaped lowess that are significantly deviated from regression line, especially in the range where the majority of datapoints are located is the sign of non-linearity.

Except for event, all other predictors show a strong linear relation with residuals in estimated partial regressions. Even with Event, the curve of lowess begins when it exits the mass of datapoint. These visual findings are supported by the fact that when we included squared terms of main predictors in the model, in almost all cases, their coefficients were insignificant, and adjusted R-squared for the models were smaller. For this reason, we not only conclude that our data satisfies the linearity assumption for OLS regression, we need to remove squared terms from the models.

Figure 18) Augmented component plus residual on IRSC variables with regression and lowess lines



D.7 Model specification

A model specification error can occur when one or more relevant variables are omitted from the model or one or more irrelevant variables are included in the model. If relevant variables are omitted from the model, the common variance they share with included variables may be wrongly attributed to included variables, and the error term is inflated. On the other hand, if irrelevant variables are included in the model, the common variance they share with included variables may be wrongly attributed to them. We test the model specification in two forms: 1) testing the link between response and the entirety of the model, and 2) testing the omitted variable bias. The first test, also known as linktest (Stata 15 command "linktest") is based on the idea that if a regression is properly specified, one should not be able to find any additional independent variables that are significant except by chance. linktest creates two new variables, the variable of prediction, _hat, and the variable of squared prediction, _hatsq. The model is then refit using these two variables as predictors. _hat should be significant since it is the predicted value. On the other hand, _hatsq shouldn't, because if our model is specified correctly, the squared predictions should not have much explanatory power. That is, we wouldn't expect _hatsq to be a significant predictor if our model is specified correctly. The results of linktest is shown in Figure 17. The p-values suggest that the model is well specified.

Figure 19) Regression of R_peg_21 on predicted and predicted-squared values from the model

Source	SS	df	MS	Number of obs	=	636
				F(2, 633)	=	161.93
Model	39.8910533	2	19.9455266	Prob > F	=	0.0000
Residual	77.9692837	633	.123174224	R-squared	=	0.3385
				Adj R-squared	=	0.3364
Total	117.860337	635	.18560683	Root MSE	=	.35096

R_peg_21	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
_hat	1.983298	.6038578	3.28	0.001	.7974914	3.169105
_hatsq	-.2015249	.1232299	-1.64	0.102	-.4435139	.040464
_cons	-1.184432	.7359597	-1.61	0.108	-2.629649	.2607862

The second test is Omitted Variable (Ramsey) Regression Specification Error Test (Stata 15 command: "ovtest"). The idea behind ovtest is very similar to linktest. It also creates new variables based on the predictors and refits the model using those new variables to see if any of them would be significant. The results are shown in Figure 20.

Figure 20) Omitted Variable (Ramsey) Regression Specification Error Test

```
Ramsey RESET test using powers of the fitted values of R_peg_21
       Ho:  model has no omitted variables
                  F(3, 601) =      4.92
                   Prob > F =      0.0022
```

According to p-value, we reject the null hypothesis that the model has no omitted variables. This creates a problem, that needs to be addressed either with Instrumental Variable approach (IV Estimator), or by controlling for Fixed Effects in regression analysis. Since finding an appropriate instrument is a challenging task, at this stage we decided to include both industry and year fixed effects in all models. In addition, we re-run all regression analyses using percentage change of IRSC variables instead of level of them. Since our data is not a panel data where we collect multiple observations from one induvial firm across time, we do not need to include firm fixed effects.