Funding Disclosures, Information Asymmetry, and the Cost of Capital[☆]

Alvin E. S. Ang[a], Robert Tumarkin[b]

[a]*Department of Economics and Finance, School of Business, The Hang Seng University of Hong Kong*
Shatin, Hong Kong
[b]*School of Banking and Finance, UNSW Business School, UNSW Sydney*
NSW 2052, Australia

Abstract

Qualitative funding disclosures in 10-K filings prescribed by SEC Regulation S-K contain credible information about the firm's planned sources of internal and external funds. Using a grammatical Natural Language Processing technique, which explicitly considers the contextual relationships among words, we accurately identify and classify funding disclosures without subjective interpretations. We document that funding disclosures transfer information from corporate managers to outsiders, which mitigates information asymmetry. And, firms with more disclosures benefit from a lower cost of capital. The crucial implication of our study is the information structure of firms is relevant beyond accounting numbers, and proper management of disclosure policies can produce tangible benefits.

JEL classification: G18; G30; M41

Keywords: SEC Regulation S-K, Qualitative Funding Disclosures, Grammatical Natural Language Processing, Information Asymmetry, Cost of Capital

[☆]We thank Wendy Hsu, David Reeb, Takeshi Yamada, and session participants at the Asian Finance Association Conference for suggestions.

[*]Corresponding author. Address: Room D728, Department of Economics and Finance, School of Business, The Hang Seng University of Hong Kong, Hang Shin Link, Siu Lek Yuen, Shatin, Hong Kong; Phone: +852 3963 55653; Email: alvinang@hsu.edu.hk

Email addresses: alvinang@hsu.edu.hk (Alvin E. S. Ang), r.tumarkin@unsw.edu.au (Robert Tumarkin)

This version: January 2019

1. Introduction

Firm managers are responsible for structuring the firm's financing policies. Very often, these policies are made with information to which outsiders are not privy. This creates informational asymmetries that can impair the efficiency of capital markets. Not surprisingly, investors attribute firms with high asymmetric information as riskier, and consequently charge a higher cost of capital relative to firms with greater informational transparency. Regulators have attempted to improve market function through specific informational disclosure mandates in corporate annual reports. In the U.S., SEC Regulation S-K requires managers to "separately describe internal and external source of liquidity" and "the anticipated sources of funds needed to fund [the firm's] commitments." These forward-looking statements are intended to provide the market with valuable information not inferable from accounting data about planned financial policies. This paper evaluates whether a firm's financing disclosure provides credible qualitative information that mitigates the adverse selection problem for investors, thereby reducing the firm's cost of capital.

To perform this analysis, we implement a grammatical Natural Language Processing (NLP) technique to precisely identify a firm's internal and external sources of liquidity. The technique examines the underlying grammatical structure of key sentences found in the "Liquidity and Capital Resources" section of 10-K filings. By focusing on the grammatical relationships among words, the technique improves upon conventional approaches used in the literature[1]. Keyword-style searches that are often used to analyze firm disclosures, in essence, ignore context. For example, firms typically indicate that they have specific sources of funding to achieve desired objectives in the upcoming fiscal year. One firm might indicate that its "operations will be sufficient to fund the firm's financial obligations," while another states that it "intends to issue debt to fund operations." The funds related to operations are financial

[1]Tetlock et al. (2008) quantify the negative words occurring in news stories and examine the impact on stock returns. They use the conventional "bag-of-words" technique to measure the degree of negativity. Similarly, Jegadeesh and Wu (2013) measure the tone of 10-Ks based on both negative and positive words to examine its relation on market reaction. Loughran and McDonald (2014) describes a general methodology of analyzing qualitative information in financial disclosures using the Fog Index.

resource in the first sentence, but a financial obligation in the second. Naive keyword searches for the word "funds" will not be able to differentiate between these meanings. By focusing on the grammatical relationships among words, our technique is able to identify words and their context, ensuring that we are accurately capturing the underlying information in the firm's statements.

Upon identifying the key sentences that disclose financing policies, we classify the funding sources into eight categories; cash on hand, cash from operations, bank debt, other debt, equity, other issuance, asset sale, and unspecified. The eight categories of funding sources have very low pairwise correlations, which shows that our technique of identifying and classifying funding sources produces unique financial policy information with very little overlap. We further group the funding categories into internal and external sources of funds. The former comprises cash on hand and cash from operations, and the latter comprises bank debt, other debt, equity, and other issuance. We do this so we can separately examine the effects of intended use of internal funds and external funds on firm economics.

We first investigate whether the disclosure of funding sources contains credible business-relevant information above that which is found in accounting data. We do so by examining how specific firm outcomes that are most directly associated with the firm's financing policies are affected by the revelation of ex-ante funding disclosures. Since a firm's planned internal and external sources of funds should determine how much external capital the firm needs to raise in the future, we expect measures of external capital to be significantly associated with these disclosures if they are indeed credible. We find that firms that expect to rely on more external funds subsequently raise significantly more external capital than those that planned to rely less on external funds. And, this result is robust to decomposing external funds separately into proceeds from seasoned equity offerings and net long term debt issuances.

To provide further evidence that the qualitative disclosures of financing policies are credible, we test the implications of planned funding sources on a firm's typical uses of funds. We argue that since internal and external sources of funds are key capital inputs to the firm's production function, the disclosure of funds acts as a precursor to the firm's

expected investment activity. We expect firms with a greater number of funding sources to be better-positioned to finance projects. Therefore, a positive relationship between the number of funding sources the firm plans to rely on and the subsequent level of investment expenditure is a manifestation of the credibility of funding disclosures. We find firms that disclose more sources of external funds have subsequently higher capital and R&D expenditures. Moreover, disclosing additional external sources of funds have large economic effects on the amount of subsequent expenditures. For example, for every additional source of external fund a firm plans to rely on, the firm can expect to increase its capital expenditures by 33.1%.

Now that we have established the credibility and implications of funding disclosures, a natural question to examine is why would some firm managers reveal more information on financing policies than others. While Regulation S-K compels firm managers to disclose funding sources, the specificity of which remains within the purview of managers themselves. They can choose to word their planned financing policies in vague generic terms while still complying with disclosure requirements. For instance, some disclosures simply state "management believes we have sufficient capital resources to fund expenditures" or "we expect to have adequate financing to meet our needs". Both these examples reveal unspecified sources of funding, which are unlikely to provide outsiders with adequate information about the firms' financing plans. Yet, there are other disclosures such as "we believe that our internally-generated funds, and borrowing capacity under our credit facility will be adequate" and "the company believes that its cash, and cash equivalents, funds from operations, and proceeds from debt issuances are sufficient", which detail the variety of funding sources the firm plans to rely on. Clearly, more detailed funding disclosures transfer more information to outsiders and are likely to be more helpful at alleviating information asymmetry. We should therefore, expect firms revealing more funding disclosures to be "rewarded" by the market with lower cost of capital.

Our finding shows that firms disclosing more sources of funding experience significant reductions to their cost of capital. For every one additional category of funds out of the eight that a firm reveals, the cost of capital is cut by 2.0%. Now, one could argue that the cost

of capital is lower for firms with more funding sources because the market perceives firms with a larger diversity of sources as facing less financing uncertainty. Thus, the lower cost of capital simply reflects lower overall firm risk, which nullifies information asymmetry as an explanatory factor. We address this concern by examining firms that make no ex-ante disclosures that they intend to rely on external sources of funding, and *yet* subsequently raise external capital in the following year. Our results show that such firms have a cost of capital that is up to 6.6% *higher* than firms that disclose plans to raise external capital and then proceed to do so. The evidence strongly suggests that the differential in cost of capital is associated with the severity of the asymmetric information problem, which can be mitigated through funding disclosures.

Our unique application of NLP gives our study the advantage of using the richness of sentences to accurately evaluate the information content in qualitative disclosures, and mitigates problems of misinterpretations that are common in conventional textual analysis techniques. We are thus able to show that qualitative funding disclosures contain relevant and credible information because they directly affect the associated firm outcomes. This improves upon studies that infer the credibility of specific disclosures from the firms' stock price reactions, which raises questions whether such inferences are supported by theory. We also produce evidence suggesting that qualitative disclosures, and not just the accounting numbers, in annual reports play an important role in alleviating information asymmetry and can influence the firm's cost of capital.

The rest of the paper is organized as follows. In Section 2, we review related literature and develop our hypotheses. Section 3 describes our data and methodology. Section 4 details our empirical results. And, we conclude in Section 5.

2. Hypothesis Development

Firm managers do not always disclose all the information they possess to the public, which creates an information asymmetry problem. And, if unresolved, informational differences between corporate insiders and outside investors can impede market efficiency (Akerlof, 1970). This motivates government agencies such as the SEC to set financial reporting requirements of

public companies with the objective of facilitating information dissemination. But, even with enforcement of disclosure requirements, managers may misreport firm economics, or exploit regulatory loopholes to withhold certain information in order to serve their own self-interests. Therefore, the extent to which financial reports can reduce asymmetric information in capital markets hinges on the credibility, amount, and type of disclosed information.

Existing accounting research in this area produces indirect evidence to prove that investors gather credible and useful information from financial reports. They examine whether required reporting of specific accounting items in financial statements translate to stock price reactions. The premise is positive association between accounting information and stock price movements indicates that the market considers management's disclosures to be credible (Ajinkya and Gift, 1984; Waymire, 1984, 1986). Holthausen and Watts (2001) criticize these studies as lacking in theoretical priors because the channels through which reported accounting items directly affect stock prices are not clearly established. Thus, even if there are statistically-significant associations between specific disclosures and stock prices, it could be erroneous to infer that the disclosures provide valuable information.

Another issue with these extant studies is they only examine quantifiable accounting items. For instance, Venkatachalam (1996) find that banks' share prices are affected by disclosures of fair values of derivative positions in accordance to the Statement of Financial Accounting Standards (SFAS) rule No. 119. The question whether the finding in these studies extends to non-quantifiable information has been hitherto, largely unanswered. Qualitative disclosures especially those in the Management's Discussion and Analysis (MD&A) section are prescribed by the Federal Accounting Standards Advisory Board as "required supplementary information". And, since they are meant to provide information that is not apparent in the financial statements, their credibility also warrants careful investigation.

Since the primary purpose of disclosures is to inform the public of firm activity, then examining the effects on firm outcomes that are *directly* associated with the specific information disclosed would reveal the information's credibility. For instance, firm managers who comply with SEC Regulation S-K will disclose their expected sources of internal and external

funding. And, if these qualitative disclosures are credible, then one should be able to observe evidence from the firms' capital raising activity. Consider a firm that plans to rely more on internal, instead of external sources of funding. If this firm's funding disclosures are truthful, then one would expect it to raise less external capital than another firm that planned to rely more on external financing. This methodology directly tests the credibility of qualitative disclosures and ensures that the subsequent inferences will not be confounded by extraneous factors. We use this approach to test our hypothesis as follows.

Hypothesis 1 *Qualitative disclosures in the MD&A section provide credible information, which forecasts specific aspects of firm activity.*

Credible qualitative disclosures transmit information to capital market participants and ease the severity of asymmetric information. Finance research postulates an association between the degree of information asymmetry and the firm's cost of capital. In an imperfect market in which the information asymmetry problem cannot be completely resolved, investors will demand a premium for holding informational risk (Myers and Majluf, 1984). Yet, even with incomplete information, theory shows that capital market equilibrium can still be achieved such that firms revealing less information will have higher risk premiums than those that reveal more information (Merton, 1987; Barry and Brown, 1984, 1985; Easley and O'hara, 2004).

This theory is corroborated by empirical evidence. For instance, Duarte et al. (2008) find that firms with a low probability of informed trading, in other words high asymmetric information, experience significant cost of capital increases. They use the conventional *PIN* measure, which is an estimated probability of occurrence of private events affecting the intensity of order flows to proxy for information asymmetry. But, because *PIN* fundamentally requires a strict binary assessment of information as either good or bad news, it could be exposed to measurement errors due to subjectivity. Thus, rendering it a less accurate proxy for information asymmetry.

We improve upon the measurement of information asymmetry by using a systematic and non-subjective approach to collect and interpret qualitative disclosures. Our choice of using disclosures offers a key advantage. Financial disclosures are a *direct* dissemination of information to the public. This is important because without a reliable channel to transmit information, investors would need to expend resources to gather information. And, since not all investors have equal ability to acquire information, the measurement of information asymmetry becomes obfuscated because it would be conjointly determined by the quantity of information firms disclose and the cost of acquiring it. The confluence of these two effects would make it difficult to infer a direct association between information revealed by managers and cost of capital.

Our measure of information asymmetry is a direct representation of the amount of qualitative information disclosed. This allows us to test how management's disclosure policies directly affect cost of capital. We base our hypothesis on theoretical predictions and formalize it as follows.

Hypothesis 2 *Qualitative disclosures mitigate asymmetric information and the more information a firm discloses, the lower the firm's cost of capital.*

We expect our investigation to show that the disclosure decisions by firm managers is intricately-linked to the firm's cost of capital. While much research has been done on the credibility and relevance of financial statements, we argue that qualitative disclosures are also informative and credible because they are an avenue for managers to transmit information not covered by the accounting numbers, and the threat of litigation should disincentivize managers from falsifying them. Moreover, since management's qualitative disclosures are essentially a transformation of private information into public, the greater the quantity of disclosures, the lesser the severity of asymmetric information. And, in equilibrium, the market will attribute firms with higher transparencies with lower risks, and reward these firms with a lower cost of capital.

3. Data and Methodology

3.1. Text Extraction of Funding Sources

Our empirical analyses that follow require careful consideration of the context of sentences. To do this, we wrote a program in Ruby that interfaces with the Stanford CoreNLP software, which is a computation linguistics algorithm designed to parse sentences and identify the grammatical relationships among words. Our program then uses these grammatical relationships to classify the information content of the sentences into distinct categories. To see why this method supersedes rudimentary textual analysis techniques such as keyword searches, which have been frequently employed in past studies of qualitative disclosures, consider again the example given in Section 1. The sentences "operations will be sufficient to fund the firm's financial obligations" and "intends to issue debt to fund operations" produce the following grammatical relationships depicted in figures 1 and 2, respectively.

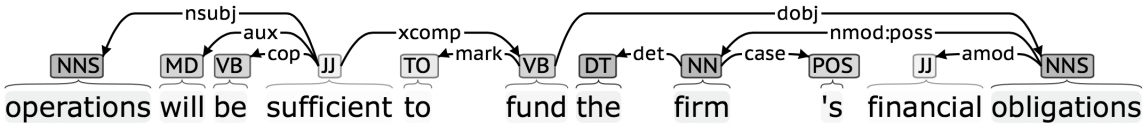

Figure 1

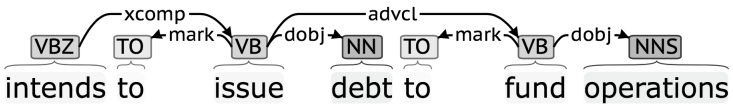

Figure 2

The CoreNLP identifies "fund" as a verb (denoted as "VB" in the figures) in both sentences and are direct objects ("dobj") of the word "obligations" in the first sentence and "operations" in the second. But, in the first sentence, "fund" is complemented ("xcomp") by the adjective "sufficient" (denoted as "JJ"). This tells us that the word "fund" is actually more similar to a noun and it is sufficient for something. From here, it is easy to deduce "fund" as a financial resource. Whereas in the second sentence, "fund" is modified by the adverbial clause ("advcl") "issue", which is a direct object of the noun "debt". In this case, since fund is modified by issuing debt, we can deduce that "fund" here represents a debt liability, and

not a resource. Now, keyword search techniques will not have the technical sophistication to analyze sentences and their constituent words with such grammatical detail. And, very likely incorrectly identify "fund" as a financial resource in both sentences. Therefore, the application of our grammatical NLP technique is necessary to avoid systematic errors in identifying qualitative information.

After parsing the sentences from our sample through the CoreNLP software, our program then processes all the identified funding sources and classifies them into eight distinct types: "cash on hand", "cash from operations", "bank debt", "other debt", "equity", "other issuance", "asset sale", and "unspecified". As an illustration of what constitutes each of the funding types, Table 1 shows examples of phrases identified as funding sources from sentences parsed through the CoreNLP software.

[Insert Table 1: Categories of Fund Sources]

Next, we prove that our classification of funding sources is largely able to produce distinct types of sources, which is important for analyses requiring accurate identification of internal and external sources of funds. Table 2 shows the Pearson pair-wise correlation coefficients for all eight types of funding sources. Other than the correlation between bank debt and cash from operations, unspecified and cash on hand, and unspecified and cash from operations, all the other correlation coefficients are less than 10%. This shows that our computation linguistics methodology underpinned by CoreNLP is capable of extracting distinct information from the qualitative disclosures for more accurate analysis.

[Insert Table 2: Corr. of Fund Sources]

3.2. Construction of the Fund Sources Indices

We use the eight fund source categories to construct firm-year indices for funding sources. For every firm in a given year, we create an indicator variable for each of the eight fund source categories that takes a value of 1 if the firm-year observation shows availability of the particular funding source. We then take the sum of the fund source indicator variables

and scale it by 8 to create a *composite fund source index*, which ranges from 0.125 (only one type of funding source available) to 1 (fully-diversified funding sources available). We further construct two indices, *internal fund source index* and *external fund source index* to separately identify the availability of internal and external funding sources. The *internal fund source index* is the sum of the indicator variables for *cash_on_hand* and *cash_from_ops* divided by 2. The *external fund source index* is the sum of the indicator variables for *bank_debt*, *other_debt*, *equity*, and *other_issuance* divided by 4.

The internal and external fund source indices are constructed so that we can examine the separate marginal effects of these two distinct categories of funding on the outcome variables. The correlation coefficient between these indices is 0.104, which is sufficiently low and should alleviate concerns of collinearity when they are both included in subsequent empirical specifications. Also, note that all our indices give equal weight to the various types of funding sources based on the assumption that firms can readily access any of their disclosed source of funds. According to SEC Regulation S-K, there are no requirements for firms to rank the relative importance of the variety of funding sources either based on amount or liquidity. Thus, we contend that giving equal weight to each source is reasonable.

Across all firms, the mean, median, and standard deviation of the composite, internal, and external fund source indices are 0.255, 0.250, 0.110; 0.604, 0.500, 0.329; and 0.119, 0, 0.130, respectively. Table 3 shows the means of each fund source index across the industries sorted by two-digit SIC codes in our sample. Firms in 50% of the SIC codes show a mean composite fund source index of more than 0.266, which is equivalent to approximately over two types of fund sources. The highest mean composite index of 0.388 (roughly three types of fund sources) is from the agricultural services industry while the lowest index of 0.125 (one type of fund source) is from the agricultural production, forestry, and non-classifiable establishments industries. For the internal fund source index, firms in 83% of the SIC codes have a mean index of greater than 0.5, which means they have at least one of the two types of internal funding sources. While for the external fund source index the highest mean is only 0.25 or one of the four types of external funding sources.

[Insert Table 3: Industry Distribution of Mean Indices]

3.3. Main Variables

In the empirical analysis in the subsequent section, we conduct tests to show how the qualitative disclosure of funding sources impacts firms' financing and investment activities, and cost of capital. To construct dependent variables for the firms' financing activities, we follow closely the methodology in Almeida and Campello (2010) and define external financing as the sum of net equity and net debt issuances scaled by total assets. To uncover differential impacts on types of external financing, we further define equity financing and debt financing simply as proceeds from seasoned equity offerings scaled by total assets, and net debt issuances scaled by total assets, respectively. For the firms' investment activities, we scale capital expenditures and R&D expenditures by total assets.

For our cost of capital variable, we use the annualized excess return on the firm's stock. This is computed from first, annualizing the daily returns and risk-free rate separately, and then subtracting the annualized risk-free rate from the annualized stock return. For specifications in which the cost of capital is the dependent variable, we include the following asset-pricing control variables. The book-to-market is common equity liquidation value divided by total market value. Liquidity is measured as the percentage of trading days in a year in which the stock return is not equals to zero. Also, we run the Fama-French three-factor model from daily data to obtain annual coefficient estimates on the three factors; market risk premium, small minus big, and high minus low.

For tests examining firm risk, we measure total firm risk as the annualized volatility of daily excess stock returns obtained from The Center for Research in Security Prices (CRSP). We further dissect total risk into the systematic and unsystematic components. We first run an OLS regression with the Fama-French three-factor model on the firms' daily excess returns and use the annualized standard deviation of the residuals as our measure for unsystematic risk. Then, we subtract the annualized variance of residuals from the annualized variance of daily excess returns and take the square root to compute the systematic risk.

Our firm-specific control variables are constructed using accounting and financial data

from Compustat. We use Tobin's Q, profitability, and firm size, cash flow scaled by beginning-of-period total assets, cash holdings, inventory, property, plant and equipment (all scaled by contemporaneous total assets), and leverage measured as total debt over total capital. For tests examining the differential impact during the 2008 financial crisis, we define a *Crisis* indicator variable, which takes the value of 1 if the observation year is 2008 or 2009 and 0 otherwise.

3.4. Descriptive Statistics

We present descriptive statistics for the dependent and main independent variables in Table 4 . All variables except indices are Winsorized at the 1st and 99th percentiles. In our sample, the average firm-year discloses approximately two types of funding sources. All firm-years report at least one funding source, and no firm-years has more than five funding sources. The average firm-year shows slightly more than one source of internal funds and about one source of external funds. Preliminarily, this suggests that corporate managers on average structure financial policy to rely evenly on both internal and external sources of funds. It is also noteworthy that the internal and external fund source indices have very different distributions. The internal fund source index is almost evenly-distributed about its mean while the external fund source index is positively-skewed. This implies that firms appear less likely to rely excessively on external sources of funding.

[Insert Table 4: Descriptive Statistics]

4. Empirical Results

The vast majority of the disclosure statements project expected funding sources for the next twelve months. Therefore, funding disclosures made in year $t-1$ are related to the outcomes of the dependent variables in year t. As such, we contend that lagging our fund source indices by one year is adequate to test their informative value. Also note that in our empirical specifications, we include firm and year fixed effects (except in specifications with the *Crisis* dummy) to account for unobservable effects that can bias our coefficients

and statistical inferences. Additionally, we cluster standard errors by firm to correct for hetereogeneity and autocorrelation in standard errors.

4.1. Do Funding Disclosures Predict Financing Policy?

We first investigate whether managers are truthful about their intended financing policy. If the funding disclosures contain accurate information, then we expect to find firms that intend to rely on external funds to actually raise external capital in the next period. We test this by regressing measures of external financing raised on the fund sources indices. Table 5 presents the results.

[Insert Table 5: External Financing]

In columns (1), (3), and (5), we show that only the external fund source index predicts external capital raised. We further decompose the external capital into equity and debt. We define equity capital as proceeds from SEOs. This is a better measure for the actual amount of equity capital raised because we can exclude employee stock options, warrants, and unit trusts, which are often co-mingled in the conventional computation of net equity issuance (sale of common/preferred stock less purchase of common/preferred stock) from Compustat data. The external fund source index consistently shows that the more external sources the firm plans to rely on, the greater the amount of equity and debt issuances. On the other hand, the internal fund source index has no significant correlation to external capital raised. The evidence here proves that when managers make ex-ante decisions on future financing policy, firms on average follow through with the plans, and the disclosures are made not merely to satisfy regulatory requirements, but serve to provide credible information to outsiders.

As a robustness check on our fund source measures, instead of using indices based on the count of the number of funding sources, we simply use indicator variables to denote the availability of internal and external funds. The internal fund source indicator takes a value of 1 if a firm-year shows availability of any single type of internal funding sources, and 0 if no internal funds are shown. The external fund source indicator is constructed similarly with availability of external funding sources. Additionally, we also include an unspecified only

indicator, which takes a value of 1 for firm-years disclosing *only* unspecified funding sources. This is an indicator for disclosures with very little information content.

The results in columns (2), (4), and (6) support our conclusion that the external funding disclosures are informative about the firms' financing policies because they show a positive and significant association with the actual amount of capital raised in the next period. This is the first key piece of evidence that qualitative funding disclosures transmit credible information.

4.2. Implications of Funding Disclosures on Investment Activity

In this section, we investigate the implication of funding disclosures on future capital expenditures. Other than to meet working capital needs and debt servicing obligations, corporate managers also need to plan how to fund investment projects. The variation in capital expenditures across firms is usually explained by cash flows and investment opportunities. This is based on the q-theory of investment, which states that firms maximize investments with capital stock (both endowed and acquired over a given period) so long as "marginal q" remains positive. In empirics, the capital stock is cash flow, and the average Tobin's q proxies for investment opportunities.

However, this conventional investment equation omits an important intangible variable; corporate managers' *expectations* of raising capital beyond internally-generated funds to finance projects. Managers often plan the firms' investment activity in advance, and the level of activity should also be contingent on projections of the ability to acquire external sources of funds if internal sources are insufficient. We argue that since managers' expectations of funding are revealed in the funding disclosures, our fund source indices are pertinent to predicting how much firms invest in the next period.

We test this conjecture by regressing capital expenditures scaled by beginning-of-period total assets on our fund source indices in addition to cash flow (also scaled by beginning-of-period total assets) and lagged Tobin's q. We also include firm-specific controls of cash holdings, size, leverage, and property, plant and equipment. The controls, other than size which is the natural log of total assets, are all scaled by contemporaneous total assets, and lagged. Table 6 presents the results.

[Insert Table 6: Investment Activity]

First, we use our composite fund source index as a regressor. And, the positive and significant coefficients on this index as shown in column (1) suggest that firms which expect to have access to more sources of funding, both internal and external, will invest more. This result is a reflection of managers' optimism on the firms' ability to have sufficient funding sources, and with it a confidence to carry out planned capital expenditures.

Next, we dissect our composite fund source index into the internal and external fund source indices to explore which type of funding source the average firm plans to rely on to finance investments. The results in column (2) clearly shows that the higher the external fund source index, the higher the investment activity in the following period. On the other hand, the internal fund source index does not drive future investment activity. This evidence suggests that when managers formulate financial policy, a key determinant of how much the firm will invest depends on the number of external funding sources managers are confident of securing. Now, while it is true that *contemporaneous* cash flow is positively and significantly correlated to investments, a distinction must be drawn with the internal fund source index. The lack of statistical significance on this index is evidence that firms do not *ex-ante plan* to finance capital expenditures with internally-generated funding sources. This however, does not restrict firms from channeling cash flows generated *in the same period* to fund capital expenditures.

As a robustness check, we use R&D expenditures as our measure of investment activity. These expenditures are also scaled by the beginning-of-period total assets. We find that the composite and external fund source indices continue to be positively-associated with the level of R&D expenditures. All the results remain unchanged when we use our fund source indicators instead of the indices. We further investigate whether funding disclosures could be related to non-investment activity such as paying dividends and stock repurchases, but we do not find any significant relationship.

The results in this section collectively show that firms plan to utilize external funding sources more so than internal sources to finance investment projects. This information is

conveyed to outsiders through disclosures of external funding sources. Together with the results from the preceding section, we conclude qualitative funding disclosures provide credible information and have predictive implications on the firm's capital-raising and investment activity.

4.3. How Do Funding Disclosures Affect the Cost of Capital

Having established that disclosure policies on financing plans provide the market with credible information, which reduces information asymmetry, we proceed to analyze how the differential in information structure affects the cost of capital. We conjecture that a rational expectations equilibrium exists such that investors will demand higher expected returns on capital provided to firms with greater informational asymmetry problems.

A key advantage of our fund source indices is they measure the type and amount of information disclosed to the public, and can therefore function as direct proxies for the severity of information asymmetry. We use the annualized excess return on the firm's stock as a measure for the cost of capital and regress it on our fund source indices according to the technique in Fama and Macbeth (1973) to investigate the relationship between information asymmetry and cost of capital. Table 7 presents the results.

[Insert Table 7: Cost of Capital]

The composite fund source index shows a significantly negative coefficient indicating that the lesser the information asymmetry, the lower the cost of capital. This is consistent with theory predicting that reducing information asymmetry mitigates firm risk, which leads to decreased cost of capital. When we further investigate the type of financing information that contributes more to easing information asymmetry, we find that more disclosures of external funding sources consistently leads to significant reductions in cost of capital. According to the external fund source index, disclosing one additional source of external fund decreases the cost of capital by 3.8%. And, based on the external fund source indicator, firms disclosing any type of external fund can expect to have a 4.4% discount to the their cost of capital. The results show that qualitative disclosures do not uniformly reduce information asymmetry.

Some types of disclosures are perceived by the market to contain more pertinent information, and have greater effect on the cost of capital. A crucial implication is managers can influence their firm's cost of capital through careful structuring of information disclosure policies.

Next, we show that there is a strong incentive for firm managers to honestly disclose the firm's funding sources. Since disclosures of external funding sources naturally relates most to the firm's future capital-raising activity, we investigate how the cost of capital is affected for firms that do not ex-ante disclose their intention to raise external capital, but actually do so in the following year. We use three indicator variables to conduct this test. First, *NDRE* or "no disclosures, but raised external capital" takes a value of 1 if the external fund source index in year $t-1$ is zero, but the external finance variable is positive in year t, and 0 otherwise. The second indicator, *NDRS* or "no disclosures, but raised SEO" takes a value of 1 if the *equity* and *other_issuance* variable are both zero in year $t-1$, but the proceeds from SEOs are positive in year t. Finally, *NDRD* or "no disclosures, but raised debt capital" takes a value of 1 if the sum of the indicators *other_debt*, *bank_debt*, and *other_issuance* equals zero, but the net long term debt issuance is positive in year t.

Columns (4), (5), and (6) of Table 7 show the coefficient estimates on the indicator variables. All the coefficients are positive and significant, suggesting that firms that did not inform the market of their intention to raise external capital beforehand experience an increase in their subsequent cost of capital. The greatest increase is seen for firms that make no disclosures on their intention to raise equity capital, but subsequently proceed to conduct SEOs. Their cost of capital can increase by 6.6% in expectation, which is an economically-significant levy on the firm's financing cost. The evidence is clear that if managers deliberately withhold information on their financing plans, or even if they are honest, but deviate from the original plans, the market considers such firms to have greater information asymmetry problems, and compensates the higher informational risk with higher cost of capital.

Our results thus far, support our hypotheses that qualitative funding disclosures are credible because they are significantly associated with the firm's capital-raising activities. Moreover, the disclosures are business-relevant because they preemptively inform outsiders

on the firm's capital expenditures intent. The disclosures also serve to reduce information asymmetry, particularly disclosures of external funding sources, and lower the firm's cost of capital.

4.4. How Are Firm Risks Affected By Disclosures of Funding Sources?

A key source of information potential lenders and equity holders rely on to infer the future riskiness of a firm is the firm's disclosure of funding sources. This is especially important in a financial crisis during which external financing is constrained and firm risk becomes elevated from increased external funding uncertainty. It follows that firms that rely more on internally-generated funds should be able to mitigate their risk during a crisis while firms that rely more on external funds face greater risk. To test this prediction, we regress firm risk on the internal fund source index and external fund source index interacted with the *Crisis* dummy. Table 8 presents the results.

[Insert Table 8: Firm Risk During the Crisis]

As expected, firm risk measured by total, systematic, and unsystematic risks increase during the 2008–2009 financial crisis since this period saw severe market volatility especially when Lehman Brothers announced bankruptcy in September 2008 and the near-collapse of AIG later on. However, firms relying only on internal funds during the crisis can expect to reduce their total firm risk by an average of 3.4% as shown by the coefficient on the interaction term, $Crisis$ x $Internal\ fund\ index$, in column (2) while firms relying only on external funds during the crisis experience an average increase of 17.7% in total risk. It is also noteworthy that firms which have intended to rely on a mix of internal and external funds can expect to attenuate their total risk by weighting more on internal sources of funding. This evidence is consistent with the heightened difficulty of securing external capital during the crisis, which puts firms that require external funds at greater risk of not being able to meet obligations and objectives. When we dissect total risk into its systematic and unsystematic components, we find that a greater reliance on external funds increases both components of total risk, and reliance on internal funds reduces idiosyncratic risk.

Additionally, the results show that firms with more growth opportunities are riskier, which is consistent with the greater uncertainty faced by high growth firms since they tend to invest in more projects relative to low growth firms. Not surprisingly, the coefficient on firm performance measured as return on assets is negative and significant because more profitable firms should be less risky. As for firm size, larger firms have less total risk since these firms tend to have less difficulty in securing external capital for their needs and have greater stability in performance. Undoubtedly, larger firms have higher systematic risk as their stock returns are more correlated to market performance.

5. Conclusion

We develop a key improvement to extant textual analysis methodologies by explicitly considering the grammatical relationships among words such that the context of sentences are accounted for. This ensures accurate identification of information from qualitative disclosures. To our knowledge, we are the first to apply the Stanford CoreNLP computation linguistics technique to study the credibility and implications of disclosures of funding sources found in annual reports as required by SEC Regulation S-K.

Our results show that qualitative fund source disclosures contain pertinent information that transmit signals to outside investors regarding future firm behavior and characteristics. We further show that these disclosures can alleviate the information asymmetry problem and are significantly associated with the firm's cost of capital. Our study underscores the incontrovertible importance of the information contained in qualitative disclosures, which cannot be ignored if one's objective is to perform holistically complete analyses of firms. Finally, we set a new benchmark of utilizing grammatical NLP techniques to perform textual analyses.

References

Ajinkya, B. B., Gift, M. J., 1984. Corporate Managers' Earnings Forecasts and Symmetrical Adjustments of Market Expectations. Journal of Accounting Research 22 (2), 425–444.

Akerlof, G. A., 1970. The Market for "Lemons": Quality Unvertainty and the Market Mechanism. Quarterly Journal of Economics 84 (3), 488–500.

Almeida, H., Campello, M., 2010. Financing Frictions and the Substitution between Internal and External Funds. Journal of Financial and Quantitative Analysis 45 (03), 589–622.

Barry, C. B., Brown, S. J., 1984. Differential information and the small firm effect. Journal of Financial Economics 13 (2), 283–294.

Barry, C. B., Brown, S. J., 1985. Differential Information and Security Market Equilibrium. Journal of Financial and Quantitative Analysis 20 (4), 407–422.

Billett, M. T., King, T.-h. D., Mauer, D. C., 2007. Growth Opportunities and the Choice of Leverage , Debt Maturity , and Covenants. The Journal of Finance LXII (2), 697–730.

Duarte, J., Han, X., Harford, J., Young, L., 2008. Information asymmetry, information dissemination and the effect of regulation FD on the cost of capital. Journal of Financial Economics 87 (1), 24–44.

Easley, D., O'hara, M., 2004. Information and the Cost of Capital. The Journal of Finance 59 (4), 1553–1583.

Fama, E. F., Macbeth, J. D., 1973. Risk , Return , and Equilibrium : Empirical Tests. The Journal of Political Economy 81 (3), 607–636.

Holthausen, R. W., Watts, R. L., 2001. The relevance of the value-relevance literature for financial accounting standard setting. Journal of Accounting and Economics 31 (1-3), 3–75.

Jegadeesh, N., Wu, D., dec 2013. Word power: A new approach for content analysis. Journal of Financial Economics 110 (3), 712–729.

Loughran, T., McDonald, B., aug 2014. Measuring Readability in Financial Disclosures. The Journal of Finance LXIX (4), 1643–1671.

Merton, R. C., 1987. A Simple Model of Capital Market Equilibrium with Incomplete Information. The Journal of finance XLII (3), 483–510.

Myers, S. C., Majluf, N. S., jun 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13 (2), 187–221.

Tetlock, P. C., Saar-Tsechansky, M., Macskassy, S., 2008. More Than Words: Quantifying Language to Measure Firms ' Fundamentals. Journal of Finance LXIII (3), 1437–1467.

Venkatachalam, M., 1996. Value-relevance of banks' derivatives disclosures. Journal of Accounting and Economics 22, 327–355.

Waymire, G., 1984. Additional Evidence on the Information Content of Management Earnings Forecasts. Journal of Accounting Research 22 (2) (2), 703–718.

Waymire, G., 1986. Additional Evidence on the Accuracy of Analyst Forecasts Before and After Voluntary Management Earnings Forecasts. The Accounting Review 61 (1), 129–142.

Appendix: Variable Definitions

Fund Source Indices

Composite fund source index takes the sum of the indicator variables for the eight types of funding sources (cash on hand, cash flow from operations, bank debt, other debt, equity, other issuances, asset sale, and unspecified) and divided by 8.

External fund source index takes the sum of the indicator variables for four types of external funding sources (bank debt, other debt, equity, and other issuances) and divided by 4.

Internal fund source index takes the sum of the indicator variables for two types of internal funding sources (cash on hand and cash flow from operations) and divided by 2.

Dependent Variables

External financing is the sum of net equity issuance (Compustat items: *sstk* – *prstkc*) and net long term debt issuance (Compustat items: *dltis* – *dltr*) scaled by contemporaneous total assets (Compustat item: *at*).

Equity financing is the net equity issuance (Compustat items: *sstk* – *prstkc*) scaled by contemporaneous total assets (Compustat item: *at*).

Debt financing is the net long term debt issuance (Compustat items: *dltis* – *dltr*) scaled by contemporaneous total assets (Compustat item: *at*).

Total risk is the annualized volatility of daily excess stock returns. The daily excess stock return is the difference of daily stock return (CRSP item: *ret*) and the daily risk-free rate (*rf*) obtained from the Kenneth R. French Data Library available at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html. Volatility is the standard deviation of the daily excess stock returns. Annualized volatility is volatility multiplied by the square root of 252.

Unsystematic risk is the standard deviation of the residuals from regressing the daily excess stock returns on the Fama-French three factors (*mktrf*, *smb*, and *hml*) obtained from the Kenneth R. French Data Library.

Systematic risk is the square root of the difference of the square of ***Total risk*** and the square of ***Unsystematic risk***.

Investment is capital expenditures (Compustat item: *capx*) scaled by the beginning-of-period total assets (Compustat item: *at*).

Covenant index is the sum of the indicator variables for fifteen categories of covenant restrictions following Billett et al. (2007). The data is obtained from the Fixed Investment Securities Database (FISD).

Financing restrictions is the sum of the indicator variables for seven categories of covenant restrictions relevant to financing activities following Billett et al. (2007). The data is obtained from FISD.

Control Variables

Cash flow is the sum of income before extraordinary items (Compustat item: *ib*) and depreciation and amortization (Compustat item: *dp*) scaled by beginning-of-period total assets (Compustat item: *at*).

Q is the ratio of the market value of assets (Compustat items: *at – ceq – txdb + csho x prcc_f*) to the book value of assets (Compustat item: *at*).

Firm size is measured as the natural logarithm of the total assets (Compustat item: *at*).

Cash is the cash and short-term investments (Compustat item: *che*) scaled by contemporaneous total assets (Compustat item: *at*).

Inventory is the sum of total receivables (Compustat item: *rect*) and change in inventory (Compustat item: *invch*) scaled by contemporaneous total assets (Compustat item: *at*).

PPE is the net total property, plant, and equipment (Compustat item: *ppent*) scaled by contemporaneous total assets (Compustat item: *at*).

Leverage is the ratio of total debt (Compustat items: *dltt + dlc*) to total capital (Compustat items: *dltt + dlc + seq*).

ROA is the return on assets measured as income before extraordinary items (Compustat item: *ib*) over contemporaneous total assets (Compustat item: *at*).

Institutional ownership is the percentage of shares outstanding owned by institutions (*instown_perc*) obtained from the Thomson Reuters Institutional (13f) Holdings database.

Table 1: Categories of Funding Sources and Examples

The table shows the eight distinct types of funding sources and the associated examples of phrases identified from sentences parsed through the CoreNLP software. Our program then classifies the phrases into the funding source categories.

Funding Source Type	Example of Phrases
Cash on Hand	cash and cash equivalents cash reserves marketable securities short-term investments
Cash from Ops.	cash flow from operations cash generated from sales funds provided by operational activity internally generated funds operating cash flow
Bank Debt	bank credit facility bank overdraft agreement revolver/revolving credit facility
Other Debt	access to private/public debt markets issuance of debt (notes/bonds) stand by commitment term funding uncommitted facilities
Equity	access to private/public equity markets cash available through equity markets issuance of stock public stock offering sale of warrants
Other Issuance	issuance of debt or equity securities public offering sale of securities securitization
Asset Sale	property sales real estate assets sale of property/real estate

(continued)

Table 1—*Continued*

Funding Source Type	Example of Phrases
Unspecified	available liquidity capital/financial resources external sources of liquidity other financing arrangements

Table 2: Pearson Correlation Matrix of Types of Funding Sources

The table reports the Pearson correlation coefficients between the 8 distinct types of funding sources we have identified from textual analysis of the "Liquidity and Capital Resources" section of 10-K filings. The 8 types of funding sources are indicator variables each taking a value of 1 if the firm's funding disclosure indicates availability of that type of funding source, and 0 otherwise.

	Cash on Hand	Cash from Ops.	Bank Debt	Other Debt	Equity	Other Issuance	Asset Sale	Unspecified
Cash on Hand	1·000							
Cash from Ops.	−0·084	1·000						
Bank Debt	−0·022	0·042	1·000					
Other Debt	−0·090	0·254	−0·084	1·000				
Equity	−0·013	−0·054	−0·011	−0·032	1·000			
Other Issuance	−0·001	−0·006	0·002	0·024	−0·007	1·000		
Asset Sale	−0·006	0·020	−0·004	0·029	−0·003	−0·002	1·000	
Unspecified	−0·293	−0·162	−0·017	−0·023	0·014	0·024	0·000	1·000

Table 3: Distribution of Mean Fund Source Indices by Industry

We sort firms into two-digit SIC codes and compute the industry means of the composite fund source index, internal fund source index, and the external fund source index. The composite fund source index takes the sum of the indicator variables for the eight types of funding sources (cash on hand, cash flow from operations, bank debt, other debt, equity, other issuances, asset sale, and unspecified) and divided by 8. The internal fund source index takes the sum of the indicator variables for two types of internal funding sources (cash on hand and cash flow from operations) and divided by 2. The external fund source index takes the sum of the indicator variables for four types of external funding sources (bank debt, other debt, equity, and other issuances) and divided by 4.

SIC	Industry	Comp. Fund Index	Int. Fund Index	Ext. Fund Index
01	Agricultural production crops	0.297	0.531	0.203
02	Agriculture producting livestock and animal specialities	0.125	0.500	0.000
07	Agricultural services	0.388	0.900	0.200
08	Forestry	0.125	0.500	0.000
10	Metal mining	0.214	0.594	0.042
12	Coal mining	0.273	0.651	0.160
13	Oil and gas extraction	0.264	0.547	0.138
14	Mining and quarrying of nonmetallic minerals, except fuels	0.246	0.547	0.172
15	Building construction general contractors and operative builders	0.248	0.472	0.173
16	Heavy construction other than building construction contractors	0.318	0.726	0.179
17	Construction special trade contractors	0.272	0.538	0.190
20	Food and kindred products	0.290	0.589	0.163
21	Tobacco products	0.225	0.450	0.100
22	Textile mill products	0.235	0.492	0.159
23	Apparel and other finished products made from fabrics and similar materials	0.291	0.648	0.183
24	Lumber and wood products, except furniture	0.331	0.765	0.181
25	Furniture and fixtures	0.263	0.529	0.149
26	Paper and allied products	0.221	0.505	0.139
27	Printing, publishing, and allied industries	0.262	0.593	0.150
28	Chemicals and allied products	0.213	0.501	0.070
29	Petroleum refining and related industries	0.213	0.449	0.081
30	Rubber and miscellaneous plastics products	0.307	0.638	0.164
31	Leather and leather products	0.350	0.741	0.170
32	Stone, clay, glass, and concrete products	0.277	0.645	0.156

(continued)

Table 3—*Continued*

SIC	Industry	Comp. Fund Index	Int. Fund Index	Ext. Fund Index
33	Primary metal industries	0.249	0.549	0.140
34	Fabricated metal products, except machinery and transportation equipment	0.253	0.563	0.141
35	Industrial and commercial machinery and computer equipment	0.268	0.638	0.129
36	Electronic and other electrical equipment and components, except computer equipment	0.255	0.628	0.107
37	Transportation equipment	0.252	0.532	0.134
38	Measuring, analyzing, and controlling instruments	0.241	0.605	0.098
39	Miscellaneous manufacturing industries	0.282	0.721	0.155
40	Railroad transportation	0.183	0.442	0.000
41	Local suburban transit and interurban highway passenger transportation	0.337	0.885	0.192
42	Motor freight transportation and warehousing	0.218	0.313	0.150
44	Water transportation	0.257	0.563	0.144
45	Transportation by air	0.237	0.552	0.071
46	Pipelines, except natural gas	0.208	0.500	0.083
47	Transportation services	0.261	0.659	0.109
48	Communications	0.266	0.653	0.124
49	Electric, gas, and sanitary services	0.268	0.571	0.153
50	Wholesale trade-durable goods	0.288	0.539	0.169
51	Wholesale trade-non-durable goods	0.269	0.502	0.175
52	Building materials, hardware, garden supply, and mobile home dealers	0.242	0.467	0.130
53	Gerneral merchandise stores	0.277	0.560	0.177
54	Food stores	0.285	0.531	0.148
55	Automotive dealers and gasoline service stations	0.279	0.442	0.207
56	Apparel and accessory stores	0.277	0.682	0.162
57	Home furniture, furnishings, and equipment stores	0.277	0.626	0.148
58	Eating and drinking places	0.289	0.685	0.134
59	Miscellaneous retail	0.268	0.602	0.163
70	Hotels, rooming houses, camps, and oter lodging places	0.246	0.531	0.094
72	Personal services	0.270	0.636	0.149
73	Business services	0.243	0.682	0.087

(continued)

Table 3—*Continued*

SIC	Industry	Comp. Fund Index	Int. Fund Index	Ext. Fund Index
75	Automotive repair, services, and parking	0.228	0.397	0.112
76	Miscellaneous repair services	0.292	0.833	0.167
78	Motion pictures	0.251	0.560	0.155
79	Amusement and recreation services	0.317	0.739	0.165
80	Health services	0.280	0.574	0.160
81	Legal services	0.357	0.929	0.250
82	Educational services	0.293	0.663	0.169
83	Social services	0.220	0.488	0.107
87	Engineering, accounting, research, management, and related services	0.268	0.587	0.140
99	Nonclassifiable establishments	0.125	0.063	0.000

Table 4: Descriptive Statistics

This table presents descriptive statistics on 24,523 firm-year observations. Mean, Median, SD, Min., and Max. report the means, medians, standard deviations, minimum, and maximum of the variables, respectively. In Panel A, Composite Fund Source Index takes the sum of the indicator variables for the eight types of funding sources (cash on hand, cash flow from operations, bank debt, other debt, equity, other issuances, asset sale, and unspecified) and divided by 8. The Internal Fund Source Index takes the sum of the indicator variables of cash on hand and cash flow from operations and divided by 2. The External Fund Source Index takes the sum of the indicator variables of bank debt, other debt, equity, and other issuances and divided by 4. Panels B and C, show the statistics for the dependent and control variables used in our empirical tests, respectively. Detailed definitions of these variables are in Appendix A.

	Mean	Median	SD	Min.	Max.
Panel A: Fund Source Indices					
Comp. Fund Index	0·255	0·250	0·110	0·125	0·625
Int. Fund Index	0·604	0·500	0·329	0·000	1·000
Ext. Fund Index	0·119	0·000	0·130	0·000	0·500
Panel B: Dependent Variables					
External Finance	0·071	0·004	0·218	−0·274	1·012
SEO	0·023	0·000	0·103	0·000	0·695
Debt Finance	0·007	0·000	0·088	−0·261	0·388
Capex	0·059	0·036	0·069	0·000	0·403
R&D	0·075	0·015	0·125	0·000	0·699
Div. & Repurchases	0·031	0·002	0·062	0·000	0·356
Cost of Capital	0·006	0·033	0·588	−1·958	1·503
Total Risk	0·576	0·520	0·324	0·000	1·715
Systematic Risk	0·202	0·171	0·150	0·000	1·876
Unsystematic Risk	0·513	0·457	0·309	0·000	1·573
Panel C: Control Variables					
Cash Flow	0·042	0·084	0·207	−0·935	0·434
Q	2·276	1·621	1·938	0·587	12·241
Log Assets	5·716	5·601	1·731	2·140	10·192
Log Market Cap.	5·969	5·961	1·824	1·867	10·638
Cash	0·279	0·168	0·319	0·001	1·739
PP&E	0·224	0·153	0·211	0·005	0·888
Leverage	0·259	0·167	0·303	0·000	1·567
Inventory	0·270	0·244	0·189	0·000	0·785
Log Book-to-Market	−0·859	−0·784	0·890	−8·631	1·112
Liquidity	0·934	0·968	0·078	0·634	1·000
MKT Beta	2·494	2·463	1·458	−0·940	6·713
SMB Beta	2·111	1·965	1·957	−2·269	7·911
HML Beta	0·169	0·211	2·363	−7·257	6·880

Table 5: Predicting Financing Policy with Qualitative Funding Disclosures

The table reports estimation results from OLS panel regressions with fixed-effects examining the relationship between qualitative funding disclosures and capital-raising activities. In columns 1 and 2, the dependent variable is External Finance, which is the sum of net equity and long term debt issuances. In columns 3 and 4, the dependent variable is SEO, which is the proceeds from seasoned equity offerings scaled by total assets. In columns 5 and 6, the dependent variable is Debt Finance, which is the net long term debt issuances. The fund source indices and indicator variables are all lagged by one year. Cash Flow, Q, and Log Assets are measured contemporaneously, while Inventory, PP&E, and Leverage are lagged by one year. Definitions of these variables are detailed in Appendix A. All specifications include firm and year fixed-effects. Standard errors are clustered by firm. t-statistics are reported in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

	External Finance		SEO		Debt Finance	
	(1)	(2)	(3)	(4)	(5)	(6)
Int. Fund Index	−0·00578		−0·00321		−0·00161	
	(−0·802)		(−0·808)		(−0·370)	
Ext. Fund Index	0·0445***		0·0275***		0·0169*	
	(2·876)		(2·616)		(1·693)	
Int. Fund Indicator		−0·00861		0·00123		0·00134
		(−0·926)		(0·241)		(0·233)
Ext. Fund Indicator		0·0117***		0·00767***		0·00498*
		(2·696)		(2·615)		(1·828)
Unspec. Indicator		−0·00418		0·00599		0·00412
		(−0·321)		(0·810)		(0·571)
Cash Flow	−0·272***	−0·272***	−0·0502***	−0·0503***	−0·0226***	−0·0227***
	(−13·81)	(−13·82)	(−4·578)	(−4·585)	(−2·785)	(−2·792)
Q	0·0178***	0·0178***	0·00853***	0·00853***	−0·00103	−0·00103
	(10·75)	(10·73)	(7·208)	(7·190)	(−1·478)	(−1·476)
Log Assets	0·0486***	0·0485***	0·0118***	0·0117***	0·0281***	0·0281***
	(12·85)	(12·83)	(5·251)	(5·241)	(12·57)	(12·55)
Inventory	0·313***	0·313***	0·0731***	0·0731***	0·0986***	0·0985***
	(13·49)	(13·48)	(5·448)	(5·440)	(8·201)	(8·198)
PP&E	0·197***	0·197***	0·00469	0·00444	0·0742***	0·0740***
	(7·760)	(7·733)	(0·308)	(0·291)	(4·712)	(4·695)
Leverage	−0·0692***	−0·0690***	0·0242***	0·0243***	−0·133***	−0·133***
	(−6·190)	(−6·177)	(4·022)	(4·034)	(−15·61)	(−15·62)
No. of Obs.	17,700	17,700	17,700	17,700	17,700	17,700
No. of Firms	3,494	3,494	3,494	3,494	3,494	3,494
Adj. R^2	0.142	0.142	0.032	0.032	0.115	0.115

Table 6: Qualitative Funding Disclosures as Determinants of Investment Activity

The table reports estimation results from OLS panel regressions with fixed-effects examining the relationship between qualitative funding disclosures and investment activities. In columns 1, 2 and 3, the dependent variable is Capex, which is the capital expenditures scaled by total assets. In columns 4, 5, and 6, the dependent variable is R&D, which is the research and development expenditures scaled by total assets. In columns 7, 8, and 9, the dependent variable is Div. & Repurchases, which is the sum of cash dividends and stock repurchases scaled by total assets. The fund source indicies and indicator variables are all lagged by one year. Cash Flow is measured contemporaneously while Q, Cash, Log Assets, Leverage, and PP&E are all lagged by one year. Definitions of these variables are detailed in Appendix A. All specifications include firm and year fixed-effects. Standard errors are clustered by firm. t-statistics are reported in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

	Capex			R&D			Div. & Repurchases		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Comp. Fund	0·0326***			0·0222**			−0·00856		
Index	(3.824)			(2·163)			(−0·862)		
Int. Fund		0·00527*			0·00165			−0·00292	
Index		(1·661)			(0·413)			(−0·717)	
Ext. Fund		0·0161**			0·0151**			−0·0112	
Index		(2·299)			(1·988)			(−1·452)	
Int. Fund			−0·00129			−0·000318			−0·00124
Indicator			(−0·302)			(−0·0947)			(−0·235)
Ext. Fund			0·00481**			0·00494**			−0·00287
Indicator			(2·487)			(2·284)			(−1·338)
Unspec.			−0·00222			0·00425			0·00282
Indicator			(−0·425)			(0·662)			(0·459)
Cash Flow	0·0230***	0·0231***	0·0232***	−0·115***	−0·115***	−0·115***	0·0184***	0·0184***	0·0183***
	(4·468)	(4·477)	(4·496)	(−9·897)	(−9·890)	(−9·900)	(3·253)	(3·249)	(3·240)
Q	0·00619***	0·00621***	0·00622***	0·0102***	0·0102***	0·0102***	0·00238***	0·00240***	0·00242***
	(11·33)	(11·33)	(11·34)	(9·122)	(9·130)	(9·126)	(3·231)	(3·265)	(3·287)

(continued)

Table 6—*Continued*

	Capex			R&D			Div. & Repurchases		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Cash	0·00361	0·00353	0·00352	−0·0270***	−0·0270***	−0·0270***	0·000994	0·000974	0·000993
	(1·382)	(1·347)	(1·343)	(−5·271)	(−5·266)	(−5·257)	(0·284)	(0·278)	(0·283)
Log Assets	−0·0127***	−0·0127***	−0·0125***	−0·0391***	−0·0390***	−0·0389***	0·00617***	0·00622***	0·00618***
	(−8·410)	(−8·314)	(−8·208)	(−11·46)	(−11·44)	(−11·47)	(3·515)	(3·540)	(3·511)
Leverage	−0·0280***	−0·0280***	−0·0281***	−0·00886	−0·00890	−0·00890	−0·0344***	−0·0345***	−0·0344***
	(−8·197)	(−8·175)	(−8·201)	(−1·425)	(−1·435)	(−1·431)	(−7·535)	(−7·528)	(−7·521)
PP&E	0·0431***	0·0433***	0·0429***	0·0615***	0·0614***	0·0610***	−0·0296**	−0·0292**	−0·0290**
	(2·676)	(2·694)	(2·670)	(4·016)	(4·002)	(3·983)	(−2·321)	(−2·285)	(−2·270)
No. of Obs.	13,259	13,259	13,259	13,259	13,259	13,259	13,259	13,259	13,259
No. of Firms	2,761	2,761	2,761	2,761	2,761	2,761	2,761	2,761	2,761
Adj. R^2	0.149	0.148	0.148	0.260	0.260	0.260	0.060	0.060	0.060

Table 7: How the Level of Information Asymmetry affects the Cost of Capital

The table reports estimation results from Fama and MacBeth regressions examining how the level of information asymmetry measured by the amount and type of qualitative disclosures influence the cost of capital. The dependent variable is Cost of Capital, which is measured as the annualized daily excess stock return. The fund souce indices and indicator variables are all lagged by one year. NDRE is an indicator variable that takes a value of 1 if External Fund Source Index for a firm-year observation in year t-1 is zero, but External Finance is positive in year t, and 0 otherwise. NDRS is an indicator variable that takes a value of 1 if fund source indicators *equity* and *other_issuance* are both zero in year t-1, but SEO is positive in year t, and 0 otherwise. NDRD is an indicator variable that takes a value of 1 if fund source indicators *other_debt*, *bank_debt*, and *other_issuance* sum to zero in year t-1, but Debt Finance is positive in year t. All other variables are defined in Appendix A. t-statistics are reported in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

	Cost of Capital					
	(1)	(2)	(3)	(4)	(5)	(6)
Comp. Fund	−0·162***					
Index	(−4·354)					
Int. Fund		−0·00896				
Index		(−0·647)				
Ext. Fund		−0·150***				
Index		(−3·609)				
Int. Fund			−0·0326*			
Indicator			(−1·896)			
Ext. Fund			−0·0435***			
Indicator			(−3·710)			
Unspec.			0·0194			
Indicator			(0·648)			
NDRE				0·0200*		
				(1·971)		
NDRS					0·0656*	
					(2·113)	
NDRD						0·0227**
						(2·224)

(continued)

Table 7—*Continued*

	Cost of Capital					
	(1)	(2)	(3)	(4)	(5)	(6)
Log Market Cap.	0·0399∗∗	0·0400∗∗	0·0398∗∗	0·0441∗∗∗	0·0442∗∗∗	0·0447∗∗∗
	(2·853)	(2·857)	(2·879)	(3·311)	(3·344)	(3·338)
Log Book-to-Market	−0·160∗∗∗	−0·161∗∗∗	−0·162∗∗∗	−0·154∗∗∗	−0·153∗∗∗	−0·154∗∗∗
	(−8·666)	(−8·705)	(−8·646)	(−8·159)	(−7·919)	(−8·052)
Liquidity	−0·0572	−0·0768	−0·0791	−0·00110	−0·00279	0·000776
	(−0·211)	(−0·294)	(−0·308)	(−0·00457)	(−0·0114)	(0·00321)
MKT Beta	−0·0372∗	−0·0369∗	−0·0363	−0·0387∗	−0·0403∗	−0·0390∗
	(−1·789)	(−1·768)	(−1·749)	(−1·917)	(−1·975)	(−1·934)
SMB Beta	−0·00222	−0·00230	−0·00235	−0·00197	−0·00254	−0·00221
	(−0·245)	(−0·254)	(−0·259)	(−0·239)	(−0·307)	(−0·269)
HML Beta	0·0207	0·0202	0·0200	0·0212∗	0·0223∗	0·0217∗
	(1·748)	(1·722)	(1·707)	(1·876)	(1·940)	(1·914)
No. of Obs.	15,101	15,101	15,101	18,974	18,974	18,974
R^2	0.197	0.199	0.200	0.190	0.189	0.189

Table 8: What do the Qualitative Funding Disclosures Indicate about Firm Risks

The table reports estimation results from OLS panel regressions with fixed-effects examining the relationship between qualitative funding disclosures and measures of firm risk. In columns 1 and 2, the dependent variable is Total Risk, which is the annualized volatility of daily excess stock returns. In columns 3 and 4, the dependent variable is Systematic Risk, which is $\sqrt{(Total\ Risk)^2 - (Unsystematic\ Risk)^2}$. In columns 5 and 6, the dependent variable is Unsystematic Risk, which is the annualized standard deviation of the residuals from OLS regressions of the daily excess stock returns using the Fama and French three-factor model. The fund source indices and indicator variables are all lagged by one year. Crisis is an indicator variable that takes a value of 1 if the firm-year observation is in year 2008 or 2009, and 0 otherwise. Definitions of other variables are detailed in Appendix A. All specifications include firm fixed-effects only. Standard errors are clustered by firm. t-statistics are reported in parentheses. Coefficients marked with ***, **, and * are significant at the 1%, 5%, and 10% level, respectively.

	Total Risk		Systematic Risk		Unsystematic Risk	
	(1)	(2)	(3)	(4)	(5)	(6)
Int. Fund	−0·0463***		−0·00599		−0·0515***	
Index	(−2·964)		(−0·936)		(−3·633)	
Ext. Fund	0·0886**		0·0277*		0·0754**	
Index	(2·481)		(1·862)		(2·315)	
Crisis ×	−0·0336		−0·00457		−0·0159	
Int. Fund Index	(−1·632)		(−0·381)		(−0·869)	
Crisis ×	0·177***		0·0984***		0·143***	
Ext. Fund Index	(3·358)		(3·410)		(3·028)	
Crisis	0·224***	0·206***	0·152***	0·130***	0·161***	0·160***
	(13·65)	(5·473)	(16·47)	(5·082)	(11·04)	(4·844)
Int. Fund		−0·00499		−0·0136*		−0·0117
Indicator		(−0·251)		(−1·707)		(−0·606)
Ext. Fund		0·0232**		0·00599		0·0188**
Indicator		(2·407)		(1·481)		(2·150)
Unspec.		0·0373		−0·0100		0·0341
Indicator		(1·329)		(−0·903)		(1·309)
Crisis ×		−0·0121		0·0135		−0·0124
Int. Fund Indicator		(−0·333)		(0·537)		(−0·389)
Crisis ×		0·0521***		0·0314***		0·0391***
Ext. Fund Indicator		(3·651)		(4·044)		(3·024)
Crisis ×		0·0511		0·0515*		0·0135
Unspec. Indicator		(1·125)		(1·780)		(0·341)
Q	0·0252***	0·0253***	0·0210***	0·0210***	0·0118***	0·0119***
	(10·49)	(10·53)	(19·78)	(19·79)	(5·633)	(5·678)
ROA	−0·201***	−0·201***	−0·0468***	−0·0465***	−0·205***	−0·206***
	(−8·713)	(−8·778)	(−5·436)	(−5·396)	(−10·02)	(−10·10)
Log Assets	−0·0666***	−0·0680***	0·0240***	0·0238***	−0·0736***	−0·0752***
	(−11·33)	(−11·64)	(8·972)	(8·998)	(−13·91)	(−14·30)
No. of Obs.	17,908	17,908	17,908	17,908	17,908	17,908
No. of Firms	3,524	3,524	3,524	3,524	3,524	3,524
Adj. R^2	0.148	0.147	0.264	0.265	0.139	0.138