Number of Numbers: Does Quantitative Disclosure Reduce Information Risk?

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Abstract:

Theoretical research argues that numbers convey more precise information than words. Based on this work, we hypothesize that when managers provide disclosure with a greater proportion of quantitative information, information risk will decrease and firm value will increase. We offer three main findings. First, after controlling for the cash flow news in earnings conference calls, we find a positive association between the extent of hard information (i.e., numerical disclosure) and short-window stock returns around the call. This result suggests that information risk decreases when managers provide greater numerical disclosure. Second, we find that this positive association is larger when firms' information environment is otherwise poor. Finally, we find that this positive association is larger when uncertainty about firm performance is higher (i.e., when the firm issues a negative earnings surprise). Overall, our results suggest that investors react to the extent of hard information (i.e., numerical disclosure) in earnings conference calls.

Keywords: Quantitative Disclosure; Numerical Information; Earnings Conference Calls; Voluntary Disclosure; Textual Analysis.

JEL codes: G14; G12; M41; G10.

1. INTRODUCTION

A large body of accounting research investigates firms' disclosure practices, as disclosure is the primary avenue through which corporations communicate information to shareholders and regulators (e.g., Lang and Lundholm 1993; Healy and Palepu 2001; Beyer, Cohen, Lys, and Walther 2010). Recently, a stream of disclosure research uses textual analysis to study the informativeness of disclosure (e.g., Li 2008; Loughran and McDonald 2014, 2016). This research mainly focuses on two important attributes of textual disclosure: tone and readability. We expand this analysis to consider an additional important and theoretically motivated disclosure attribute: the extent to which it includes quantitative information.

We investigate whether disclosure with a greater proportion of quantitative information reduces a firm's information risk (i.e., makes it easier for investors to assess the covariance between the firm's expected future cash flows and the market's expected future cash flows) and thus reduces the cost of capital and increases firm value.[1] Specifically, we examine three research questions. First, is the extent of hard information (i.e., numerical disclosure) in earnings conference calls positively associated with short-window stock returns around the call? Second, is this association greater when a firm's information environment is otherwise poor (i.e., firms that are smaller, younger, with lower institutional ownership, higher stock volatility, and higher analyst forecast dispersion)? Finally, is this association greater when uncertainty about firm performance increases (i.e., when the firm has a negative earnings surprise)?

Theoretical research suggests that numerical disclosure conveys hard and more precise information; whereas words convey soft and vague information (Liberti and Petersen 2017). That

[1] It is important to distinguish between fundamental risk (i.e., investors' estimates of the *level* of risk parameters in the distribution function of future cash flows) and information risk (i.e., the *uncertainty* – or weighted average precision – around investors' estimates of the level of risk parameters in the distribution function of future cash flows). While the association between disclosure and investors' assessments of fundamental risk depends on the sign of disclosure news, higher quality and precise disclosure should uniformly be associated with reduced information risk (Lambert, Leuz, and Verrecchia 2007; Campbell et al. 2014).

is, “hard information is almost always recorded as numbers,” and “soft information is often communicated in text” (Liberti and Petersen 2017, p.g. 7-8). Additionally, hard information has little ambiguity in its interpretation and can be easily verified and compared. In contrast, soft information can be difficult to verify and compare. The interpretation of soft information depends on users’ own assessments. Following the theory by Liberti and Petersen (2017), we expect that textual disclosures with more quantitative information convey more precise and transparent information in comparison to textual disclosures with more qualitative information. Therefore, we expect that, after controlling for cash flow news related to current and future earnings, disclosure with a greater proportion of quantitative information will be associated with a reduction in information risk and an increase in firm value.

However, a greater proportion of quantitative information may not reduce information risk for at least three reasons. First, investors may simply not pay attention to the nuanced textual disclosure provided by managers, or may face limitations in their ability to process them (Li 2010b; Lee 2012). Second, investors may recognize the strategic nature of managers’ descriptions of performance and choose not to rely on them, but instead perceive third-party descriptions from analysts and the business press as more credible (Kothari, Li, and Short 2009; Kimbrough and Wang 2014). If so, we would only find a reduction in information risk when analysts and business press are available. Finally, even if investors rely on the manager’s disclosures, managers might strategically decide to provide quantitative information to reduce information risk only when it benefits them (i.e., when earnings are significantly poor and they are not to blame).[2] If so, we

[2] Quantitative disclosure in earnings conference calls consists of: (1) how certain managers are about the information being disclosed, and (2) how forthcoming they wish to be with such information. We focus the bulk of our tests on explanations of *historical* performance where there is no uncertainty about the information being disclosed.

would only find a reduction in information risk in this limited instance, and again only if investors believe their attributions for the poor performance.

Before testing our hypotheses, we examine the determinants of quantitative disclosure using pairwise correlations. We find that the quantitative portion of a firm's disclosure is positively correlated across time at 0.589, suggesting that while there is some stickiness to firms' quantitative disclosure, there is also some time-series variation within firms. We also find that the proportion of quantitative disclosure is negatively associated with measures that capture the richness of a firm's information environment (i.e., institutional ownership levels and analyst following), consistent with quantitative disclosure being more prevalent when the information environment is otherwise poor. Finally, we find that the proportion of quantitative disclosure is positively associated with measures that capture firm profitability (i.e., earnings surprises and return on assets), suggesting that firms provide more quantitative disclosure when firm performance is good.

We then examine short-window returns around earnings conference calls to investigate the capital market consequences associated with numerical disclosure. We measure numerical disclosure as the total number of numbers relative to the total number of numbers and words in a conference call transcript. We focus on earnings conference calls because they are one of the first disclosures released by firms, so they draw significant investor attention. SEC reporting companies usually hold earnings conference calls within a few hours or even minutes after releasing earnings. Companies will subsequently file mandatory disclosures, such as 10-Qs or 10-Ks, usually within a few weeks, subject to regulatory requirements. Earnings conference calls, therefore, provide a powerful setting for us to examine investor reactions to quantitative disclosure. Our final sample consists of 65,051 unique earnings conference calls from 2002 to 2012 at the firm-quarter level.

We predict that conference calls with more quantitative information will reduce firms' information risk and cost of capital, and thus increase firm value. We, therefore, expect that, *ceteris paribus*, earnings conference calls with more quantitative information will experience more positive short-window stock returns. Consistent with our expectations, we find that after controlling for current earnings news, disclosures with relatively more quantitative information are associated with higher positive cumulative abnormal returns 3-days around the conference calls. Specifically, a one standard deviation increase in the percentage of numbers is associated with an increase of 23 basis points of cumulative 3-days abnormal return. These results suggest that, on average, numerical disclosure reduces information risk and increases firm value.

We next investigate circumstances under which the effects of numerical disclosure should be more prominent. Existing research suggests that investors demand additional and more precise information when firms have a poor information environment (e.g., Botosan 1997), and there are fewer alternatives through which to get information (i.e., fewer analysts and less business press coverage). We, therefore, hypothesize that the association between the extent of hard information (i.e., numerical disclosure) in earnings conference calls and short-window stock returns is the strongest for firms with poor information environments (i.e., where ex-ante information risk is greatest). We find a positive and significant correlation between the proportion of quantitative information and 3-day cumulative abnormal returns around earnings conference calls for firms with larger stock volatility compared to those with lower stock volatility. Because there are multiple measures for the information environment, we further partition the results of numerical disclosure on short-term capital market reactions using six additional proxies for a firm's information environment: firm size, bid-ask-spread, firm age, cash flow volatility, institutional holdings, and analyst dispersion. Results are largely consistent with our finding that the effect of numerical disclosure on reducing information risk is strongest among firms with relatively weaker information environments. These results suggest that the effect of numerical disclosure in reducing information is greater when the firm's information environment is otherwise more uncertain and therefore investors must rely more heavily on manager disclosure.

Finally, we investigate whether the effects of numerical disclosure vary with the sign of the concurrent earnings news. Prior research suggests that managers delay the disclosure of bad news, so a negative earnings surprise is a less common event and is likely to invoke more uncertainty about long-run firm value (relative to a positive earnings surprise). We predict that numerical disclosure can reduce the information risk induced by a negative earnings surprise, as it is precise, comparable, and easier-to-verify information (Liberti and Petersen 2017). Consistent with our predictions, we find a positive and significant correlation between disclosures with more quantitative information and 3-day abnormal returns around earnings conference calls for firms in the lowest forecast error decile (i.e., the most negative earnings news). This correlation does not exist for firms in the highest forecast error decile (i.e., the most positive earnings news). These results suggest that the effect of numerical disclosure in reducing information risk is greater when the uncertainty around a firm value is greater.

In our main tests, we use short-window stock returns around managers' disclosure to proxy for changes in investors' assessments of a firm's information risk. In additional analyses, we find that our results hold using several alternative measures for information risk; namely, firms' implied volatility, implied cost of equity capital, and effective percentage bid-ask spread. These findings further support the notion that higher amounts of quantitative information reduce information risk and thus increase firm value.

When examining which portions of disclosure drive our main results, we find no evidence that our results concentrate in any particular portion (i.e., scripted statement vs. Q&A disclosure; forward looking vs. non-forward looking disclosure). We further find that our results are robust after controlling for numerical information in management earnings forecasts, as well as when examining the subset of firms that do not issue forecasts at all. These findings mitigate the likelihood that management forecast news (and its quantitative nature) drive our results. Finally, our results are robust to firm fixed effects, suggesting that our results cannot be explained by time-invariant correlated omitted variables.

Our study makes several contributions. First, we contribute to the literature that examines how investors use accounting information. Initially, researchers focused on the informativeness of summary accounting outputs such as earnings or cash flows (e.g., Ball and Brown 1968; Dechow 1994; Sloan 1996). More recently, technology has allowed researchers to expand this analysis to firms' textual disclosures that are made in the 10-K and in conference calls (for a relatively recent literature review, see Loughran and McDonald 2014, 2016). Most of the work in this area focuses on two key attributes of textual disclosure: (1) tone (i.e., Kothari, Li, and Short 2009; Campbell, Chen, Dhaliwal, Steele, and Lu 2014; Bonsall and Miller 2017; Campbell, Lee, Lu, and Steele 2020), and (2) readability (i.e., Asay, Elliott, and Rennekamp 2016; Li 2008, 2010; Miller 2010; Merkley 2014; Bonsall, Leone, Miller, and Rennekamp 2017; Jiang, Lee, Martin, and Zhou 2018). We extend this research to focus on an important and theoretically motivated disclosure attribute: the extent to which it includes quantitative information. Dyer, Lang, and Lorien-Stice (2017) and Blankespoor (2019) provide early evidence on the *determinants* of quantitative disclosure in mandatory disclosures. Dyer et al. (2017) document a general decrease in quantitative disclosure since 1996, while Blankespoor (2019) finds it significantly increases after XBRL regulation. We stand apart as one of the first studies to examine the *consequences* of quantitative information, and find that information risk is lower when managers provide a greater proportion of quantitative textual disclosure.[3]

Second, we contribute to voluntary disclosure research. Most of the research that examines *quantitative* voluntary disclosure is limited to forward looking information in management forecasts of earnings (for a literature review, see Beyer et al. 2010). Related to the quantitativeness of disclosure, Bozanic, Roulstone and Van Buskirk (2017) examine quantitative and non-quantitative forward-looking statements in earnings announcements in 8-Ks, and find that managers issue more non-quantitative forward-looking statements when uncertainty is high. In contrast, we focus on investor reactions to voluntary disclosure about performance that has already occurred – being able to capture how quantitative the manager volunteers to be with information that has no uncertainty as to its outcome. We find that in cases where managers are more quantitative in their descriptions, capital market outcomes improve.

Finally, the findings in our study could be informative to policy makers and practitioners. The SEC recently conducted a comprehensive review of regulation to reduce excessive and redundant disclosure (SEC 2013), which discussed reporting requirements for quantitative versus qualitative disclosure. In addition, the Financial Accounting Standards Board (FASB) has an ongoing project, the Disclosure Framework, with the purpose to improve disclosure effectiveness (FASB 2012). It specifies that quantitative disclosure is as important as qualitative disclosure, and

[3] A contemporaneous working paper by Allee, Do, and Do (2021) examines the consequences of excessively quantitative disclosure (i.e., extremely high quantitative disclosure without sufficient accompanying qualitative disclosure for context). Similar to our study, they find that a consequence of this disclosure is higher short-window stock returns. However, they find that the initial stock returns associated with these extremely quantitative disclosures eventually reverse over the following 60 days. We find no such reversal in our study. We view our study and Allee et al. (2021) as complementary. That is, we establish that on average quantitative disclosure reduces investors' assessments of firm risk. Allee et al. (2021) establish that, in extreme settings where disclosure is quantitative without sufficient verbal context, this investor reaction is unwarranted and results in return reversal. Collectively, we establish the importance of studying the consequences of numerical disclosure.

stresses the importance of reporting of both quantitative and qualitative information (FASB 2015). Consistent with the intent of these regulatory reforms, our study demonstrates that, on average, quantitative disclosure improves capital market efficiency.

2. PRIOR RESEARCH AND HYPOTHESES DEVELOPMENT

Accounting researchers have vested interests in disclosures because corporations communicate information with shareholders and regulators using various forms of disclosure (e.g., Core 2001; Healy and Palepu 2001; Beyer et al. 2010). Recently, a stream of disclosure literature uses textual analysis to study the informativeness of disclosure text (e.g., Li 2008; Loughran and McDonald 2014, 2016). Most of this research seeks to understand the impact of the readability of disclosures on investors and firms (e.g., Allee and DeAngelis 2015; Bonsall and Miller 2017; Li 2008, 2010; Kothari, Li, and Short 2009; Miller 2010; Campbell et al. 2014; Merkley 2014; Bonsall et al. 2017; Campbell et al. 2020). As the first paper linking readability and firm performance, Li (2008) finds that firm with lower earnings tend to have harder-to-read financial reports (i.e., high Fog index and high word counts). Building on that, a stream of literature uses disclosure tone to examine sentiment conveyed in textual disclosure. Loughran and McDonald (2011) develop six comprehensive word lists specifically to measure tone in financial reports.

Beyond the focus on readability and tone, only two papers document changes in the extent of numerical disclosure in *mandatory* disclosures over time. Blankespoor (2019) documents that quantitative footnote disclosure in 10-K filings increases after the introduction of XBRL, consistent with firms providing more quantitative information when users' processing costs decrease. Dyer et al. (2017) document that the proportion of numbers to words in 10-Ks has decreased between 1996 and 2012. Such decrease in quantitative information is accompanied by increases in length, boilerplate, stickiness, and redundancy, and decreases in specificity and readability in 10-K disclosures. Neither Blankespoor (2019) and Dyer et al. (2017) examine the capital market effects of numerical disclosure, although both studies assume that numerical disclosure is a nuanced dimension of textual disclosure.

Recent studies suggest that the extent of numeric information relative to total information in textual disclosures plays an important role in the information dissemination process as numbers and words convey information differently. Liberti and Petersen (2017) theorize that numeric information is more precise and transparent than textual information, whereas textual information is more ambiguous and harder to verify in comparison to numeric information. According to Liberti and Petersen (2017, p.g. 7-8), "hard information is almost always recorded as numbers," and "soft information is often communicated in text." Following this theory, Xiao and Zang (2018) examine how soft information (measured by the tone in analyst reports) affects the hard information (measured by analyst forecast error and forecast revision) in analyst outputs. They find that analysts exhibit a conservative bias in that analysts' hard outputs undershoot their soft information. Bozanic et al. (2017) investigate quantitative versus non-quantitative forward-looking statements in earnings announcements in 8-Ks. They find that firms issue more non-quantitative forward-looking when uncertainty is high. Contrary to their focus on uncertain information, we study investor reactions to firm disclosure of past performance that has little to no uncertainty (as it has already occurred).

Because hard information (i.e., numerical information) is more precise than soft information (i.e., textual information), investors may perceive voluntary disclosures with more quantitative information to be more transparent. The increased transparency in voluntary disclosures can reduce information risk and cost of capital. The dividend discount model argues that – holding constant expectations about a firm's future cash flows – if cost of capital declines then a firm's stock price will increase. Therefore, we expect more positive stock reactions around earnings conference calls for conference call transcripts with more numerical disclosure.

However, a greater proportion of quantitative information may not reduce information risk for at least three reasons. First, investors may simply not pay attention to the nuanced textual disclosure provided by managers or have an inability to process these disclosure (Li 2010a, 2010b; Lee 2012). Second, investors may recognize the strategic nature of managers' descriptions of performance and choose not to rely on them, but instead perceive third-party descriptions from analysts and the business press as more credible (Kothari, Li, and Short 2009; Kimbrough and Wang 2014). If so, we would only find a reduction in information risk when analysts and business press are not available. Finally, even if investors rely on the manager's disclosures, managers might strategically decide to provide quantitative information to reduce information risk only when it benefits them (i.e., when earnings are significantly poor and they are not to blame).[4] If so, we would only find a reduction in information risk in this limited instance, and again only if investors believe their attributions for the poor performance.

Ultimately, whether there is an association between the proportion of quantitative disclosure around firm performance and short-window stock returns around the disclosure is an empirical question. We state our first prediction in the alternative form:

> ***H1: The extent of hard information (i.e., numerical disclosure) in earnings conference calls is positively associated with short-window stock returns around the call.***

[4] Prior research suggests that managers strategically use conference call disclosure to shape investor perceptions of firm performance. For instance, Larcker and Zakolykina (2012) classifies deceptive conference calls as those that are associated with subsequent financial restatements. Furthermore, papers have shown that managers alter their tone (Huang, Teoh, and Zhang 2014) or the type and order of analysts they call on (Cohen, Lou and Malloy 2020), all in an effort to shape investors' perceptions about firm performance. These studies also generally find that deceptive disclosures are followed by negative stock returns (i.e., a reversal), suggesting that investors do not fully "see through" the strategic disclosure. In Section 4.6, we test whether there is a reversal of the predicted positive short-window returns. We find no such evidence. In fact, we find a significant positive drift (untabulated), suggesting that the improvements in uncertainty are relatively persistent.

Ample theoretical and empirical evidence in the accounting literature shows that additional disclosures can reduce information asymmetry and cost of capital (e.g., Kim and Verrechia 1994; Botosan 1997; Piotroski 2000). Such effects are more prominent for firms with poorer information environments. For example, Botosan (1997) finds a negative correlation between cost of capital and the extent of voluntary disclosures, but *only* for firms with low analyst following. Because numerical disclosure conveys more precise information, we predict that for firms with poorer information environments, relatively more quantitative information will have a greater impact on reducing firms' information risk and cost of capital. Therefore, we anticipate the effect of H1 (short-window stock returns) to be the strongest among firms with poor information environments. Specifically, we predict that:

> ***H2 (information environment): The association between the extent of hard information (i.e., numerical disclosure) in earnings conference calls and short-window stock returns is stronger when the information environment is poor.***

Managers and shareholders sometimes have different disclosure preferences (Jensen and Meckling 1976; Matsumoto 2002). This agency problem arises from information asymmetry and managers' private incentives. Managers usually possess more and often superior private information and can be incentivized to withhold those information (Healy and Palepu 2001; Verrechia 2001; Beyer et al. 2010). Consistent with the agency theory, Baginski, Campbell, Hinson, and Koo (2018) empirically show that, on average, career concerns (i.e., concerns over a manager's current and future compensation) lead management to delay the disclosure of bad news. Therefore, as a matter of empirical fact, negative earnings surprises are less common, and should therefore result in increased information risk about firm value.

Because quantitative disclosure is precise, comparable, and easier-to-verify information (Liberti and Petersen 2017), we predict that its role in decreasing information risk will be greater when accompanied by a negative earnings surprise. Consequently, we expect that – after controlling for the magnitude of the negative earnings surprise – higher levels of quantitative disclosure will increase short-window stock returns. This leads to our final hypothesis:

> ***H3: The association between the extent of hard information (i.e., numerical disclosure) in earnings conferences and short-window stock returns is stronger when there is a negative earnings surprise.***

3. RESEARCH DESIGN AND RESULTS

3.1 Setting and Sample Selection

SEC reporting companies report their quarterly performance in a series of disclosures. At the end of a fiscal quarter, most reporting companies voluntarily release their earnings information via earnings announcements to respond to investors' demand for information. Immediately after this earnings release (usually within a few hours) companies hold earnings conference calls. Corporate managers use conference calls to voluntarily provide commentary on the most recent quarterly earnings results and their implications for future performance. In a typical conference call, managers usually begin the call by reading a safe harbor statement and discussing some important results in the earnings release. Then they will hold a question-and-answer (Q&A) session that is open to analysts, investors, and other call participants.

As previously discussed, we focus on earnings conference calls because they are one of the first disclosures released after the end of each quarterly reporting period, and therefore they draw significant investor attention. Furthermore, these disclosures are less constrained by regulatory reporting requirements so they more directly focus on managers' interpretations about current performance. Thus, earnings conference calls provide a powerful setting in which to examine investor reaction to quantitative disclosure.

We obtain conference call transcripts from Thomson One's StreetEvent and FactSet's CallStreet. We report our sample selection procedure in Table 1. We begin with 90,049 quarterly earnings conference call transcripts from 2002 to 2012. We delete the 89 duplicative transcripts and then hand-match the remaining transcripts to CRSP and Compustat. We remove the 23,576 observations that have missing CRSP and Compustat information. Additionally, we require the stock price to be at least $5, and remove 430 firms whose stocks were traded for less than $5. Lastly, we delete 886 conference call transcripts that cannot be separated into the statement and Q&A sections.[5] Our selection criteria generate a final sample of 65,068 at the firm-quarter level.

In Panel B, we present the distribution of observations by quarter-year. The observations appear evenly distributed across quarter-years, other than a noticeable increase in 2005 (which corresponds to the first full year during which firms filed their press releases and conference call scripts through Form 8-K). To control for any serial differences in how our sample is distributed, we include quarter-year fixed effects throughout our analyses.

3.2 Measuring Numerical Information

We use a python algorithm to extract the number of words and numbers in each quarterly earnings conference call transcript. A word is counted only when it is included in the 10-K dictionary by Loughran and McDonald (2011). Because numbers are recorded in numeric form in both StreetEvents and CallStreet (i.e., 9% instead of nine percent), we impose a few criteria when counting the frequency of numerical information. We search for and count any numbers beginning with a space or dollar sign, and require that the rest of the number consist of numeric characters (0-9). We count numbers that include commas (,) as thousands-separators or periods (.) as decimal separators. We exclude whole numbers from 1950 to 2020 to exclude the mention of years in the

[5] Our main results remain qualitatively similar if we include the 430 firms whose stock prices are less than $5 and the 886 transcripts that cannot be separated into Statement and Q&A sections.

transcript. These criteria filter out numbers in company names (e.g., L-3 Communications) and other non-informative numbers (e.g., FY09) while retaining the most informative numerical information in the transcript (e.g., growth rate, EPS, and revenue).[6]

After counting the number of words and numbers, we calculate the proportion of numerical information in each transcript (*PCTNUM*) and use it as a proxy of the extent of hard information relative to total information:

$$PCTNUM = \frac{N(Numbers)}{N(Words) + N(Numbers)}$$

where *N*(*Numbers*) is the total count of numbers in the transcript and *N*(*Words*) is the total count of words in the transcript.[7] In regression analysis, we standardize *PCTNUM* for ease of interpretation.[8] We present summary statistics for *PCTNUM* in Table 2. As can be seen, the average conference call transcript in our sample contains 206 numbers and 7,426 words. That is, the average proportion of numerical information (*PCTNUM*) is approximately 2.7%.[9]

3.3 Model to test H1

We use the following OLS model to test our hypotheses:

$$CAR[-1,1] = \alpha + \beta_1\ PCTNUM + \beta_2\ FE + \beta_3\ ROA + \beta_4\ BM + \beta_5\ ME + \beta_6\ MOMENTUM + \beta_7\ ACCRUAL + \beta_8\ TONE + \beta_9\ PCTFLS + \beta_{10}\ BLAME + \beta_{11}\ LENGTH + \beta_{12}\ VOLATILITY + \beta_{13}\ INSTOWN + \beta_{14}\ LNUMEST + \beta_{15}\ TURNOVER + \beta_{16}\ GUIDANCE + \beta_{17}\ NEWS + \partial\ Qtr\text{-}Year\ FEs + \varepsilon \quad (1)$$

[6] In untabulated results, we find that our results are robust if we remove all these criteria.

[7] If we substitute *PCTNUM* with the natural log of the total number of numbers, all of our results are unaffected.

[8] We standardize *PCTNUM* as follows. For each observed value of *PCTNUM*, we subtract the mean and divide by the standard deviation of *PCTNUM*.

[9] The pairwise correlation between $PCTNUM_t$ and $PCTNUM_{t-1}$ is 0.589 (t-stat of 184.6), as reported in Panel B of Table 2. We then run 1st order autoregressive model (i.e., AR(1)) at the firm level to examine the time series property of *PCTNUM*, requiring each firm has at least four quarterly observations. The average coefficient of the lagged *PCTNUM* on the right-hand-side of AR(1) is 0.22 (untabulated; t-stat of 1.3). These results together suggest that there appear to be some persistence in *PCTNUM*, and that *PCTNUM* could be driven by firm style. We re-run our main results in Table 3 with firm fixed effects and find that our results are robust to including firm fixed effects (reported in Table 8).

where the dependent variable, *CAR[-1,1]*, is the 3-day cumulative abnormal returns around conference calls. Cumulative abnormal return (CAR) is calculated using the Fama-French three-factor model (Fama and French 1993),[10] where the betas are estimated using the daily returns in the interval of [-180,-15] relative to the date of the conference call. We standardize all the continuous independent variables for ease of interpretation. To control for macroeconomic conditions and serial correlation in the error terms, we include quarter-year fixed-effects and cluster standard errors by quarter.

We include four sets of control variables related to asset pricing, firm performance, conference call specific factors, and other firm specific factors. We control for three asset pricing variables, namely book-to-market ratio (*BM*), firm size (*ME*), and momentum (*MOMENTUM*), as prior literature relate these variables with expected returns (e.g., Fama and French 1993). Firms with higher book-to-market ratios are viewed as value stocks and associate with higher expected returns. We calculate book-to-market ratio as book value divided by total market capitalization. Firm size captures various aspects of a firm's operational and business characteristics. Larger firms are more politically powerfully and economically sound (e.g., Watts and Zimmerman 1986). We use the natural log of a firm's market capitalization as a proxy for firm size. Chan, Jegadeesh, and Lakonishok (1996) find that momentum is predictive of future returns. We thus include the cumulative returns of a firm's stock in the past 12 months preceding the earnings conference call (*MOMENTUM*).

To control for firm performance and profitability, we include earnings surprise (*FE*) and return-on-asset ratio (*ROA*). Prior literature shows that earnings surprise can cause investor reactions (e.g., Hirshleifer, Lim, and Teoh 2009). Following Hirshleifer et al. (2009), we measure

[10] In untabulated results, we find that our results remain robust if we replace CARs with market-adjusted returns (calculated as firm returns minus market returns).

earnings surprise (*FE*) as the difference between realized earnings and the consensus earnings forecast before the earnings announcement date, scaled by share price:

$$FE_{i,t} = \frac{E_{i,t} - F_{i,t}}{P_{i,t}}, \tag{2}$$

where *E* denotes realized quarterly earnings, *F* denotes the consensus analyst forecast earnings, and *P* denotes the stock price at the end of the I/B/E/S statistical period when consensus analyst earnings forecasts are calculated. The subscript *i* indicates firm *i* and *t* indicates quarter *t*. The consensus analyst forecast expectation is the median individual analyst forecast formed on the closest I/B/E/S statistical period end date prior to the conference call. We winsorize *FE* at 1% and 99% to account for outliers, following Hirshleifer et al. (2009). Larger *FE* suggests that the firm outperforms the analysts' expectations; whereas smaller *FE* suggests that the firm underperforms the analysts' expectations. We calculate *ROA* as net income divided by total assets. Consistent with prior literature (e.g., Hirshleifer et al. 2009), we expect both earnings surprise (*FE*) and return on assets (*ROA*) to be positively associated with short-window stock returns.

Research shows that investors react to disclosure specific characteristics, such as the tone of words (Huang et al. 2014), forward-looking sentences (Li 2010b), the proportion of blame sentences (Zhou 2014), and readability (Li 2008). Following Loughran and McDonald (2011), we measure *TONE* as the difference between the proportion of positive words and the proportion of negative words in an earnings conference call. We control for the proportion of forward-looking sentences in a conference call (*PCTFLS*) as well as the proportion of sentences with a negative attribution to the firm's industry or the macro-economy (*BLAME*). Generally longer disclosures are likely to have more information and more quantitative disclosures as well. Following Li (2008), we include length of a transcript (*LENGTH*) to control for the readability of conference call transcripts.

Lastly, we include a set of firm-specific variables that have been shown to associate with stock returns. Specifically, we control for total accruals (*ACCRUAL*), annualized daily stock volatility in the year preceding the conference call (*VOLATILITY*), the proportion of institutional holdings over total shares outstanding (*INSTOWN*), the natural log of the number of analysts following the firm (*LNUMBEST*), and the average share turnover in the month preceding the conference call (*TURNOVER*). Additionally, prior research establishes that management forecast guidance affects stock returns. Therefore, we control for whether a firm issued earnings guidance within two days before the conference call (*GUIDANCE*) and earnings guidance news (*NEWS*). We measure *NEWS* as earnings guidance midpoint minus median analyst forecast, deflated by stock price one month preceding earnings guidance.[11] We obtain firms' financial information from Compustat, stock information from CRSP, and analyst forecast information from I/B/E/S. Appendix 1 includes all formal variable definitions.

3.4 Descriptive Statistics and Univariate Correlations

Table 2, Panel A presents summary statistics for the sample. The descriptive statistics are consistent with prior literature related to textual analysis and conference calls. Panel B of Table 2 is a correlation matrix that provides pair-wise correlations for all variables in our sample. It also provides insights on the determinants of *PCTNUM* (i.e., how it correlates with other firm and disclosure characteristics).

Several interesting patterns emerge in Table 2, Panel B. First, we find a positive correlation (0.589, $p<0.001$) between the proportion of quantitative disclosure in time *t* ($PCTNUM_t$) and the

[11] Alternatively, if we use the upper bound of a range forecast as the expectation for the forecast (see Ciconte, Kirk, and Tucker 2014), our results throughout are unchanged.

proportion of quantitative disclosure in time *t-1* ($PCTNUM_{t-1}$). This suggests that while there is some stickiness to firms' quantitative disclosure, there is also some time-series variation within firms (which we will return to when we include firm effects in our models). Second, we find a negative correlation (-0.054, p<0.001) between the proportion of quantitative disclosure (*PCTNUM*) and the proportion of forward-looking statements in the conference call (*PCTFLS*). This suggests that firms provide more quantitative disclosure when describing historical information, consistent with managers have more certainty about the details of past transactions.

Third, we find a positive correlation (0.030, p<0.001) between the proportion of quantitative disclosure (*PCTNUM*) and short-window abnormal returns around the conference call (*CAR*). This result is consistent with H1 and suggests that quantitative disclosure reduces information risk. Fourth, and related to H2, we find that the proportion of quantitative disclosure (*PCTNUM*) is negatively associated with measures that capture a firm's information environment (i.e., *INSTOWN* and *LNUMEST*). This suggests that firms are more likely to voluntarily provide quantitative disclosure when their information environment is poorer, and is consistent with our H2 prediction that quantitative disclosure would be more important in these circumstances.

Finally, and related to H3, we find that the proportion of quantitative disclosure (*PCTNUM*) is positively associated with measures that capture firm profitability (both *FE* and *ROA*), suggesting that firms provide more quantitative disclosure when firm performance is good. This is important because it means that if we find results for H3 (which predicts that the effects of H1 would be concentrated when firm performance is poor) it is not because firms fail to provide quantitative disclosure when performance is good. We now turn to multivariate regression analyses to formally examine our hypotheses.

3.5 H1: Quantitative disclosure and information risk – short-window stock returns

To investigate the short-term capital market reaction to the extent of numerical disclosure in conference calls (*H1*), we estimate Model (1) with controls and quarter-year fixed effects in place. Results are presented in Table 3. Column (1) serves as a benchmark by including only *PCTNUM* with no control variables. In column (2), we include *PCTNUM* and all control variables. We find that *PCTNUM* has positive and significant coefficients in both columns (1) and (2). These results suggest that firms with higher proportion of numerical disclosure in earnings conference calls are associated with higher 3-day cumulative abnormal returns around the calls. The economic magnitude is considerable. As suggested by the coefficient of *PCTNUM* of 0.231 in column (2), one standard deviation increase in *PCTNUM* is associated with a 23 bps increase in the 3-day abnormal return (*t-stat*=5.2). Collectively, we find evidence supporting our H1 that investors react more positively when a greater proportion of firm disclosure is numerical, consistent with the disclosure reducing investors' perceptions of information risk.

Turning to control variables, we find that *FE* loads positively and significantly in column (2), suggesting that firms with more positive earnings surprise are associated with higher 3-day cumulative abnormal returns. Additionally, we find that firms with higher profitability (*ROA*), higher book-to-market ratio (*BM*), more positive tone in conference calls (*TONE*), earnings guidance issuance (*GUIDANCE*), and more positive earnings guidance news (*NEWS*) are associated with higher 3-day cumulative abnormal returns around earnings calls. On the other hand, firms with larger momentums (*MOMENTUM*), more accruals (*ACCRUAL*), higher proportion of forward-looking sentences (*PCTFLS*), higher proportion of blame sentences (*BLAME*), and longer conference call transcripts (*Length*) are associated with lower cumulative abnormal returns.

3.6 H2: The effect of a firm's information environment on H1

H2 predicts that the capital market effects of quantitative disclosure are the strongest among firms with relatively more uncertain information environments. In such cases, a firm's disclosure would have a greater impact on investors' perceptions about a firm's information risk. Following prior literature (i.e., Zhang 2006), we assume that a firm's information environment is more uncertain when its stock return volatility (*Sigma*) is high. In Table 4, we measure stock return volatility as the standard deviation of weekly market excess returns over the year preceding earnings conference call, and examine whether our results for H1 are stronger in firms with higher stock return volatility.

Quintile 5 in Table 4 includes firms with the highest stock volatility, whereas quintile 1 includes firms with the lowest stock volatility. The coefficients of *PCTNUM* are positive in all five *Sigma* quintiles and are statistically significant in quintiles 2 to 5. The magnitude of *PCTNUM* coefficient increases monotonically from 0.074 in *Sigma* quintile 1 to 0.273 in *Sigma* quintile 5. This suggests that the correlation between numerical disclosure and abnormal returns is the strongest among firms with the largest stock volatility (i.e., the largest information uncertainty). These results support H2.

In Table 5, we re-estimate the analysis in Table 4 using six additional measures for firms' information environment, following Zhang (2006). They are firm size (*ME*), average bid-ask spread (*SPREAD*), firm age (*AGE*), cash flow volatility (*CVOL*), intuitional shareholders (*IO*), and analyst forecast dispersion (*DISP*). We estimate Model (1) with the exact controls by quintiles of each measure and report only the coefficients of *PCTNUM* for brevity. All models include quarter-year fixed effects. For ease of interpretation, we take reciprocals of *ME*, *AGE*, and *IO*, and present associated results. Firms in quintile 5 (1) have information environments that are the most (least) uncertain.

Consistent with H2, we find that the positive association between *PCTNUM* and *CAR[-1,1]* concentrates in quintiles with poorer information environments. For example, the coefficient of *PCTNUM* is 0.261 for firms with the highest bid-ask spread (*SPREAD Q5*), which is higher than that (0.111) for firms with the lowest bid-ask spread (*SPREAD Q1*). Taken together, the results in Tables 4 and 5 support H2 and suggest that quantitative firm disclosure has a greater impact on investors' perceptions of information risk when the firm has an otherwise poor information environment.

3.7 H3: The effect of negative earnings surprises on H1

H3 predicts that the capital market effects of quantitative disclosure are the strongest among firms with negative earnings surprises. As previously discussed, prior research finds that negative earnings surprises are uncommon. If quantitative disclosure has a positive impact on investors' perceptions about information risk, we would expect this to matter most when investors are seeking information on how to assess the impact of this (uncommon) negative performance event.

To test H3, we measure earnings surprise as the current period analyst forecast error, calculated as realized earnings minus analyst forecast consensus. A positive forecast error indicates good news and a negative forecast error indicates bad news. We then estimate Model (1) by quintile of earnings surprise. Quintile 1 reflects portfolios with the lowest *FE* values (i.e., the largest negative earnings surprises). Quintile 5 reflects portfolios with the largest *FE* values (i.e., the largest positive earnings surprises). As can be seen in Table 6, *PCTNUM* loads positively and significantly at the 0.01 level in the lowest two *FE* quintiles (i.e., firms with the most negative earnings news). The coefficients of *PCTNUM* are statistically insignificant in *FE Q3-Q5*. The magnitude of *PCTNUM* coefficients gradually decreases from lower *FE* quintiles to high *FE* quintiles. These results demonstrate that the proportion of quantitative information are associated with higher 3-day cumulative abnormal returns around earnings calls for firms with the most negative earnings news. Consistent with H3, the evidence in Table 6 suggests that numerical disclosure has a greater impact on investors' perceptions of information risk when investors are more likely to be actively seeking information about an uncommon performance event (i.e., for firms with the most negative earnings surprises).

4. ADDITIONAL ANALYSES AND ROBUSTNESS TESTS

4.1 Alternative measures of information risk

In our main tests, we examine whether investors' perceptions of information risk change in response to disclosure with a greater proportion of numerical information by using short-window stock returns around the disclosure date and controlling for cash flow news related to current and future earnings. The benefit of using short-window stock returns (as opposed to other measures of information risk) is that it does not require firms to have multiperiod analyst forecasts and/or robust options markets. That is, using short-window stock returns (after controlling for cash flow news in current and future earnings) provides the largest and most generalizable sample that provides the greatest power for our tests.

In this section, we assess the sensitivity of our findings to alternative measures that proxy for information risk – namely, changes around the disclosure date in (1) the effective bid-ask spread, (2) the implied volatility of in a firm's options, and (3) the implied cost of capital. Specifically, we estimate the following OLS regression model:

$$DV = \alpha + \beta_1\, PCTNUM + \beta_2\, FE + \beta_3\, ROA + \beta_4\, BM + \beta_5\, ME + \beta_6\, MOMENTUM + \beta_7\, ACCRUAL + \beta_8\, TONE + \beta_9\, PCTFLS + \beta_{10}\, BLAME + \beta_{11}\, LENGTH + \beta_{12}\, VOLATILITY + \beta_{13}\, INSTOWN + \beta_{14}\, LNUMEST + \beta_{15}\, TURNOVER + \beta_{16}\, GUIDANCE + \beta_{17}\, NEWS + \partial\, Qtr\text{-}Year\ FEs + \varepsilon \quad (2)$$

where the dependent variable equals *Spread_diff*, *ImVol*, *ICC_diff* and *ImVol_diff.* The control variables are the same as in Model (1). *Spread_diff* is the change in average effective percentage spread from day [-2, -1] to [0, 1], relative to the conference call. We obtain daily effective spread from TAQ intraday dataset. *ImVol*, is the average implied volatility over the [+2, +5] day window relative to earnings conference call. We use the implied option volatility on 30-day at-the-money options (delta). We obtain data on implied volatility from Optionmetrics. *ICC_diff* is the change in implied cost of capital (ICC) from the quarter before to the quarter after conference call. ICC is constructed following Gebhardt, Lee,and Swaminathan (2001) and Lee, Ng, and Swaminathan (2007). *ImVol_diff* is the change in implied volatility from day [-90, -2] to [2, 90], relative to the conference call. All control variables described in section 3.3 are included. Consistent with estimating model (1), we include quarter-year fixed effects and cluster standard errors by quarter. As expected, the decrease in sample size in this analysis is due to data availability.

Results of estimating Model (2) with and without controls are reported in Table 7. *PCTNUM* has negative and significant coefficients in Columns (1) and (2), implying that a higher proportion of quantitative disclosure is associated with a decrease in effective bid-ask spread in short-windows around the conference call. Turning to Columns (3) and (4), the negative and significant coefficients of *PCTNUM* suggest that a higher proportion of quantitative disclosure is associated with lower implied volatility after the conference call.

We next examine whether the proportion of quantitative disclosure is associated with changes in implied cost of capital and implied volatility over a longer window. We find that there is a decrease in both implied cost of capital and implied volatility one quarter around the earnings conference calls. Overall, the findings in Table 7 support our conjecture that a greater amount of quantitative disclosure is negatively associated with investors' perceptions of information risk, measured with the effective bid-ask spread, the implied volatility of a firm's options, and the implied cost of capital around earnings conference calls (both short- and long-windows).

4.2 Firm Fixed Effects

A potential concern of any archival study is that the results could be driven by correlated omitted variables. To control for any time-invariant, firm-specific characteristics that are not controlled for, we include firm fixed effects and re-estimate the models in Table 3. Results with firm fixed effects are reported in Table 8. The coefficients *PCTNUM* remain positive and statistically significant, consistent with our findings in Table 3. The economic magnitude of *PCTNUM* even increases after including firm fixed effects. Specifically, a one standard deviation increase in the percentage of numbers is associated with an increase of 28 basis points of cumulative 3-days abnormal return, according to column (2). These results further suggest that our findings are not due to time-invariant correlated omitted variables. As with any archival study, of course, the possibility remains that a time-varying variable that we cannot identify exists and is correlated with our variable of interest *PCTNUM* over short-windows around the conference call.

4.3 Components of Conference Call Transcripts

To understand which component of the earnings conference call transcripts may be driving our results, we examine the effects of proportion of numerical disclosure in different portions of the transcript. We first divide the conference call transcripts into the scripted statement and Q&A components by searching for a number of textual patterns that involve operators in conference calls and questions asked by analysts, following Matsumoto, Pronk, and Roelofsen (2011). We calculate the proportion of numbers in the statement ($PCTNUM_S$) and Q&A ($PCTNUM_{QA}$) sections separately. We estimate Model 1 by replacing *PCTNUM* with $PCTNUM_S$ and $PCTNUM_{QA}$.[12] We include all control variables described in Section 3.3, but suppress them for presentation for brevity.

The results are presented in column (1) of Table 9. They show that the proportion of numerical disclosure in both the statement ($PCTNUM_S$) and Q&A ($PCTNUM_{QA}$) sections are positively associated with higher 3-day cumulative abnormal returns around conference calls, as evident by their coefficients of 0.240 and 0.245, respectively. These results suggest that our results hold regardless of whether the quantitative disclosure occurs in the scripted remarks or is prompted from analyst questions during the Q&A portion of the call.

As previously discussed, we intend for our results to capture the proportion of quantitative disclosure about historical performance. In our main tests, we include control variables for whether a firm issues a management forecast and, if so, for the news provided by the most recent management forecast, as well as the percentage of forward-looking statements included in the conference call. In this section, we further examine the historical vs. forward looking nature of disclosure by dividing the earnings conference call script into the proportion of numerical disclosure in forward-looking (FLS) and non-forward-looking (NonFLS) statements. Compared to FLS, information in NonFLS is historical and therefore managers have no uncertainty about the applicable dollar amounts. Following Bozanic et al. (2018), we categorize each sentence in earnings conference calls as forward-looking or non-forward-looking. We then calculate the proportion of quantitative information in all FLS and NonFLS, labeled as $PCTNUM_{FLS}$ and $PCTNUM_{NonFLS}$ respectively.

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[12] The coefficients of $PCTNUM_S$ and $PCTNUM_{QA}$ in column (1) of Table 9 do not sum up to be the coefficient of *PCTNUM* IN column (2) of Table 3 because $PCTNUM_S$ and $PCTNUM_{QA}$ are standardized separately for ease of interpretation. Similarly, we standardize $PCTNUM_{FLS}$ and $PCTNUM_{NonFLS}$ separately.

In column (2) of Table 9, $PCTNUM_{FLS}$ loads positively and significantly, suggesting that the proportion of quantitative information in FLS are associated with higher *CAR[-1,1]*. More importantly, $PCTNUM_{NonFLS}$ has a positive and significant coefficient of 0.177, suggesting that the proportion of quantitative information in disclosure about historical performance is associated with higher *CAR[-1,1]*. Taken together, the results in Table 9 suggest that our results hold regardless of whether the quantitative disclosure relates to prospective or historical performance. To further examine whether our results hold for disclosures related to historical performance (where there is no uncertainty for managers), in the next section, we re-examine whether our results hold using only the subset of firms that do not provide a management earnings forecast in (or around) their conference calls.

4.4 Subsample Test Using Firms that do not issue Management Earnings Forecasts

In this section, we repeat the analysis in Table 9 using the subsample of firms that do not issue an earnings forecast around the conference call to discuss the current earnings performance. In other words, these are the firms in our sample that are most clearly discussing the historical performance during the quarter. The results are reported in Table 10.

Consistent with findings in Table 9, we continue to find that $PCTNUM_{NonFLS}$ has a positive and significant coefficient. This result suggests that the proportion of quantitative information in disclosure about historical performance is associated with higher *CAR[-1,1]*. These results provide further assurance that our findings not only relate to forward-looking disclosure but also to those disclosures that relate to historical performance where manager uncertainty about the disclosures is removed.

4.5 Disclosure in Earnings Press Releases

As previously discussed, the conference call often occurs almost immediately after the firm issues a press release where it reports the current earnings amount. Therefore, our dependent variable (CAR) likely includes investor reaction to the earnings press release as well as the conference call. Furthermore, the press release includes disclosure as well, and so in this section we examine whether the proportion of quantitative disclosure in the press release (rather than in the conference call) is also positively associated with short-window stock returns.

Therefore, in this section, we re-estimate Model (1) and include various measures of disclosure contained within the earnings press release. Specifically, we create the variable *PCTNUM_PressRelease* to measure the proportion of quantitative disclosure in the press release. We also account for the number of tables (*#Tables_PressRelease*) and the count of line items in tables (*#Items_PressRelease*) reported in the press release.

The results of considering the association between press release disclosure and short window stock returns are presented in Table 11. In Panel A, we include these three press release variables separately in columns (1) to (3) and together in column (4) with all previously identified control variables in place, as well as the inclusion of firm fixed effects. Interestingly, only *PCTNUM_PressRelease* has positive and significant coefficients in columns (1) and (4), suggesting that it is a higher proportion of quantitative disclosure in earnings guidance that is associated with higher 3-day abnormal stock returns, and that the quantitative nature of the accompanying tables does not affect stock returns.

In Panel B, we add in our primary variable of interest, the proportion of quantitative disclosure in earnings conferences calls *PCTNUM*, in addition to the press release disclosure variables and controls. We find that, even after controlling for the disclosure in the earnings press release, *PCTNUM* loads positively and significantly in all four regression specifications.[13] We also find that the coefficients of *PCTNUM_PressRelease* are positive and significant in columns (1) and (4), however the magnitude of these coefficients are smaller than those for *PCTNUM*. Collectively, these results suggest that our findings hold regardless of whether the quantitative disclosure occurs in the press release or the conference call, although they also suggest that the results are stronger for the disclosure occurring in the conference call (i.e., our primary variable of interest).

4.6 Future Stock Returns

As previously discussed, it is possible that managers use a greater proportion of numerical disclosure in a strategic way (i.e., to make performance appear more stable and/or better than it actually is). If so, and investors perceive the disclosures to be credible, we would find a positive short-window reaction that subsequently reverses as future information makes clear that the perceived reductions in uncertainty were incorrect. To rule out this possibility, in Table 12 we examine whether the short-window positive abnormal returns in response to *PCTNUM* reverse over the 60 days after the earnings conference call. We find no such evidence. In fact, we find a positive association between *PCTNUM* and future stock returns (i.e., nearly 39 basis point drift). This evidence is inconsistent with managers, on average, using quantitative disclosure in a strategic manner. Rather, this evidence suggests that, on average, the information risk resolved by the quantitative disclosure persists over the following three month time period.

5. CONCLUSION

This study examines investor reaction to disclosure with a greater proportion of numerical information. Theoretical research suggests that numbers convey more precise, easier-to-verify and

[13] As a robustness check, we replace *PCTNUM_PressRelease* with percentage of numbers in non forward-looking sentences in the earnings press release. Our results remain robust.

easier-to-compare information than words (Liberti and Petersen 2017). We, thus, expect that textual disclosures with more quantitative information convey more precise and transparent information in comparison to textual disclosures with more qualitative information. Consequently, disclosures with more quantitative information will, *ceteris paribus*, reduce information risk and increase firm value.

We focus on the setting of earnings conference calls, an important voluntary disclosure mechanism. We measure numerical disclosure as the total number of numbers relative to total number of numbers and words in an earnings conference call transcript. Our study has three main findings. First, we find a positive association between the extent of numerical disclosure in earnings conference calls and short-window stock returns around the calls. Then, we find that the capital market effects of numerical disclosure concentrate in firms where the disclosure should be most impactful – (1) firms with information environments that are otherwise poor (i.e., firms that are smaller, younger, with lower institutional ownership, higher stock volatility, and higher analyst forecast dispersion), and (2) when uncertainty about firm performance is higher (i.e., firms that experience a negative earnings surprise). In our additional analyses, we find that higher proportion of quantitative information is associated with lower effective bid-ask spread, implied volatility and implied cost of capital. Our results are robust to firm fixed effects, alternative measures of information environment, alternative measures of information uncertainty, controlling for forward-looking statements, and including information in earnings guidance. Overall, our results suggest that numerical disclosure can reduce investors' perceptions about information risk.

Our results have practical implications. Kothari et al. (2009) find that investors view corporate disclosures as less credible than disclosures by the independent business press and analysts. Their study calls for more research to better understand how firm disclosure affects information risk and firm value. We show that more quantitative disclosure can reduce investors' perceptions of a firm's information risk. This result implies that investors respond to quantitative disclosure as if it increases the credibility of corporate disclosures.

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Appendix 1: Variable Definition

Variable	Definition
PCTNUM	*PCTNUM* is the percentage of quantitative information in the conference call. *PCTNUM* is calculated as *N(Numbers)*/ (*N(Numbers)* + *N(Words)*), where *N(Number)* is the total number of numbers in an earnings conference call and *N(Words)* is the total number of words in an earnings conference call. *PCTNUM* is standardized as follows. For each observed value of *PCTNUM*, we subtract the mean and divide by the standard deviation of *PCTNUM*.
$PCTNUM_S$	$PCTNUM_S$ is the total number of numbers in the statement section of a conference call relative to total number of numbers and words in an earnings conference call. $PCTNUM_S$ is standardized. For each observed value of $PCTNUM_S$, we subtract the mean and divide by the standard deviation of $PCTNUM_S$.
$PCTNUM_{QA}$	$PCTNUM_{QA}$ is the total number of numbers in the Q&A section of a conference call relative to total number of numbers and words in an earnings conference call. $PCTNUM_{QA}$ is standardized. For each observed value of $PCTNUM_{QA}$, we subtract the mean and divide by the standard deviation of $PCTNUM_{QA}$.
$PCTNUM_{FLS}$	$PCTNUM_{FLS}$ is total number of numbers relative to total number of numbers and words in all forward-looking sentences in a conference call. $PCTNUM_{FLS}$ is standardized. For each observed value of $PCTNUM_{FLS}$, we subtract the mean and divide by the standard deviation of $PCTNUM_{FLS}$.
$PCTNUM_{NonFLS}$	$PCTNUM_{NonFLS}$ is total number of numbers relative to total number of numbers and words in all non-forward-looking sentences in a conference call. $PCTNUM_{NonFLS}$ is standardized. For each observed value of $PCTNUM_{NonFLS}$, we subtract the mean and divide by the standard deviation of $PCTNUM_{NonFLS}$.
N(Words)	*N(Words)* is the total number of words in an earnings conference call.
N(Numbers)	*N(Number)* is the total number of numbers in an earnings conference call.
CAR[-1,1]	*CAR[-1,1]* is cumulative abnormal returns of [-1,1] days around earnings conference call. Cumulative abnormal return (CAR) is calculated using the Fama-French three-factor model (Fama and French, 1993). The betas are estimated using the daily returns in the interval of [-180,-15] relative to the date of the conference call.
FE	*FE* is forecast error. *FE* is calculated as realized earnings minus analyst consensus forecast, scaled by stock price. The consensus analyst forecast expectation is the median individual analyst forecast formed on the closest I/B/E/S statistical period end date prior to the conference call. Stock price is one month before the earnings announcement, obtained from CRSP.
ROA	*ROA* is return on assets, which is calculated as net income divided by total assets.
BM	*BM* is book-to-market ratio, which is calculated as book value divided by total market capitalization.
ME	*ME* is the natural log of market capitalization of a firm.

MOMENTUM	*MOMENTUM* is the cumulative returns of a firm's stock in the past 12 months preceding the earnings conference call.
ACCRUAL	*ACCRUAL* is calculated as (net income – net operating cash flow)/total assets. All financial information is from Compustat quarterly.
TONE	*TONE* is the difference between the proportion of positive words and proportion of negative words in the conference call. We use the dictionary by Loughran and McDonald (2011) to define positive and negative words.
PCTFLS	*PCTFLS* is the number of forward-looking sentences relative to total number of sentences.
BLAME	*BLAME* is the percentage of sentences with negative attribution to industry or economy.
LENGTH	*LENGTH* is the total number of words and numbers in a conference call transcript.
VOLATILITY	*VOLATILITY* is the annualized daily volatility calculated using the data from the month preceding the conference call.
INSTOWN	*INSTOWN* is the institutional ownership, defined as the proportion of institutional holdings over total shares outstanding. Institutional ownership is obtained from Thompson Reuters.
LNUMEST	*LNUMEST* is the natural log of the number of analysts following the firm. Analyst information is from I/B/E/S.
TURNOVER	*TURNOVER* is the average share turnover in the month preceding the conference call.
GUIDANCE	*GUIDANCE* is an indicator variable equal 1 if a company issued an earnings guidance in days [-2,0] relative to conference call date.
NEWS	*NEWS* measures earnings guidance news. *NEWS* is defined as earnings guidance midpoint minus median analyst forecast, deflated by stock price one month preceding earnings guidance.
SIGMA	*SIGMA* is the standard deviation of weekly market excess returns over the year preceding the earnings conference call.
SPREAD	*SPREAD* is the average of daily effective bid-ask spread over the quarter prior to earnings conference call.
AGE	*AGE* is the number of years since the firm was first covered by CRSP.
CVOL	*CVOL* is the standard deviation of cash flow from operations in the past 5 years (with a minimum of 3 years), where cash flow from operations is earnings before extraordinary items minus total accruals, scaled by average total assets.
IO	*IO* is shares owned by 13-F institutions scaled by total shares outstanding at the end of the quarter prior to earnings conference call.
DISP	*DISP* is the standard deviation of analyst forecasts in the month preceding the conference call, scaled by the prior year-end stock price.
Spread_diff	*Spread_diff* is the change in average effective percentage spread from day [-2, -1] to [0, 1], relative to the conference call. We obtain daily effective spread from TAQ intraday dataset.
ImVol	*ImVol* is the average implied volatility over the [+2, +5] day window relative to earnings conference call. We use the implied option volatility on 30-day at

	the money options (delta). We obtain data on implied volatility from Optionmetrics.
ICC_diff	*ICC_diff* is the change in implied cost of capital (ICC) from the quarter before to the quarter after conference call. ICC is constructed following Gebhardt, Lee,and Swaminathan (2001) and Lee, Ng, and Swaminathan (2007).
ImVol_diff	*ImVol_diff* is the change in implied volatility from day [-90, -2] to [2, 90], relative to the conference call.
PCTNUM_PressRelease	*PCTNUM_PressRelease* is the number of numbers relative to number of numbers and words in the text portion of the earnings press release.
Tables_PressRelease	*#Tables_PressRelease* is the number of tables in the earnings press release.
#Items_PressRelease	*#Items_PressRelease* is the number of line items reported in all tables in the earnings press release.

Table 1: Sample Selection

Panel A describes the sample selection procedure. Panel B presents the distribution of observations by quarter-year.

Panel A: Sample selection procedure

	Number of Observations
Number of Earnings Conference Call Transcripts 2002-2012	90,049
Subtract:	
Duplicates	89
Missing CRSP and Compustat Data	23,576
Stock price less than $5	430
Transcripts that Cannot Be Separated into Statement and Q&A Sections	886
Final Sample Size	***65,068***

Panel B: Number of observations by quarter-year

Year	**Q1**	**Q2**	**Q3**	**Q4**
2003	1,213	1,350	1,285	1,334
2004	1,019	1,004	1,361	1,445
2005	1,517	1,609	1,620	1,659
2006	1,719	1,745	1,767	1,743
2007	1,755	1,673	1,803	1,808
2008	1,875	1,845	1,842	1,770
2009	1,686	1,570	1,790	1,770
2010	1,820	1,206	1,841	1,595
2011	1,808	1,765	1,740	1,742
2012	1,785	1,750	1,752	1,687

Table 2: Descriptive statistics

Panel A presents the summary statistics of all variables used in this study. Panel B includes Pearson correlation matrix. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call in percentage. *N(Words)* is total number of words in a conference call. *N(Numbers)* is total number of numbers in a conference call. *CAR[-1,1]* is cumulative abnormal returns of [-1,1] days around earnings conference call. *FE* is forecast error. *FE* is calculated as realized earnings minus analyst consensus forecast, scaled by stock price. *ROA* is return on assets which is calculated as net income divided by total assets. *BM* is the book-to-market ratio, calculated as book value divided by total market capitalization. *ME* is the logged value of market capitalization of a firm. *MOMENTUM* is the cumulative returns of a firm's stock in the past 12 months preceding the conference call. *ACCRUAL* is calculated as net income minus net operating cash flow, scaled by total assets. *TONE* is the difference between the proportion of positive words and proportion of negative words in the conference call. *PCTFLS* is the number of forward-looking sentences over total number of sentences. *BLAME* is the percentage of sentences with negative attribution to industry or economy. *LENGTH* is the length of a conference call transcript, calculated as the total number of words and numbers. *VOLATILITY* is the annualized daily volatility calculated using the data from the month preceding the conference call. *INSTOWN* is the percentage of institutional holdings over total shares outstanding. *LNUMEST* is the natural log of the number of analysts following the firm. Analyst information is from I/B/E/S. *TURNOVER* is the average share turnover in the month preceding the conference call. *GUIDANCE* is an indicator variable equal 1 if a company issued an earnings guidance in days [-2,0] relative to conference call date. *NEWS* is defined as earnings guidance midpoint minus median analyst forecast, deflated by stock price one month preceding earnings guidance. All variable definitions are included in Appendix 1.

Panel A: Descriptive statistics

Variables	N	Mean	Std Dev	Q1	Median	Q3
PCTNUM	65,068	2.746	0.704	2.271	2.667	3.141
N(Words)	65,068	7,426.427	2,485.075	5,763	7,418	8,917
N(Numbers)	65,068	206.212	79.387	153	199	248
CAR[-1,1]	65,068	0.249	9.254	-4.170	0.182	4.829
FE	65,068	-0.011	1.297	-0.091	0.054	0.238
ROA	65,068	0.017	0.173	0.004	0.044	0.083
BM	65,068	0.622	0.837	0.281	0.473	0.756
ME	65,068	13.871	1.586	12.743	13.717	14.831
MOMENTUM	65,068	0.074	0.395	-0.103	0.071	0.239
ACCRUAL	65,068	0.975	0.486	0.949	0.979	1.001
TONE	65,068	2.586	0.477	2.252	2.556	2.884
PCTFLS	65,068	12.884	12.573	3.730	10.236	15.210
BLAME	65,068	0.200	0.322	0.000	0.000	0.292
LENGTH	65,068	7,632.640	2,543.996	5,928	7,619.500	9,156
VOLATILITY	65,068	0.281	0.461	0.106	0.189	0.340
INSTOWN	65,068	0.555	0.323	0.339	0.662	0.822
LNUMEST	65,068	8.693	6.518	4.000	7.000	12.000
TURNOVER	65,068	2.137	2.163	0.944	1.572	2.633
GUIDANCE	65,068	0.273	0.445	0.000	0.000	1.000
NEWS	65,068	0.095	9.049	0.000	0.000	0.000

Panel B: Correlation Matrix

Variables	***Lag(PCTNUM)* (1)**	***CAR[-1,1]* (2)**	***FE* (3)**	***ROA* (4)**	***BM* (5)**	***ME* (6)**	***MOMENTUM* (7)**	***ACCRUAL* (8)**	***TONE* (9)**	***PCTFLS* (10)**	***BLAME* (11)**	***LENGTH* (12)**	***VOLATILITY* (13)**	***INSTOWN* (14)**	***LNUMEST* (15)**	***TURNOVER* (16)**	***GUIDANCE* (17)**	***NEWS* (18)**
PCTNUM	0.589 ***	0.030 ***	0.019 ***	0.037 ***	0.014 ***	-0.05 ***	0.006 ***	-0.046 ***	-0.148 ***	-0.054 ***	-0.044 ***	-0.195 ***	-0.01 ***	-0.015 ***	-0.084 ***	-0.046 ***	0.049 ***	-0.006
(1)		0.007 *	0.014 ***	0.039 ***	0.015 ***	-0.053 ***	0.04 ***	0.044 ***	-0.159 ***	-0.074 ***	-0.042 ***	-0.125 ***	-0.011 ***	-0.012 ***	-0.088 ***	-0.031 ***	0.004	-0.007
(2)			0.194 ***	0.019 ***	0.015 ***	0.004	0.006	-0.008 *	0.04 ***	-0.058 ***	-0.026 ***	-0.025 ***	-0.002	0.011 ***	0.002	-0.023 ***	0.01 **	-0.002
(3)				0.034 ***	-0.046 ***	0.042 ***	0.111 ***	0.113 ***	-0.003	-0.01 ***	-0.052 ***	-0.013 ***	-0.014 ***	0.018 ***	0.043 ***	-0.025 ***	0.050 ***	0.001
(4)					-0.051 ***	0.269 ***	-0.073 ***	0.233 ***	-0.008 **	-0.091 ***	0.038 ***	0.1 ***	-0.226 ***	0.042 ***	0.142 ***	-0.007 *	0.091 ***	0.001
(5)						-0.235 ***	0.006	-0.051 ***	0.086 ***	-0.031 ***	0.119 ***	-0.11 ***	0.065 ***	0.023 ***	-0.203 ***	-0.101 ***	-0.081 ***	0.010 **
(6)							-0.055 ***	0.068 ***	0.096 ***	0.043 ***	-0.002	0.398 ***	-0.267 ***	0.156 ***	0.675 ***	0.119 ***	0.096 ***	0.003
(7)								-0.002	-0.024 ***	-0.039 ***	-0.095 ***	-0.028 ***	0.102 ***	0.004	-0.041 ***	0.032 ***	-0.001	-0.001
(8)									-0.007 *	-0.047 ***	-0.02 ***	-0.005	-0.101 ***	0.018 ***	-0.026 ***	-0.031 ***	-0.006	0.001
(9)										0.041 ***	0.193 ***	-0.031 ***	-0.003	0.029 ***	0.016 ***	-0.046 ***	0.022 ***	-0.001
(10)											0.002	-0.013 ***	0.010 ***	-0.005	0.029 ***	0.037 ***	0.061 ***	0.005 ***
(11)												0.013 ***	0.027 ***	0.008 **	-0.043 ***	-0.005	-0.005	0.011 ***
(12)													-0.066 ***	0.039 ***	0.48 ***	0.183 ***	0.102 ***	0.005
(13)														-0.036 ***	-0.121 ***	0.107 ***	-0.064 ***	-0.004
(14)															0.079 ***	-0.079 ***	0.015 ***	-0.008
(15)																0.28 ***	0.158 ***	0.001
(16)																	0.005	0.014 ***
(17)																		0.017 ***

Table 3: Short-window stock returns around earnings conference calls

This table presents the results of estimating the following regression: *CAR[-1,1] = f (PCTNUM, controls)*. The dependent variable, *CAR[-1,1]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call. All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. All regressions include quarter-year time fixed effects. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

	[1]	[2]
PCTNUM	0.333***	0.231***
	(0.047)	(0.049)
FE		1.846***
		(0.098)
ROA		0.142***
		(0.052)
BM		0.136**
		(0.057)
ME		0.011
		(0.079)
MOMENTUM		-0.252***
		(0.083)
ACCRUAL		-0.324***
		(0.054)
TONE		0.431***
		(0.052)
PCTFLS		-0.516***
		(0.046)
BLAME		-0.320***
		(0.043)
LENGTH		-0.194***
		(0.057)
VOLATILITY		-0.028
		(0.048)
INSTOWN		0.040
		(0.034)
LNUMEST		0.047
		(0.051)
TURNOVER		-0.117
		(0.103)
GUIDANCE		0.753***
		(0.147)
NEWS		1.067***
		(0.085)
Observations	65,068	65,068
Quarter-Year FE	Yes	Yes
R-squared	0.005	0.063

Table 4: Proportion of numerical disclosure (*PCTNUM*) and stock volatility (*Sigma*)

This table presents the results of estimating the following regression by stock volatility quintiles: *CAR[-1,1] = f (PCTNUM,* controls*)*. The dependent variable, *CAR[-1,1]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call. Stock volatility (*Sigma*) is the standard deviation of weekly market excess returns over the year preceding the earnings conference call. We present the results by *Sigma* quintiles. All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. All regressions in panel B include quarter-year time fixed effects. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

Sigma Quintile	***Q1 (Lowest)***	***Q2***	***Q3***	***Q4***	***Q5 (Highest)***
DV	**CAR [-1,1]**	**CAR [-1,1]**	**CAR [-1,1]**	**CAR [-1,1]**	**CAR [-1,1]**
PCTNUM	0.074	0.177***	0.194**	0.246***	0.273**
	(0.062)	(0.065)	(0.095)	(0.081)	(0.123)
FE	1.921***	2.463***	2.028***	1.708***	1.733***
	(0.257)	(0.172)	(0.207)	(0.213)	(0.086)
ROA	0.103	0.290**	0.115	0.167	-0.001
	(0.203)	(0.120)	(0.116)	(0.128)	(0.070)
BM	0.007	-0.031	-0.136*	0.133	0.352***
	(0.066)	(0.091)	(0.080)	(0.121)	(0.117)
ME	-0.183**	-0.029	0.147	0.321*	0.137
	(0.080)	(0.122)	(0.128)	(0.184)	(0.230)
MOMENTUM	-0.334***	-0.535***	-0.461***	-0.408**	-0.133
	(0.103)	(0.173)	(0.162)	(0.168)	(0.098)
ACCRUAL	-0.277**	-0.428***	-0.219*	-0.361**	-0.318***
	(0.112)	(0.104)	(0.118)	(0.153)	(0.114)
TONE	0.296***	0.427***	0.301***	0.527***	0.526***
	(0.052)	(0.068)	(0.058)	(0.133)	(0.125)
PCTFLS	-0.246***	-0.453***	-0.480***	-0.518***	-0.666***
	(0.046)	(0.068)	(0.069)	(0.106)	(0.125)
BLAME	-0.372***	-0.383***	-0.400***	-0.267***	-0.135
	(0.064)	(0.074)	(0.104)	(0.093)	(0.170)
LENGTH	-0.094	-0.343***	-0.410***	-0.292***	-0.030
	(0.069)	(0.102)	(0.099)	(0.108)	(0.112)
VOLATILITY	0.936	0.268	-0.668	-0.243	-0.020
	(0.756)	(0.895)	(0.582)	(0.402)	(0.034)
INSTOWN	0.064	0.043	0.159*	-0.031	0.078
	(0.076)	(0.057)	(0.086)	(0.089)	(0.145)
LNUMEST	-0.008	0.042	-0.118	0.022	-0.051
	(0.087)	(0.107)	(0.119)	(0.145)	(0.181)
TURNOVER	-0.006	0.253**	0.212	-0.251	-0.176
	(0.190)	(0.108)	(0.137)	(0.202)	(0.110)
GUIDANCE	0.271**	0.459**	0.738***	0.846***	1.261***
	(0.126)	(0.173)	(0.208)	(0.310)	(0.284)
NEWS	0.285***	0.639***	1.179***	1.465***	1.600***
	(0.067)	(0.102)	(0.135)	(0.117)	(0.101)
Observations	13,002	13,020	13,018	13,020	13,008
Quarter-Year FEs	Yes	Yes	Yes	Yes	Yes
R-squared	0.044	0.067	0.068	0.064	0.088

Table 5: Additional measures of information environment

This table presents the coefficients of *PCTNUM* from estimating the following regression by quintiles of six additional measures for information environment: CAR[-1,1] = f (*PCTNUM*, controls). The dependent variable, CAR[-1,1], is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call. All regressions include control variables and quarter-year fixed effects. Standard errors are clustered by quarter. For brevity we suppress all control variables (i.e., *FE*, *ROA*, *BM*, *ME*, *MOMENTUM*, *ACCRUAL*, *TONE*, *PCTFLS*, *BLAME*, *LENGTH*, *VOLATILITY*, *INSTOWN*, *LNUMEST*, *TURNOVER*, *GUIDANCE*, and *NEWS*). Six measures for information environment are firm size (*ME*), bid-ask spread (*SPREAD*), firm age (*AGE*), cash flow volatility (*CVOL*), institutional holdings (*IO*), and forecast dispersion (*DISP*). Firm size (*ME*) is the natural log of market capitalizations in millions of dollars at the end of the quarter prior to earnings conference call. Bid-ask spread (*SPREAD*) is the average of daily effective spread over the quarter prior to earnings conference call. We obtain daily effective spread from TAQ intraday dataset. Firm age (*AGE*) is the number of years since the firm was first covered by CRSP. Cash flow volatility (*CVOL*) is the standard deviation of cash flow from operations in the past 5 years (with a minimum of 3 years), where cash flow from operations is earnings before extraordinary items minus total accruals, scaled by average total assets. Institutional holdings (*IO*) is shares owned by 13-F institutions scaled by total shares outstanding at the end of the quarter prior to earnings conference call. Forecast dispersion (*DISP*) is the standard deviation of analyst forecasts in month preceding the conference call, scaled by the prior year-end stock price. 1/*ME*, 1/*AGE*, and 1/*IO* are the reciprocals of *ME*, *AGE*, and *IO*. All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. All regressions include quarter-year time fixed effects. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

Information Environment Measures	**Q1 (Low)**	**Q2**	**Q3**	**Q4**	**Q5 (High)**
1/ME	0.082	0.135	0.307***	0.283***	0.286***
	(0.071)	(0.092)	(0.098)	(0.082)	(0.097)
SPREAD	0.111*	0.201**	0.230***	0.327***	0.261***
	(0.057)	(0.079)	(0.078)	(0.087)	(0.090)
1/AGE	0.118**	0.170**	0.297***	0.312***	0.302***
	(0.057)	(0.082)	(0.082)	(0.102)	(0.109)
CVOL	0.235**	0.076	0.180**	0.192*	0.409***
	(0.093)	(0.088)	(0.087)	(0.104)	(0.114)
1/IO	0.179*	0.141	0.193***	0.293***	0.319***
	(0.090)	(0.090)	(0.071)	(0.078)	(0.109)
DISP	0.031	0.268***	0.297***	0.304***	0.220*
	(0.098)	(0.096)	(0.081)	(0.079)	(0.113)

Table 6: Proportion of numerical disclosure (*PCTNUM*) and forecast error (*FE*)

This table presents the results of estimating the following regression by forecast error quintiles: *CAR[-1,1] = f (PCTNUM, controls)*. The dependent variable, *CAR[-1,1]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call. *FE* is forecast error. *FE* is calculated as realized earnings minus analyst consensus forecast, scaled by stock price. We present the results by *FE* quintiles. All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. All regressions include quarter-year fixed effects. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

FE Quintile	***Q1 (Lowest)***	***Q2***	***Q3***	***Q4***	***Q5 (Highest)***
DV	**CAR [-1,1]**	**CAR [-1,1]**	**CAR [-1,1]**	**CAR [-1,1]**	**CAR [-1,1]**
PCTNUM	0.403***	0.173**	0.103	-0.024	0.043
	(0.095)	(0.070)	(0.072)	(0.105)	(0.099)
FE	0.190*	12.125***	28.828***	11.889***	0.677***
	(0.109)	(2.457)	(4.430)	(1.420)	(0.172)
ROA	-0.184***	-0.184	0.169	0.506***	0.630***
	(0.064)	(0.125)	(0.201)	(0.110)	(0.093)
BM	0.411***	0.531***	-0.163	-0.638***	-0.293**
	(0.133)	(0.106)	(0.107)	(0.078)	(0.116)
ME	1.125***	0.179	-0.285***	-0.304**	-0.660***
	(0.149)	(0.114)	(0.094)	(0.112)	(0.141)
MOMENTUM	-0.351**	-0.803***	-0.645***	-0.314**	-0.299**
	(0.141)	(0.143)	(0.197)	(0.130)	(0.139)
ACCRUAL	-0.306***	-0.226*	-0.232	-0.126	-0.272***
	(0.106)	(0.125)	(0.177)	(0.124)	(0.085)
TONE	0.134	0.201***	0.269***	0.232**	0.501***
	(0.105)	(0.066)	(0.061)	(0.090)	(0.095)
PCTFLS	-0.286**	-0.228***	-0.387***	-0.530***	-0.884***
	(0.110)	(0.070)	(0.062)	(0.070)	(0.105)
BLAME	-0.001	-0.354***	-0.269***	-0.243**	-0.324**
	(0.122)	(0.051)	(0.095)	(0.097)	(0.127)
LENGTH	-0.529***	-0.173	-0.200**	-0.080	0.116
	(0.113)	(0.107)	(0.080)	(0.100)	(0.135)
VOLATILITY	-0.046	-0.463*	-0.517	-0.248**	0.086
	(0.047)	(0.235)	(0.432)	(0.105)	(0.111)
INSTOWN	0.047	-0.023	-0.031	-0.001	0.183*
	(0.108)	(0.075)	(0.071)	(0.074)	(0.106)
LNUMEST	-0.335***	0.126	0.450***	0.286**	0.068
	(0.112)	(0.097)	(0.097)	(0.109)	(0.115)
TURNOVER	-0.004	-0.455***	-0.447***	-0.273**	-0.108
	(0.223)	(0.108)	(0.114)	(0.115)	(0.136)
GUIDANCE	0.490	-0.475**	0.188	0.560***	1.086***
	(0.336)	(0.191)	(0.174)	(0.159)	(0.241)
NEWS	0.745***	0.827***	0.704***	0.992***	1.228***
	(0.096)	(0.115)	(0.128)	(0.110)	(0.121)
Observations	12,995	13,949	12,097	13,021	13,006
Quarter-year FE	Yes	Yes	Yes	Yes	Yes
R-squared	0.033	0.047	0.035	0.043	0.058

Table 7: Alternative measures of information risk

This table presents the results of the following OLS regression: *DV* = f (*PCTNUM*, controls). The dependent variable, *DV*, equals *Spread_diff*, *ImVol*, *ICC_diff* and *ImVol_diff*. *Spread_diff* is the change in average effective percentage spread from day [-2, -1] to [0, 1], relative to the conference call. We obtain daily effective spread from TAQ intraday dataset. *ImVol* is the average implied volatility over the [+2, +5] day window relative to earnings conference call. We use the implied option volatility on 30-day at the money options (delta). We obtain data on implied volatility from Optionmetrics. *ICC_diff* is the change in implied cost of capital (ICC) from the quarter before to the quarter after conference call. ICC is constructed following Gebhardt, Lee,and Swaminathan (2001) and Lee, Ng, and Swaminathan (2007). *ImVol_diff* is the change in implied volatility from day [-90, -2] to [2, 90], relative to the conference call. Sample size changes due to data availability. All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. All regressions include quarter-year fixed effects. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DV	*Spread_diff*	*Spread_diff*	*ImVol*	*ImVol*	*ICC_diff*	*ICC_diff*	*ImVol_diff*	*ImVol_diff*
PCTNUM	-0.122*	-0.138**	-0.228**	-0.188**	-0.029**	-0.029**	-0.304***	-0.229***
	(0.0606)	(0.0608)	(0.105)	(0.071)	(0.013)	(0.014)	(0.109)	(0.067)
FE		-0.217**		-0.945***		-0.025		-0.930***
		(0.0883)		(0.124)		(0.040)		(0.117)
ROA		-0.141*		-3.357***		-0.057***		-3.437***
		(0.0810)		(0.163)		(0.020)		(0.163)
BM		-0.409***		-1.173***		-0.022		-1.351***
		(0.0747)		(0.193)		(0.014)		(0.172)
ME		-1.028***		-9.663***		0.035**		-9.314***
		(0.102)		(0.263)		(0.017)		(0.249)
MOMENTUM		-0.163*		-1.168***		0.070***		-1.106***
		(0.0949)		(0.429)		(0.024)		(0.379)
ACCRUAL		-0.0730		-0.182		0.012		-0.118
		(0.0687)		(0.160)		(0.023)		(0.157)
TONE		-0.0122		-0.227***		-0.032**		-0.129*
		(0.0610)		(0.073)		(0.014)		(0.069)
PCTFLS		4.915***		0.557***		-0.072		0.566***
		(1.392)		(0.060)		(0.327)		(0.056)
BLAME		-0.0440		0.017		-0.005		-0.043
		(0.0689)		(0.057)		(0.016)		(0.065)
LENGTH		-0.148*		0.010		0.019		-0.005
		(0.0829)		(0.105)		(0.013)		(0.105)
VOLATILITY		0.286**		2.724***		-0.079***		2.704***
		(0.134)		(0.961)		(0.016)		(0.942)
INSTOWN		-0.120**		0.296***		0.003		0.225**
		(0.0443)		(0.089)		(0.011)		(0.090)
LNUMEST		0.614***		0.845***		-0.023		1.149***

		(0.0795)		(0.149)		(0.0185)		(0.139)
TURNOVER		0.152		3.243***		-0.000		3.273***
		(0.0999)		(0.240)		(0.015)		(0.249)
GUIDANCE		0.737***		-1.811***		-0.045**		-1.691***
		(0.109)		(0.228)		(0.022)		(0.239)
NEWS		-0.0722***		-0.134		-0.011***		-0.063
		(0.0225)		(0.081)		(0.001)		(0.076)
Observations	59,100	59,100	52,603	52,603	44,976	44,976	52,988	52,988
Quarter-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.003	0.010	0.236	0.603	0.059	0.060	0.247	0.627

Table 8: Short-window stock returns around earnings conference calls with firm fixed effects
This table presents the results of estimating the following regression with firm fixed effects: *CAR[-1,1] = f (PCTNUM, controls)*. The dependent variable, *CAR[-1,1]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call. All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. All regressions include quarter-year fixed effects and firm fixed effects. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

	[1]	[2]
PCTNUM	0.534***	0.280***
	(0.073)	(0.065)
FE		1.899***
		(0.094)
ROA		-0.146**
		(0.062)
BM		-0.037
		(0.088)
ME		-2.636***
		(0.311)
MOMENTUM		-0.604***
		(0.082)
ACCRUAL		-0.329***
		(0.066)
TONE		0.422***
		(0.060)
PCTFLS		-0.589***
		(0.065)
BLAME		-0.400***
		(0.041)
LENGTH		-0.383***
		(0.089)
VOLATILITY		-0.004
		(0.050)
INSTOWN		0.037
		(0.043)
LNUMEST		-0.155
		(0.100)
TURNOVER		-0.099
		(0.118)
GUIDANCE		0.996***
		(0.171)
NEWS		1.267***
		(0.081)
Observations	64,953	64,953
Quarter-Year FE	Yes	Yes
Firm FE	Yes	Yes
R-squared	0.066	0.131

Table 9: Components of conference call transcripts

In this table, we break down *PCTNUM* and report the results of estimating the following regression: *CAR[-1,1] = f (PCTNUM, controls)*. The dependent variable, *CAR[-1,1]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. $PCTNUM_S$ is total number of numbers relative to total number of numbers and words in the statement section of a conference call. $PCTNUM_{QA}$ is total number of numbers relative to total number of numbers and words in the Q&A section of a conference call. $PCTNUM_{FLS}$ is total number of numbers relative to total number of numbers and words in all forward-looking sentences in a conference call. $PCTNUM_{NonFLS}$ is total number of numbers relative to total number of numbers and words in all non-forward-looking sentences in a conference call. All regressions include control variables, quarter-year fixed effects, and firm fixed effects. For brevity we suppress all control variables (i.e., *FE*, *ROA*, *BM*, *ME*, *MOMENTUM*, *ACCRUAL*, *TONE*, *PCTFLS*, *BLAME*, *LENGTH*, *VOLATILITY*, *INSTOWN*, *LNUMEST*, *TURNOVER*, *GUIDANCE*, and *NEWS*). All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

	[1]	[2]
$PCTNUM_S$	0.240***	
	(0.064)	
$PCTNUM_{QA}$	0.245***	
	(0.059)	
$PCTNUM_{FLS}$		0.191***
		(0.064)
$PCTNUM_{NonFLS}$		0.177**
		(0.068)
Observations	64,953	64,953
Controls	Included	Included
Quarter-Year FE	Yes	Yes
Clustering	Yes	Yes
Firm FE	Yes	Yes
R-squared	0.131	0.131

Table 10: Subsample of firms that do not issue management forecasts

This table repeats analysis in Table 9 using a subsample of firms that did not issue management earnings forecasts. We break down *PCTNUM* and report the results of estimating the following regression: *CAR[-1,1] = f (PCTNUM, controls)*. The dependent variable, *CAR[-1,1]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. $PCTNUM_S$ is total number of numbers in the statement section of a conference call relative to total number of numbers and words in a conference call. $PCTNUM_{QA}$ is total number of numbers in the Q&A section of a conference call relative to total number of numbers and words in the Q&A section of a conference call. $PCTNUM_{FLS}$ is total number of numbers relative to total number of numbers and words in all forward-looking sentences in a conference call. $PCTNUM_{NonFLS}$ is total number of numbers relative to total number of numbers and words in all non-forward-looking sentences in a conference call. All regressions include control variables, quarter-year fixed effects, and firm fixed effects. For brevity we suppress all control variables (i.e., *FE*, *ROA*, *BM*, *ME*, *MOMENTUM*, *ACCRUAL*, *TONE*, *PCTFLS*, *BLAME*, *LENGTH*, *VOLATILITY*, *INSTOWN*, *LNUMEST*, and *TURNOVER*). All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

	(1)	(2)
$PCTNUM_S$	0.243***	
	(0.082)	
$PCTNUM_{QA}$	0.278***	
	(0.071)	
$PCTNUM_{FLS}$		0.181**
		(0.069)
$PCTNUM_{NonFLS}$		0.198**
		(0.083)
Observations	47,232	47,232
Controls	Included	Included
Quarter-Year FE	Yes	Yes
Firm FEs	Yes	Yes
R-squared	0.135	0.135

Table 11: Consideration of disclosure in earnings press release

Panel A presents the results of estimating the following regression: *CAR[-1,1] = f (PCTNUM_PressRelease, #Tables_PressRelease, #Items_ PressRelease, controls)*. The dependent variable, *CAR[-1,1]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day -1 to 1 relative to the date of the conference call. *PCTNUM_PressRelease* is the number of numbers relative to number of numbers and words in the text portion of the earnings press release. *#Tables_PressRelease* is the number of tables in the earnings press release. *#Items_PressRelease* is the number of line items reported in all tables in the earnings press release. Panel B reports the results of *CAR[-1,1] = f (PCTNUM_PressRelease, #Tables_PressRelease, #Items_PressRelease, PCTNUM, controls)*, where we further include *PCTNUM*. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call. All regressions include control variables, quarter-year fixed effects, and firm fixed effects. For brevity we suppress all control variables (i.e., *FE*, *ROA*, *BM*, *ME*, *MOMENTUM*, *ACCRUAL*, *TONE*, *PCTFLS*, *BLAME*, *LENGTH*, *VOLATILITY*, *INSTOWN*, *LNUMEST*, *TURNOVER*, *GUIDANCE*, and *NEWS*). All continuous independent variables are standardized for ease of interpretation. Variable definitions are included in Appendix 1. Standard errors are clustered by quarter and reported in parentheses. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

Panel A: Earnings press release

	(1)	(2)	(3)	(4)
PCTNUM_PressRelease	0.190***			0.196***
	(0.058)			(0.057)
#Tables_PressRelease		0.026		0.056
		(0.062)		(0.062)
#Items_PressRelease			0.002	-0.006
			(0.068)	(0.070)
Observations	49,981	49,981	49,981	49,981
Controls	Included	Included	Included	Included
Quarter-Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
R-squared	0.140	0.140	0.140	0.140

Panel B: Earnings press release and conference calls

	(1)	(2)	(3)	(4)
PCTNUM_PressRelease	0.169***			0.174***
	(0.057)			(0.056)
#Tables_PressRelease		0.020		0.051
		(0.063)		(0.062)
#Items_PressRelease			-0.010	-0.016
			(0.069)	(0.071)
PCTNUM	0.194***	0.214***	0.215***	0.193***
	(0.066)	(0.067)	(0.068)	(0.067)
Observations	49,981	49,981	49,981	49,981
Controls	Included	Included	Included	Included
Quarter-Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
R-squared	0.139	0.139	0.139	0.140

Table 12: Post-earnings conference call returns

This table presents the results of estimating the following regression: *CAR[2,60] = f (PCTNUM, controls)*. The dependent variable, *CAR[2,60]*, is cumulative abnormal returns (adjusted using Fama-French three-factor model) from trading day 2 to 60 relative to the date of the conference call. *PCTNUM* is total number of numbers relative to total number of numbers and words in a conference call. *PCTNUM* is standardized for ease of interpretation. All variable definitions are included in Appendix 1. All regressions include quarter-year time fixed effects. Standard errors are clustered by quarter. *, **, and *** denote significance at the 0.1, 0.05, and 0.01 levels, respectively.

	[1]	[2]
PCTNUM	0.462***	0.388***
	(0.089)	(0.098)
FE		0.464
		(0.321)
ROA		0.501**
		(0.207)
BM		0.096
		(0.268)
ME		-0.401
		(0.326)
MOMENTUM		-0.486
		(0.541)
ACCRUAL		-1.277***
		(0.199)
TONE		0.236
		(0.177)
PCTFLS		-0.108
		(0.088)
BLAME		-0.571***
		(0.149)
LENGTH		0.223*
		(0.130)
VOLATILITY		0.371
		(0.318)
INSTOWN		0.101
		(0.103)
LNUMEST		-0.423
		(0.255)
TURNOVER		0.001
		(0.229)
GUIDANCE		0.163
		(0.238)
NEWS		0.149
		(0.091)
Observations	65,068	65,068
Quarter-Year FE	Yes	Yes
R-squared	0.020	0.027