Good News in Numbers

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November 16, 2016

Abstract

This paper investigates the ratio of quantitative and qualitative content in disclosure and finds that the proportion of qualitative and quantitative information in disclosures contains value-relevant information for investors, since executives tend to use qualitative information, which is less precise, to obscure their poor performance. I calculate the proportion of numbers to words in conference call transcripts as a proxy for the proportion of quantitative information. Using this measure, I find that the proportion of quantitative information is positively related to operating and financial performance. I also find that managers are more likely to talk up their performances when using lower proportion of quantitative information. In addition, a high proportion of quantitative information is associated with a more positive stock price reaction, suggesting that a high proportion of quantitative information also conveys positive information about the firm. Finally, investors do not fully incorporate this information in the stock prices. A high proportion of quantitative information predicts a positive drift in stock returns after the conference call date.

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1 Introduction

While existing research indicates that both qualitative and quantitative information disclosed by managers are valuable to investors, there are also apparent differences: quantitative information tends to be more precise than qualitative information even if the numbers are only approximations (Hutton et al., 2003). Past research identifies the usefulness of either quantitative information (e.g., Bernard and Thomas (1989)) or qualitative information (e.g., Li (2010) and Loughran and Mcdonald (2011)), but rarely considers the interaction between these two types of information. By investigating the determinants and consequences of the use of qualitative and quantitative information, this study finds support for the idea that the ratio of quantitative and qualitative information can also contain value-relevant information, since managers change their level of precision following their incentives to obscure negative information.

Quantitative information is considered more precise than qualitative textual information (Hutton et al., 2003), since numbers often indicate an exact point or a range and thus they leave little to debate about the information conveyed. In contrast, qualitative description can only indicate a direction (e.g., positive or negative) or a very wide range of numbers. The meaning of words may also be subject to interpretations in different contexts. Overall, qualitative information leaves more ambiguity to investors. For example, "good", "excellent" and "great" are all positive qualitative descriptions in Loughran and Mcdonald (2011) classification. However, when an executive simply discloses that they had a "great" quarter without specific numbers, it is difficult for investors to map these words to a specific range of numbers.

Precise information helps investors establish a solid understanding of companies. However, executives may disclose less precise qualitative information in lieu of more precise quantitative information for various reasons. For example, managers may disclose qualitative information discretionarily even when they possess accurate numeric information. These

discretionary decisions can be driven by executives' various incentives such as delaying negative information and toning up the positive information.

Empirically, I use percentage of numbers in an investment text as a proxy for the proportion of quantitative information in the document. The first part of the paper investigates the incentives that drives executives' choices of qualitative versus quantitative information in their conference call disclosures. First, past research shows that managers tend to delay or withhold the disclosure of negative news (e.g., Kothari et al. (2009b), Burgstahler and Dichev (1997)). I hypothesize that executives are more likely to use precise numeric information when the firms are reporting satisfactory financial or operating performances . When a company experiences bad performance, managers disclose less precise textual information to obscure negative performance information. Second, a reduced proportion of numbers can leave more room to influence investors' perception using qualitative statements. Third, executives disclose more quantitative information prior to share issuance and this relationship is most salient in companies with good performance.

The second part of the paper sheds light on investors' reactions to the mix of qualitative and quantitative information in the disclosures. Because executives tend to use more qualitative information when their performance is relatively unsatisfactory, a high proportion of qualitative information may alert investors about the poor performance. The event return at the date of the conference call should be positively correlated with high proportion of quantitative information if some investors realize that a high proportion of quantitative information is associated with good performance. In addition, if investors underreact to this information the proportion of quantitative information may positively predict further positive returns after the information release. Finally, a higher proportion of quantitative information should be associated with more precise information. Using absolute analyst forecast error and analyst forecast dispersion to capture the lack of precision in information, a high proportion of quantitative information should imply a low forecast error and dispersion.

Towards these goals, I analyze a set of quarterly earnings conference call transcripts

from 2003 to 2012. Conference calls provide significant additional information to written statements such as earnings releases (Matsumoto et al., 2011). In addition, conference call transcripts offer obvious advantages over the regulatory filings and earnings releases in my analysis. Since conference call transcripts do not contain any tables or XML appendices, calculating the proportion of qualitative and quantitative information in the disclosure becomes a much easier task. I use a ratio of numbers and total counts of numbers and words as a proxy for the ratio of quantitative to qualitative information (hereafter PCTNUM). First, I show that financial and operating performances are positively related with PCTNUM. In contrast, the tone of the conference call is negatively correlated with PCTNUM. These results may indicate that managers are more willing to disclose subjective information when they use more words in the disclosures. In addition, a higher proportion of qualitative disclosure is accompanied by soft talks aiming to influence investors' perception of the financial results. PCTNUM is also related to other strategic considerations. Managers disclose more quantitative information prior to SEO. Nevertheless, the firms with better operating performance tend to issue more quantitative information depending on share issuance in the next quarter. Second, I examine how investors react to the use of qualitative and quantitative information. The results indicate that the proportion of qualitative information and quantitative information also carries important information: high PCTNUM is correlated with positive market reaction. In addition, PCTNUM further predicts positive price reaction in the quarter after earnings announcement. I also find that the information in the PCTNUM measure is more valuable when the firm has small market cap or low analyst coverage. In addition, PCTNUM predicts next quarter forecast errors, indicating that PCTNUM captures fundamental-related information not incorporated by sell-side analysts. Finally, confirming that the PCTNUM measure is a proxy for the precision of the information release, I find that this measure is positively correlated with analyst forecast dispersion and analyst forecast error for the incoming quarter.

This paper contributes to the existing literature in the following ways. First, this paper

synthesizes the previous literature on the information content of qualitative and quantitative information. Prior literature documents that both qualitative (e.g., Li (2010), Price et al. (2012), Jegadeesh and Wu (2013), Demers and Vega (2014)) and quantitative information (e.g., Bernard and Thomas (1989), Richardson et al. (2005), Novy-Marx (2013)) disclosed by executives contain value-relevant information to investors. This paper shows that in addition to qualitative and quantitative information in the corporate disclosures, the proportion of qualitative and quantitative information itself also provides value-relevant information.

Second, this study contributes to a body of literature on disclosure. Previous literature documents that various incentives and investors' behavioral characteristics drive executives' reporting decisions. Related to previous literature, this is the first paper that shows the proportion of quantitative information in the voluntary disclosure is driven by managers' incentives. For example, Kothari et al. (2009b) find that executives tend to delay the disclosure of negative information. So and Weber (2015) document that the bad news are generally announced later in the quarter than usual. Burgstahler and Dichev (1997) document that earnings are managed upward to meet certain thresholds. Huang et al. (2013b) find that executives may use tone to manipulate the perception of investors. Cohen et al. (2013) document that this behavior is related to executives trying to mask their bad performance. Overall, this literature indicates that executives tend to hide bad news and try to delay the disclosures of bad news hoping for the results to improve in the future. This paper shows that by changing the proportion of qualitative and quantitative information, managers can adjust the precision of their information disclosure. By disclosing less precise information when they experience bad performance, executives attempt to manage people's perception of the company's performance. Because of these incentives, the precision of information in the conference call itself contains value-relevant information. Imprecise information signals negative information to investors. Similar to this idea, there are a number of studies that examine the information precision and soft talk versus verifiable information in the management forecast (e.g., Baginski and Hassell (1997), Baginski et al. (1993), Hutton et al. (2003)).

In addition, Huang et al. (2013a) find that investors tend to underreact to earnings-related news when managers do not use numbers in the headline of their press releases and interpret the use of number in the headline as "salience" of information. The price reaction to this variable is distinctive from the variables examined in the prior research. In particular, Huang et al. (2013a) find that stock price responding to headline salience reverse after the initial reaction, while this paper finds that the prices continue to drift after the initial reaction to the ratio of number and words, which indicates that the ratio carries information as opposed to salience. Finally, in addition to the incentive to delay bad news, managers' decision to use qualitative or quantitative information in their disclosure can also be driven by strategic considerations such as share issuance (e.g., Hughes and Pae (2004)).

Third, this study contributes to the literature on how investors respond to information in disclosures. Bernard and Thomas (1989) document the post earnings announcement drift, indicating that investors underreact to quantitative information from the earnings announcements. Li (2010) and Tetlock et al. (2008) show that investors do not fully incorporate the qualitative textual information from regulatory filings and news reports. This paper further shows that although investors react in the right direction initially to managers' choice of qualitative and quantitative information in the disclosure, the price continues to drift after the conference call date. Thus, the evidence indicates that investors underreact to the information in PCTNUM.

Fourth, this paper provides supporting evidence that the proportion of qualitative and quantitative information measures the precision of information. Although not directly related to textual readability measures proposed in previous literature (e.g., Lehavy et al. (2011) and Loughran and Mcdonald (2014)), the measure used in this paper is also a direct measure of the difficulty in interpreting the disclosure material. The higher the percentage of numeric information the lower the difficulty in understanding disclosure texts. In addition, this paper provides supporting evidence to Chuprinin et al., who use the percentage of numbers in news coverage to proxy information tangibility. A high percentage of numbers is associated with

more tangible information, since tangible information refers to information that is more precise and is easier to interpret and the proportion of numbers is positively correlated with information precision.

Finally, this paper is also linked to a literature on the information from earnings conference calls. This paper shows that the linguistic choices in conference call contains information in addition to previously documented variables. Existing papers find that conference calls are an informative disclosure channel (Matsumoto et al., 2011). In addition, investors react to various behavioral patterns such as whether executives stay silent over Q&A part (Hollander et al., 2010), structure of conference call narratives (Allee and DeAngelis, 2014) and attribution behavior (e.g., Zhou 2014). Mayew and Venkatachalam (2012) also show that the tone of voice is a useful signal for investors and investors underreact to that information. Larcker and Zakolyukina (2010) find that conference call can also help investors detect accounting irregularities.

The rest of the paper will proceed as follows. Section 2 develops empirically testable hypotheses. Section 3 provides a detailed description of textual and other data used in this study. Section 4 presents the main empirical findings of this paper. Section 5 concludes the paper.

2 Hypotheses Development

The first set of hypotheses are related to the determinants of the proportion of numbers used in conference calls. It is documented in the past that managers tend to delay revelation of bad news (e.g., Kothari et al. (2009b)). Managers also tend to spin bad news when the performance is unsatisfactory (e.g., Solomon (2012), Cohen et al. (2013)). I first hypothesize that managers reduce the use of quantitative information when their performance is less satisfactory. Thus, firm performances should negatively correlate with the proportion of quantitative information in the conference call. This prediction also echoes the higher

likelihood of salience when announcing good news documented in Huang et al. (2013a). The first hypothesis is stated as follow:

- H1a: Operating and financial performance measures (such as SUE, ROA and lag return) are positively correlated with the use of quantitative information.

In addition, by increasing the proportion of qualitative information, executives will have higher ability to engage in tone management (e.g., Huang et al. (2013b)). In other words, managers can use positive tones to influence investors' perception of the performance of their companies. The second hypothesis is

- H1b: The tone of the overall transcript is negatively correlated with the proportion of quantitative information.

In addition to the incentive to delay the revelation of bad news and tone management, executives' decisions to use qualitative or quantitative information in disclosure can also be driven by other strategic considerations. For example, managers may strategically reveal more quantitative information to reduce information asymmetry. However, this effect should only concentrate in the firms with good operating and financial performance. Hughes and Pae (2004) model firms' disclosure behaviors and find that companies disclose precise information when their value is high and less precise information when the value is low. Thus, firms that experience poor performance prefer to use qualitative information even if they need to issue shares. The testable hypothesis is that

- H1c: Firms that engage in SEO in the following quarter use more quantitative information. The effect is stronger for the firms with strong financial and operating performance.

The second set of hypotheses are related to investor responses to the use of qualitative and quantitative information. In order to hide certain unsatisfactory results, managers may simply choose to disclose using qualitative information even if they possess precise

quantitative information. If executives choose to use less precise qualitative information when they experience bad performance, the ratio of qualitative and quantitative information itself can be informative about the performance of the company. A high percentage of qualitative information signals negative performance information about the firm to investors. On the other hand, high level of quantitative information shows executives' confidence in their numbers. Thus, a high percentage of qualitative information should receive negative investor responses. I hypothesize that

- H2a: A high proportion of quantitative information leads to positive stock price reaction at the announcement date.

Past research shows that investors do not fully react to information in the earnings numbers (Bernard and Thomas, 1989) and the tone of 10-K (e.g., Li (2010)). It is shown that investor inattention may explain the documented predictability. Investors tend to react more slowly to less salient information and less tangible information (e.g.,Cohen et al. (2010)). The ratio of quantitative information is arguably not salient or tangible. Thus, investors are less likely to fully incorporate the information in the stock prices immediately. If investors do not react to the information in the ratio of qualitative and quantitative information or underreact to this information, a low ratio of quantitative information will predict lower future stock returns. Thus

- H2b: A high percentage of quantitative information leads to positive stock returns after the earnings announcement date if investors underreact.

Furthermore, the value of information delivered by the ratio of number and words is likely to vary with the information environment firms. In particular, when the shareholders have limited additional sources of information, the ratio of number and words may be more valuable to investors, since investors would have to more heavily rely on the disclosure from the company. The availability of external information can be measured using the market capitalization of the firm or the number of analysts covering the firms. Thus,

- H2c: Prices will react more (less) positively both in the short term (around the earnings announcement) and the long-term (60 trading days after the conference call) for the firm has a lower (higher) market capitalization or lower (higher) analyst coverage.

There are two potential channels that links the ratio of number and words in conference calls and the prices of stocks. First, the association between the increase in stock prices and high fraction of numbers in conference call may be a result of investors' perception. Heavy use of numbers in conference calls may improve investors' perception of the company's transparency. Thus, they may be willing to assign a higher valuation to the firm. Second, it is also possible that the linkage between fraction of numbers in conference call and the stock prices is driven by fundamental information. In other words, high fraction of numbers is informative about companies' future earnings. These explanations can be distinguished by investigating the analyst forecast error in the following quarter. So I propose the following hypothesis:

- H3: If the fraction of numbers indeed capture fundamental-related information, we should expect that high fraction of numbers in conference calls.

The final hypothesis is related to how the release of qualitative versus quantitative information affects the information environment. Prior studies have established that the style of disclosure can affect the precision of information received by the participants. The existing literature proposes several measures of readability of regulatory documents. For example, Lehavy et al. (2011) use FOG index to analyze 10-K documents. Their results indicate that a higher FOG index is associated with higher forecast error and analyst forecast dispersion. Loughran and Mcdonald (2014) propose the file size of the 10-K document submitted to the SEC is a better proxy for readability. They document that greater 10-K file size is also associated with larger analyst forecast dispersion and higher forecast error. I hypothesize that the high percentage of numbers in the conference call transcript has a similar effect on market participants. Quantitative information disclosed in conference calls generally reflects

an accurate statement (e.g., 5%) or a specific range of band (e.g., 5% to 7%). In contrast, qualitative information only reflects a normative statement and can imply a broad range of values (e.g., the segment is expected to have strong growth in the following quarter). Therefore, a higher percentage of numbers in the conference call should associate with more precise information. This leads to the following hypothesis:

- H4: A higher percentage of numbers is negatively associated with analyst forecast dispersion and analyst forecast error.

3 Data

The conference call transcripts come from two sources: Thomson One's StreetEvent and Factset's Call Street. The sample period is 2003 to 2012. The combined sample covers roughly 60,000 firm-quarters. For each transcript, I extract the number of positive and negative words. In addition, I count the total number of words in the text. A word is only counted when it is included in the 10-K dictionary by Loughran and Mcdonald (2011). This information allows me to calculate the overall tone of the transcript. I also extract the numerical phrase in the transcripts. Both StreetEvents and Call Street record numbers in numeric form (i.e., 9% instead of nine percent) in their transcripts. I look for any number with a space or a dollar sign in the front. The rest of the number can consist of numeric characters (0-9), comma (,) and period (.). These requirements can effectively rule out many numbers in company names (such as L-3 Communications) and other non-informative numbers (e.g., FY09). At the same time, they can pick up most value-relevant numbers in the discussion (such as growth rate, EPS, revenue and so on). In addition, I exclude whole numbers from 1950 to 2020 to exclude the mention of year in the conference call discussions. I calculate the following measure to proxy for the proportion of quantitative information in the text:

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

where $N(Numbers)$ are the total count of numbers in the whole transcript and $N(Words)$ is the total count of words in the transcript. In the additional analysis, I divide the transcripts into statement and Q&A components. Matsumoto et al. (2011) document that both statement and the Q&A components contain significant information about corporate value and Q&A component delivers more information relative to the statement component. I split each transcript into the statement and Q&A components by looking for a number of textual patterns that involve operator and question. I then calculate $PCTNUM_S$ and $PCTNUM_{QA}$ for both statement and $Q\&A$ components for further analyses.

To give a sense of the context of these numbers, I have tabulated the word frequencies of the sentences with at least a number and those sentences without a number. Upon casual observation, it is clear that sentences with numbers often mention financial-related numbers, such as sales and growths. In contrast, the frequencies of those words in the sentences without numbers are lower. At the same time, terms such as "product" have higher frequencies in the sentences with without numbers.

The summary statistics related to the conference calls are presented in table 1. The key variable is PCTNUM. On average, numbers account for roughly 2.7 percent of the total words and numbers. The statement component contains a higher proportion of numbers than the Q&A components. On average, numbers account for 3.9 percent in statement components and about 2.2 percent in Q&A components. The mean count of numbers in each transcript is about 209. Also, more numbers are presented in the statement components (about 109 numbers). Interestingly, compared with other textual variables listed in the table, only $PCTNUM_S$ and $PCTNUM_{QA}$ are negatively correlated (-0.0472). All the other textual variables have positive correlations between the statement component and the Q&A component. This result shows that the quantitative information in the statements and the Q&A sections are generally substitutes for each other.

The other variables are constructed as follows. Compustat and IBES are merged to obtain the common financial measures such as market equity, book-to-market ratio, past return and

Standardized Unexpected Earnings. The cumulative abnormal return (CAR) is calculated using the Fama-French 3-factor model (Fama and French, 1993). The beta of the factor loadings are estimated using the daily returns in the interval of [-180,-15] relative to the date of the conference call. Standardized unexpected earnings or SUEs are calculated as

$$SUE_{i,t} = \frac{E_{i,t} - FE_{i,t}}{P_{i,t}},$$

where E represents realized quarterly earnings, FE represents the consensus analyst forecast earnings and P is the stock price at the end of the IBES statistical period when consensus analyst earnings forecasts are calculated. The consensus analyst forecast expectation is formed on the closest IBES statistical period end date prior to the conference call. SUE is winsorized between -0.1 and 0.1. ROA is the return on assets. The analyst forecast dispersion, DISP, is calculated as the standard deviation of analyst forecast for the next quarter, scaled by price. CAR is calculated using a 3-factor model, where the loadings on the Fama-French factors are estimated by returns from the prior 180 days up to 10 days relative to the earnings announcement date. The results presented in the rest of paper are robust if market adjusted returns (calculated as firm returns minus market returns) are used instead of cumulative abnormal returns. Volatility is the estimated daily volatility one year prior to the conference call date. Share turnover is the monthly turnover in the month before the conference call date, calculated as the total number of shares traded divided by the number of shares outstanding. Institutional ownership is formed based on the 13F data at the end of the quarter prior to the conference call. The summary statistics of these variables are presented in table 2.

4 Main Results

4.1 Determinants of PCTNUM

I explore whether executives change the proportion of qualitative and quantitative information in their disclosures in response to various incentives in this section. Specifically, I test the set of hypotheses proposed in H1. I run a set of panel regressions with PCTNUM as the dependent variable. The results from these regressions are reported in table 3. The first hypothesis under H1 states that corporate performance influences the choice of linguistic style in disclosure. Executives are more willing to disclose specific numbers as opposed to more vague qualitative descriptions when they perform well. I use several measures to proxy the overall corporate performance. Both standard unexpected earnings (SUE) and lag return (LAGRET) are measures of firms' financial performance. SUE measures whether earnings can beat the analyst forecast. The lag return is a direct measure of the market's assessment of the firm's performance. I use ROA to proxy for the operating performance of the company, since ROA is a commonly used measure for profitability. I find that both SUE and LAGRET are strongly positively correlated with PCTNUM. This indicates that executives use more numbers in the conference call when there is strong financial performance. ROA is also strongly positively associated with PCTNUM, indicating a positive relationship between the firm's operating performance and the use of quantitative information in the conference call. These results confirm the empirical predictions in H1a that the firm's financial and operating performances are positively correlated with the use of numbers in the transcripts. In the same regression, I also include a set of variables related to the company characteristics, institutional ownership and analyst coverage as control variables. I find that institutional ownership is positively correlated with the use of numbers. This result is likely to be driven by institutional investors' demand more precise voluntary disclosure from the management. Another possibility is that more precise information disclosure attracts institutional investors (Bushee and Noe, 2000). Analyst following is negatively correlated with the PCTNUM. This

result may seem at odds with the previous institutional ownership result, since institutional ownership is positively correlated with the use of numbers in the conference call. However, Lehavy et al. (2011) find that 10-K with lower readability is associated with higher analyst coverage, since there may be greater demand for analysts to interpret the puzzling financial statements. Similar explanations may explain the positive coefficients in this regression: low PCTNUM is related to less precise information. Therefore, there is higher demand for analysts' services to interpret information releases from the investors.

The second test investigates how other linguistic characteristics relate with PCTNUM. Firstly, if low percentage of numbers are related to managers' choice to disclose less precise information in response to poor performance, it leaves more room for executives to tone up the results. Therefore, high PCTNUM may be negatively related to the tone of the transcript. In the second regression of table 3, I find that TONE is negatively related to PCTNUM. This coefficient is highly statistically significant (t-stat = -16). Secondly, the regression reports that PCTNUM is negatively related to the length of the transcript, indicating that managers tend to be more verbose when they use less quantitative information in the disclosures. Finally, a high proportion of qualitative information is likely to be linked to more behavioral biases in the reporting such as self attribution bias. Zhou (2014) proposes that BLAME measure can proxy managers' behaviors to attribute negative performance externally. Thus, BLAME is predicted to be negatively correlated with PCTNUM. Moreover, I find that BLAME is negatively related to PCTNUM, indicating that a higher proportion of quantitative information is related to a lower proportion of sentences that attribute negative performance to negative factors. These results are consistent with the hypothesis H1b. Summarizing the results, PCTNUM is negatively associated with the tone of the conference call transcript, the length of conference call transcript and the BLAME measure, indicating that a high proportion of quantitative information in the conference call disclosure is associated with reduced tone management, more succinctness in discussions and potentially less biases in attributing negative performance.

Finally, I test if share issuance in the recent future can affect executives' use of quantitative and qualitative information in the disclosure. The result is reported in the third regression of table 3. The SEO dummy equals to one if the company engages in SEO activity in the quarter following the conference call. I find the SEO dummy is strongly associated with high PCTNUM in the transcript. This is consistent with the idea that executives tend to disclose more quantitative information prior to the SEOs. By providing more quantitative information, executives can reduce the information asymmetry between management and the investors for share issuance purpose (e.g., Lang and Lundholm (2000)). This effect also concentrates in the firms with better operating performance, since the interaction term of SEO and ROA is significantly positive. Firms with worse operating performance may prefer to avoid disclosing precise quantitative information. Because qualitative information is less precise, disclosing qualitative information may leave more room for managers to manage investors' perception of the firm value before share issuance. However, there is no evidence that the interaction of SEO and financial performance (e.g., SUE) is positively correlated with PCTNUM.

In the last column of this table, I include all the independent variables. Most coefficients remain significant in the kitchen-sink regression. The coefficient of log number of analyst estimate and share turnover become statistically insignificant, indicating that these variables have less important relationships with the proportion of quantitative information.

In sum, executives choose the proportion of numeric information in response to a number of incentives. They tend to use more quantitative information and thus increase the precision of the information disclosure when their financial and operation performances excel. An increase in qualitative information is oftentimes accompanied by more positive tones, indicating the possibility that executives engage in tone management (Huang et al., 2013b). Managers also strategically increase the proportion of quantitative information prior to SEO, but this effect is stronger in the companies with higher profitability.

4.2 Investor Responses to PCTNUM

The previous results show strong evidence that managerial incentives strongly affect the choice of proportion of qualitative and quantitative information in the disclosure. In this section, I explore the information in the ratio of qualitative and quantitative information in the conference calls. I start by examining how investors respond to PCTNUM information around the conference call date. More specifically, I test hypothesis H2a: investors react positively to the conference call transcripts with a high proportion of quantitative information, since a high proportion of quantitative information indicates that executives are not attempting to obscure negative information from the investors. I test this hypothesis H2a by running the Fama-Macbeth regression (Fama and MacBeth, 1973) with cumulative abnormal return in the 3-day window around the date of the conference call to test investors' initial reaction to the ratio of quantitative information. The regression takes the following specification:

$$CAR[-1,1] = \alpha + \beta PCTNUM + \gamma X + \epsilon,$$

where CAR is adjusted using 3 factor model in Fama and French (1993) and X represents a vector of control variables. The results are reported in table 4. The reported coefficient is the average coefficient of quarterly coefficients. The standard deviation is calculated using time series standard deviation with Newey-West standard error Newey and West (1987) with four lags. I find that PCTNUM is is positively correlated with 3-day abnormal returns. In the univariate specification, one standard deviation in PCTNUM is associated with 27 basis points change in the 3-day abnormal return (t-stat=6). The second regression includes a set of control variables. Specifically, I include variables such as SUE, ROA and accrual. These variables summarize the financial and operating performance of the firm during the fiscal quarter covered by the earnings release. In addition, I control for two linguistic related variables: TONE (measures the difference between the percentage of positive words and negative words in the transcript) and BLAME (the percentage of sentences that attribute

negative performance to industry and economy). The coefficient for PCTNUM is still positive and statistically significant. This result supports the hypothesis $H2b$. The positive response to a high proportion of quantitative information indicates that managers' providing a high proportion of quantitative information itself is a positive signal about the firm performance, since high proportion of quantitative information shows that managers do not need to obscure negative results using qualitative information.

Previous literature documents that the statement component and the Q&A components both offer significant information. However, the Q&A component seems to be more informative. One possibility is that the statement component has high similarity with the earnings release. In general, the statement component is prepared and the Q&A component may be more spontaneous, since it is difficult to anticipate the questions from the analysts. I further explore whether the PCTNUM from these two components of earnings conference calls affect the stock prices differently. I further split the transcripts into statement component and the Q&A component. I then examine which component is responsible for the positive relationship of PCTNUM and CAR[-1,1]. While both $PCTNUM_S$ and $PCTNUM_{QA}$ are positively correlated with the cumulative abnormal return, $PCTNUM_S$ is much stronger correlated with CAR, indicating that investors deem the PCTNUM in the statement component to be more informative.

The second test in this section investigates whether investors fully incorporate the information of PCTNUM in the stock prices in a timely manner. If investors do not fully incorporate this information in the stock prices, investors can potentially use the PCTNUM as a signal for firm performance. The existing literature documents that the market tends to underreact to certain quantitative and qualitative information. The underreaction tend to be more severe for less tangible and less salient information. The information contained in PCTNUM is likely to be intangible and less salient. Few market participants count the number of words and total count of numbers after each conference call. Thus, there is the possibility that the information in PCTNUM is not completely reflected in the stock prices.

I use a similar specification as the short term return regression:

$$CAR[2,60] = \alpha + \beta PCTNUM + \gamma X + \epsilon.$$

The CAR[2,60] includes the 60 trading days following the conference call, which roughly matches to the next calendar quarter. Previous research generally uses this time frame to test investors' underreaction to the information from earnings announcements (e.g., Hirshleifer et al. (2009)). The results from this regression are tabulated in table 5. The first column in the table indicates that one standard deviation change in PCTNUM is associated with 35 basis points change in the abnormal return in the next quarter (t=4). This effect is economically larger than the effect on the announcement date. Two standard deviations of PCTNUM implies an 2.9% difference in annualized return. This effect is robust even after including control variables in the regression. Breaking down the PCTNUM into the statement component and Q&A component, both components can positively predict future returns. The economic magnitude and statistical significance are somewhat stronger for the coefficient in $PCTNUM_S$. These results indicate that the market underreacts to the information from the proportion of qualitative and quantitative information in both the statement and Q&A components of the earnings conference call. In sum, these results indicate a clear pattern of underreaction to executives' choice of qualitative and quantitative information in the conference call disclosures. These results confirm the empirical prediction of H2b.

In the next test, I investigate whether the information in PCTNUM differs in firms with different information environment. I use two variables to serve as proxies for the information environment of firms. First, the size of the firm is directly related on the attention from news outlets and analysts. Thus, investors in large firms have a richer information environment. Second, I use the direct number of analyst covering the firm as a second proxy for the richness of information environment. I test the hypothesis H2c, which states that PCTNUM

will be a less valuable information signal when there is richer information environment. I test this hypothesis in table 6. The dependent variables are CAR[-1,1] and CAR[2,60]. Our key independent variables are COVDUM*PCTNUM and MEDUM*PCTNUM, where COVDUM is an indicator variable that turns to 1 if the firm is not among the bottom quartile in terms of analyst coverage and MEDUM is an indicator variable that equals to 1 if the firm is not among the bottom quartile in market capitalization. Both interaction terms are negative and insignificant when the dependent variable is CAR[-1,1], indicating limited difference in the immediate reactions to the PCTNUM signal for firms with different information environment. However, the coefficients for these interaction terms are negative and highly significant when the dependent variable is CAR[2,60]. These results show that the stock price drift associated with PCTNUM is concentrated in firms with smaller market cap and lower analyst capitalization. Thus, the evidence indicates that the information in PCTNUM is more important when there are less external information sources and investors do not fully realize the difference, which leads to the incomplete reaction to PCTNUM among smaller or less covered firms.

Summarizing the results, the proportion of qualitative and quantitative information in conference calls contain information about firm performance. A high proportion of quantitative information is a positive signal to investors, as it shows that managers are not hiding negative information behind more ambiguous qualitative descriptions. Furthermore, investors do not fully incorporate this information in stock prices.

4.3 Predicting Forecast Error

A couple of channels potentially link the PCTNUM and the stock prices. First, high fraction of numbers could signal firms' increased transparency to investors and investors may assign a higher valuation to the firm. Second, high fraction of numbers could also contain positive information related to firms' fundamentals, which boosts the stock prices. I distinguish these two linkages using analyst forecast errors, since analyst forecast errors are a commonly used

measure for firms' fundamental performances. If PCTNUM is significantly associated with future analyst forecast errors, it is likely to indicate that the fraction of numbers in conference calls is linked to stock prices through fundamental information. The results from the test is reported in table 7. The results indicate that the PCTNUM positively predicts next quarter forecast error in both the univariate regression and the regression with additional control variables. Additionally, the power to predict next quarter forecast error is driven mostly by the PCTNUM in the statement component. Thus, this test suggests that a high PCTNUM measure may signal improvement in fundamental in the future that is not anticipated by analysts.

4.4 PCTNUM and Information Precision

The final set of empirical results explores how the ratio of qualitative and quantitative information affects the information precision of the analysts. Specifically, I examine whether higher PCTNUM is associated with higher information precision. Following previous literature (e.g., Lehavy et al. (2011), Loughran and Mcdonald (2014)), both absolute SUE and analyst forecast dispersions can proxy for the information environment of the market participants. If a high percentage of quantitative information is associated with more precise information, then a high PCTNUM should be negatively correlated with lower absolute SUE in the following quarter. In addition, a high percentage of quantitative information should lead to low analyst forecast dispersion, since more precise information about firms' fundamentals can reduce the disagreement about firms' fundamentals. I use the following panel regression specification to test the hypothesis:

$$|SUE| = \alpha + \beta PCTNUM + \delta X + \epsilon$$

$$DISPER = \alpha + \beta PCTNUM + \delta X + \epsilon$$

where X is a number of control variables that includes log size, book-to-market and so on. The results from these regressions are reported in table 8. The standard errors are clustered by PERMNO. Consistent with the hypothesis H4, the first regression in the table indicates a negative relationship between PCTNUM and absolute SUE next quarter (t=-3.8). PCTNUM is also negatively related to high dispersion (t=-3.12). This result indicates that the higher the percentage of quantitative information the higher the information precision on average. Decomposing the PCTNUM for the full transcript into statement and Q&A sections, I find that the PCTNUM in the statement component is mainly responsible for the negative relationship. These results indicate that proportion of quantitative information can affect the ambiguity in the disclosed information. This effect is similar to the readability measures such as FOG index (Lehavy et al., 2011) and the size of the regulatory filing (Loughran and Mcdonald, 2014).

The set of regressions indicate a negative relationship between analyst forecast dispersion and forecast dispersion and PCTNUM. These results are consistent with hypothesis H3. These results provide evidence that a high percentage of numbers is associated with lower disagreement among analysts. However, only the statement component of the transcript is associated negatively with the statement component in the transcript. Taken together, a high proportion of quantitative information is associated with more precise information in the information released from the voluntary disclosure.

5 Conclusion

This paper studies the ratio of qualitative and quantitative information in the quarterly earnings conference call. The research documents that the choice to disclose qualitative or quantitative information is driven by various incentives of managers. Executives tend to use more quantitative information when the companies perform well. In addition, a high proportion qualitative information is related to less positive tone , longer transcript and a

lower proportion of external attribution. A high proportion of quantitative information is likely to be associated with less tone management and more objective reporting. Managers also tend to increase the proportion of quantitative information in their reporting prior to share issuance. It is consistent with executives' aim to reduce information asymmetry prior to share issuance. The increase is significantly stronger in firms with high profitability.

More importantly, the proportion of quantitative information in the conference call disclosure also contains firm value-relevant information. Since firms with lower performance avoid disclosing precise quantitative information, a high proportion of quantitative information indicates managers' confidence in their own performance. Thus, high proportion of quantitative information in disclosure is associated with more positive price reaction for the window around the conference call. Furthermore, I also document that investors underreact to this information. Therefore, a high proportion of quantitative information leads to subsequent positive price reaction. Finally, I find that the proportion of quantitative information is positively related to the precision of external information environment. Results indicate that the proportion of numeric information is negatively related with dispersion of analyst forecast and forecast error measured by absolute SUE.

Previous literature examines qualitative and quantitative information separately. To my best knowledge, this study is the first one that joins the two lines of literature and shows that the interaction of qualitative and quantitative information is also informative to shareholders about corporate value. These results suggest that it may be fruitful to explore how qualitative and quantitative information interplay in other contexts.

References

Kristian D. Allee and Matt DeAngelis. The structure of voluntary disclosure narratives: Evidence from conference calls. SSRN Scholarly Paper ID 2375898, Social Science Research Network, Rochester, NY, January 2014. URL http://papers.ssrn.com/abstract=2375898.

Stephen P. Baginski and John M. Hassell. Determinants of Management Forecast Precision. *The Accounting Review*, 72(2):303–312, April 1997. URL http://www.jstor.org/stable/248558.

Stephen P. Baginski, Edward J. Conrad, and John M. Hassell. The Effects of Management Forecast Precision on Equity Pricing and on the Assessment of Earnings Uncertainty. *The Accounting Review*, 68(4):913–927, October 1993. URL http://www.jstor.org/stable/248513.

Victor L. Bernard and Jacob K. Thomas. Post-earnings-announcement drift: Delayed price response or risk premium? *Journal of Accounting Research*, 27:1–36, January 1989. ISSN 00218456. doi: 10.2307/2491062. URL http://www.jstor.org/stable/2491062. ArticleType: research-article / Issue Title: Current Studies on The Information Content of Accounting Earnings / Full publication date: 1989 / Copyright 1989 Accounting Research Center, Booth School of Business, University of Chicago.

Robert M. Bowen, Angela K. Davis, and Dawn A. Matsumoto. Emphasis on pro forma versus GAAP earnings in quarterly press releases: Determinants, SEC intervention, and market reactions. *The Accounting Review*, 80(4):1011–1038, October 2005. ISSN 0001-4826, 1558-7967. doi: 10.2308/accr.2005.80.4.1011. URL http://aaajournals.org/doi/abs/10.2308/accr.2005.80.4.1011.

David Burgstahler and Ilia Dichev. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics*, 24(1):99–126, December 1997. ISSN 0165-4101. doi: 10.1016/S0165-4101(97)00017-7. URL http://www.sciencedirect.com/science/article/pii/S0165410197000177.

Brian J. Bushee and Christopher F. Noe. Corporate disclosure practices, institutional investors, and stock return volatility. *Journal of Accounting Research*, 38:171–202, January 2000. doi: 10.2307/2672914. URL http://www.jstor.org/stable/2672914.

Mark M. Carhart. On persistence in mutual fund performance. *The Journal of Finance*, 52(1):57–82, March 1997. ISSN 0022-1082. doi: 10.2307/2329556. URL http://www.jstor.org/stable/2329556. ArticleType: research-article / Full publication date: Mar., 1997 / Copyright 1997 American Finance Association.

Jing Chen, Elizabeth A. Demers, and Baruch Lev. Oh what a beautiful morning! the time of day effect on the tone and market impact of conference calls. SSRN Scholarly Paper ID 2186862, Social Science Research Network, Rochester, NY, July 2013. URL http://papers.ssrn.com/abstract=2186862.

Oleg Chuprinin, Srgio Gaspar, and Massimo Massa. Adding value through information interpretation: News tangibility and mutual funds' trading. URL http://www.aeaweb.org/aea/2014conference/program/retrieve.php?pdfid=996.

L. Cohen, K. Diether, and C. Malloy. Misvaluing innovation. *Unpublished working paper, Harvard University, and Dartmouth University*, 2010.

Lauren Cohen, Dong Lou, and Christopher Malloy. Playing favorites: How firms prevent the revelation of bad news. Technical report, National Bureau of Economic Research, 2013. URL http://www.nber.org/papers/w19429.

Franois Degeorge, Jayendu Patel, and Richard Zeckhauser. Earnings management to exceed thresholds. *The Journal of Business*, 72(1):1–33, January 1999. doi: 10.1086/jb.1999.72.issue-1. URL http://www.jstor.org/stable/10.1086/209601.

Stefano Dellavigna and Joshua M Pollet. Investor inattention and friday earnings announcements. *The Journal of Finance*, 64(2):709–749, March 2009. ISSN 1540-6261. doi: 10.1111/j.1540-6261.2009.01447.x. URL http://onlinelibrary.wiley.com.proxy.library.emory.edu/doi/10.1111/j.1540-6261.2009.01447.x/full.

Elizabeth A. Demers and Clara Vega. Understanding the role of managerial optimism and uncertainty in the price formation process: Evidence from the textual content of earnings announcements. SSRN Scholarly Paper ID 1152326, Social Science Research Network, Rochester, NY, March 2014. URL http://papers.ssrn.com/abstract=1152326.

Joseph Engelberg. Costly information processing: Evidence from earnings announcements. *SSRN eLibrary*, 2008. URL http://ssrn.com/paper=1107998.

Eugene F. Fama and Kenneth R. French. Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, 33(1):3–56, February 1993. ISSN 0304-405X. doi: 10.1016/0304-405X(93)90023-5. URL http://www.sciencedirect.com/science/article/B6VBX-45910BK-J/2/dffa339e2c932078a3211c860dbaf7ce.

Eugene F. Fama and Kenneth R. French. Industry costs of equity. *Journal of Financial Economics*, 43 (2):153–193, February 1997. ISSN 0304-405X. doi: 10.1016/S0304-405X(96)00896-3. URL http://www.sciencedirect.com/science/article/pii/S0304405X96008963.

Eugene F. Fama and James D. MacBeth. Risk, return, and equilibrium: Empirical tests. *The Journal of Political Economy*, 81(3):607–636, May 1973. ISSN 0022-3808. URL http://www.jstor.org/stable/1831028. ArticleType: research-article / Full publication date: May - Jun., 1973 / Copyright 1973 The University of Chicago Press.

Ronen Feldman, Suresh Govindaraj, Joshua Livnat, and Benjamin Segal. Managements tone change, post earnings announcement drift and accruals. *Review of Accounting Studies*, 15(4):915–953, December 2010. ISSN 1380-6653, 1573-7136. doi: 10.1007/s11142-009-9111-x. URL http://link.springer.com/article/10.1007/s11142-009-9111-x.

John R. Graham, Campbell R. Harvey, and Shiva Rajgopal. The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(13):3–73, December 2005. ISSN 0165-4101. doi: 10.1016/j.jacceco.2005.01.002. URL http://www.sciencedirect.com/science/article/pii/S0165410105000571.

Jay C. Hartzell and Laura T. Starks. Institutional investors and executive compensation. *The Journal of Finance*, 58(6):2351–2374, December 2003. ISSN 1540-6261. doi: 10.1046/j.1540-6261.2003.00608.x. URL http://onlinelibrary.wiley.com/doi/10.1046/j.1540-6261.2003.00608.x/abstract.

Paul M Healy and Krishna G Palepu. Information asymmetry, corporate disclosure, and the capital markets: A review of the empirical disclosure literature. *Journal of Accounting and Economics*, 31 (13):405–440, September 2001. ISSN 0165-4101. doi: 10.1016/S0165-4101(01)00018-0. URL http://www.sciencedirect.com/science/article/pii/S0165410101000180.

David Hirshleifer and Siew Hong Teoh. Limited attention, information disclosure, and financial reporting. *Journal of Accounting and Economics*, 36(13):337–386, December 2003. ISSN 0165-4101. doi: 10.1016/j.jacceco.2003.10.002. URL http://www.sciencedirect.com/science/article/pii/S0165410103000648.

David Hirshleifer, Sonya Seongyeon Lim, and Siew Hong Teoh. Driven to distraction: Extraneous events and underreaction to earnings news. *The Journal of Finance*, 64(5):2289–2325, October 2009. ISSN 1540-6261. doi: 10.1111/j.1540-6261.2009.01501.x. URL http://onlinelibrary.wiley.com.proxy.library.emory.edu/doi/10.1111/j.1540-6261.2009.01501.x/full.

Stephan Hollander, Maarten Pronk, and Erik Roelofsen. Does silence speak? an empirical analysis of disclosure choices during conference calls. *Journal of Accounting Research*, 48(3):531563, 2010. ISSN 1475-679X. doi: 10.1111/j.1475-679X.2010.00365.x. URL http://onlinelibrary.wiley.com/doi/10.1111/j.1475-679X.2010.00365.x/abstract.

Xuan Huang, Alexander Nekrasov, and Siew Hong Teoh. Headline salience and over-and underreactions to earnings. *Available at SSRN 2101887*, 2013a.

Xuan Huang, Siew Hong Teoh, and Yinglei Zhang. Tone management. *The Accounting Review*, page 131219095011009, December 2013b. ISSN 0001-4826, 1558-7967. doi: 10.2308/accr-50684. URL http://aaajournals.org/doi/abs/10.2308/accr-50684.

John S. Hughes and Suil Pae. Voluntary disclosure of precision information. *Journal of Accounting and Economics*, 37(2):261–289, June 2004. ISSN 0165-4101. doi: 10.1016/j.jacceco.2003.05.002. URL http://www.sciencedirect.com/science/article/pii/S0165410103000636.

Amy P. Hutton, Gregory S. Miller, and Douglas J. Skinner. The role of supplementary statements with management earnings forecasts. *Journal of Accounting Research*, 41(5):867–890, December 2003. ISSN 1475-679X. doi: 10.1046/j.1475-679X.2003.00126.x. URL http://onlinelibrary.wiley.com/doi/10.1046/j.1475-679X.2003.00126.x/abstract.

Narasimhan Jegadeesh and Sheridan Titman. Returns to buying winners and selling losers: Implications for stock market efficiency. *The Journal of Finance*, 48(1):65–91, March 1993. ISSN 00221082. URL http://www.jstor.org.proxy.library.emory.edu/stable/2328882. ArticleType: research-article / Full publication date: Mar., 1993 / Copyright 1993 American Finance Association.

Narasimhan Jegadeesh and Di Wu. Word power: A new approach for content analysis. *Journal of Financial Economics*, 110(3):712–729, December 2013. ISSN 0304-405X. doi: 10.1016/j.jfineco.2013.08.018. URL http://www.sciencedirect.com/science/article/pii/S0304405X13002328.

S. P. Kothari, Xu Li, and James E. Short. The effect of disclosures by management, analysts, and business press on cost of capital, return volatility, and analyst forecasts: A study using content analysis. *Accounting Review*, 84(5):1639–1670, September 2009a. ISSN 00014826.

S. P. Kothari, Susan Shu, and Peter D. Wysocki. Do managers withhold bad news? *Journal of Accounting Research*, 47(1):241–276, March 2009b. ISSN 1475-679X. doi: 10.1111/j.1475-679X.2008.00318.x. URL http://onlinelibrary.wiley.com/doi/10.1111/j.1475-679X.2008.00318.x/abstract.

Todd Kravet and Volkan Muslu. Textual risk disclosures and investors risk perceptions. *Review of Accounting Studies*, 18(4):1088–1122, December 2013. ISSN 1380-6653, 1573-7136. doi: 10.1007/s11142-013-9228-9. URL http://link.springer.com/article/10.1007/s11142-013-9228-9.

Richard Lambert, Christian Leuz, and Robert E. Verrecchia. Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research*, 45(2):385–420, May 2007. ISSN 1475-679X. doi: 10.1111/j.1475-679X.2007.00238.x. URL http://onlinelibrary.wiley.com/doi/10.1111/j.1475-679X.2007.00238.x/abstract.

Mark H. Lang and Russell J. Lundholm. Voluntary disclosure and equity offerings: Reducing information asymmetry or hyping the stock?*. *Contemporary Accounting Research*, 17(4):623–662, December 2000. ISSN 1911-3846. doi: 10.1506/9N45-F0JX-AXVW-LBWJ. URL http://onlinelibrary.wiley.com/doi/10.1506/9N45-F0JX-AXVW-LBWJ/abstract.

David F. Larcker and Anastasia A. Zakolyukina. Detecting deceptive discussions in conference calls. *SSRN eLibrary*, July 2010. URL http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=1572705.

Yen-Jung Lee, Kathy R. Petroni, and Min Shen. Cherry picking, disclosure quality, and comprehensive income reporting choices: The case of property-liability insurers*. *Contemporary Accounting Research*, 23(3):655–692, September 2006. ISSN 1911-3846. doi: 10.1506/5QB8-PBQY-Y86L-DRYL. URL http://onlinelibrary.wiley.com/doi/10.1506/5QB8-PBQY-Y86L-DRYL/abstract.

Reuven Lehavy, Feng Li, and Kenneth Merkley. The effect of annual report readability on analyst following and the properties of their earnings forecasts. *The Accounting Review*, 86(3):1087–1115, May 2011. ISSN 0001-4826, 1558-7967. doi: 10.2308/accr.00000043. URL http://www.aaajournals.org/doi/abs/10.2308/accr.00000043.

Feng Li. The information content of forward-looking statements in corporate FilingsA nave bayesian machine learning approach. *Journal of Accounting Research*, 48(5):10491102, 2010. ISSN 1475-679X. doi: 10.1111/j.1475-679X.2010.00382.x. URL http://onlinelibrary.wiley.com/doi/10.1111/j.1475-679X.2010.00382.x/abstract.

Tim Loughran and Bill Mcdonald. When is a liability not a liability? textual analysis, dictionaries, and 10-ks. *The Journal of Finance*, 66(1):3565, 2011. ISSN 1540-6261. doi: 10.1111/j.1540-6261.2010.01625.x. URL http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.2010.01625.x/abstract.

Tim Loughran and Bill Mcdonald. Measuring readability in financial disclosures. *The Journal of Finance*, pages n/a–n/a, March 2014. ISSN 00221082. doi: 10.1111/jofi.12162. URL http://doi.wiley.com/10.1111/jofi.12162.

Dawn Matsumoto, Maarten Pronk, and Erik Roelofsen. What makes conference calls useful? the information content of managers' presentations and analysts' discussion sessions. *The Accounting Review*, 86(4):1383–1414, July 2011. ISSN 0001-4826, 1558-7967. doi: 10.2308/accr-10034. URL http://aaajournals.org/doi/abs/10.2308/accr-10034.

William J. Mayew and Mohan Venkatachalam. The power of voice: Managerial affective states and future firm performance. *The Journal of Finance*, 67(1):143, 2012. ISSN 1540-6261. doi: 10.1111/j.1540-6261.2011.01705.x. URL http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.2011.01705.x/abstract.

R. Charles Moyer, Robert E. Chatfield, and Phillip M. Sisneros. Security analyst monitoring activity: Agency costs and information demands. *Journal of Financial and Quantitative Analysis*, 24(04):503–512, 1989. doi: 10.2307/2330982.

Whitney K. Newey and Kenneth D. West. A simple, positive semi-definite, heteroskedasticity and autocorrelation consistent covariance matrix. *Econometrica*, 55(3):703–708, May 1987. ISSN 0012-9682. doi: 10.2307/1913610. URL http://www.jstor.org/stable/1913610. ArticleType: research-article / Full publication date: May, 1987 / Copyright 1987 The Econometric Society.

Robert Novy-Marx. The other side of value: The gross profitability premium. *Journal of Financial Economics*, 108(1):1–28, April 2013. ISSN 0304-405X. doi: 10.1016/j.jfineco.2013.01.003. URL http://www.sciencedirect.com/science/article/pii/S0304405X13000044.

S. McKay Price, James S. Doran, David R. Peterson, and Barbara A. Bliss. Earnings conference calls and stock returns: The incremental informativeness of textual tone. *Journal of Banking & Finance*, 36(4):992–1011, April 2012. ISSN 0378-4266. doi: 10.1016/j.jbankfin.2011.10.013. URL http://www.sciencedirect.com/science/article/pii/S0378426611002901.

Scott A. Richardson, Richard G. Sloan, Mark T. Soliman, and rem Tuna. Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics*, 39(3):437–485, September 2005. ISSN 0165-4101. doi: 10.1016/j.jacceco.2005.04.005. URL http://www.sciencedirect.com/science/article/pii/S0165410105000406.

Catherine M. Schrand and Beverly R. Walther. Strategic benchmarks in earnings announcements: The selective disclosure of PriorPeriod earnings components. *The Accounting Review*, 75(2):151–177, April 2000. ISSN 0001-4826, 1558-7967. doi: 10.2308/accr.2000.75.2.151. URL http://aaajournals.org/doi/abs/10.2308/accr.2000.75.2.151.

Douglas J. Skinner. Why firms voluntarily disclose bad news. *Journal of Accounting Research*, 32(1):38–60, April 1994. doi: 10.2307/2491386. URL http://www.jstor.org/stable/2491386.

Eric C. So and Joseph Weber. Time Will Tell: Information in the Timing of Scheduled Earnings News. SSRN Scholarly Paper ID 2480662, Social Science Research Network, Rochester, NY, September 2015. URL http://papers.ssrn.com/abstract=2480662.

Leonard C. Soffer, S. Ramu Thiagarajan, and Beverly R. Walther. Earnings preannouncement strategies. *Review of Accounting Studies*, 5(1):5–26, March 2000. ISSN 1380-6653, 1573-7136. doi: 10.1023/A:1009643517840. URL http://link.springer.com/article/10.1023/A%3A1009643517840.

David H. Solomon. Selective publicity and stock prices. *The Journal of Finance*, 67(2):599638, 2012. ISSN 1540-6261. doi: 10.1111/j.1540-6261.2012.01726.x. URL http://onlinelibrary.wiley.com/doi/10.1111/j.1540-6261.2012.01726.x/abstract.

Paul C. Tetlock. All the news that's fit to reprint: Do investors react to stale information? *Review of Financial Studies*, 24(5):1481–1512, May 2011. ISSN 0893-9454, 1465-7368. doi: 10.1093/rfs/hhq141. URL http://rfs.oxfordjournals.org/content/24/5/1481.

Paul C Tetlock, Maytal Saartsechansky, and Sofus Macskassy. More than words: Quantifying language to measure firms' fundamentals. *The Journal of Finance*, 63(3):1437–1467, June 2008. ISSN 1540-6261. doi: 10.1111/j.1540-6261.2008.01362.x. URL http://onlinelibrary.wiley.com.proxy.library.emory.edu/doi/10.1111/j.1540-6261.2008.01362.x/full.

6 Tables

Table 1: Summary Statistics of Textual Variables

This table presents the summary statistics on conference call linguistic characteristics. PCTNUM is percentage of quantitative information in the conference call (in %), calculated as N(Numbers)/(N(Numbers)+N(Words)). TONE is the difference between percentage positive and percentage negative words in the conference call. Positive and negative words are categorized in the Loughran and McDonald (2013). N(Words) is the number of words. N(Numbers) is the total count of numbers in the conference call. The subscripts S indicates statement component and QA indicates question and answer component of the conference call. The last column presents the correlations between the indicated measures of the statement component and the Q&A component.

Variables	**Mean**	**Median**	**Std Dev**	**Q1**	**Q3**	**CORR(S,QA)**
$PCTNUM$	2.758	2.674	0.722	2.277	3.152	-0.0472***
$PCTNUM_S$	3.933	3.480	3.650	2.786	4.332	
$PCTNUM_{QA}$	2.192	2.144	0.894	1.799	2.520	
$TONE$	2.584	2.553	0.479	2.250	2.882	0.349***
$TONE_S$	2.833	2.784	0.742	2.314	3.297	
$TONE_{QA}$	2.405	2.377	0.467	2.084	2.692	
$N(Words)$	7532	7539	2456	5898	8998	0.0185***
$N(Words)_S$	2894	2762	1240	2078	3549	
$N(Words)_{QA}$	4645	4555	2105	3282	5833	
$N(Numbers)$	208.5135	201	80.49659	155	251	0.109*
$N(Numbers)_S$	108.5856	100	54.05513	72	135	
$N(Numbers)_{QA}$	100.7825	95	52.89314	67	128	

Table 2: Summary Statistics of Non-Textual Variables

This table presents the summary statistics of financial variables. CAR[-1,1] is the 3-day event day return, adjusted by Fama-French 3 factors. CAR[2,60] is the post conference call abnormal returns, also adjusted using Fama-French 3 factor model. Accrual is the accrued earnings divided by total assets ((IBCY-OANCFY)/ AT). ROA is return on assets. SUE is standardized unexpected earnings. BM is log book-to-market ratio. MOM is the lag 12 month cumulative return. INSTOWN is the institutional ownership from the most recent quarter end. VOLATILITY is the annualized daily volatility calculated using the data from the month preceding the conference call. TURN is the average share turnover in the month preceding the conference call. NUMEST is the number of analysts who actively cover the company. $|SUE|$ is the dependent variable. It is the absolute SUE (scaled up by 100) for the quarter following the conference call. DISP is the analyst forecast dispersion (scaled up by 100) after the earnings announcement.

Variables	**Mean**	**Median**	**Std Dev**	**Q1**	**Q3**
CAR[-1,1]	0.269	0.213	8.763	-3.939	4.738
CAR[2,60]	0.363	0.423	17.326	-8.198	9.295
ROA	0.034	0.048	0.139	0.014	0.086
ACCRUAL	0.977	0.980	0.496	0.951	1.001
Log(ME)	14.050	13.873	1.526	12.952	14.946
BM	0.594	0.463	0.753	0.278	0.732
TURN	2.183	1.617	2.149	0.988	2.680
MOM	0.083	0.077	0.372	-0.084	0.239
VOLATILITY	0.249	0.173	0.416	0.099	0.304
INSTOWN	0.560	0.680	0.330	0.343	0.829
BLAME	0.199	0.000	0.319	0.000	0.291
NUMEST	9.057	7	6.571	4	12
SUE	0.010	0.055	1.025	-0.072	0.217
$\|SUE\|$	0.444	0.163	1.041	0.060	0.409
DISP	0.479	0.196	0.905	0.090	0.483

Table 3: Determinants of PCTNUM

This table investigates the determinants of PCTNUM. Accrual is the accrued earnings divided by total assets ((IBCY-OANCFY)/ AT). ROA is return on assets. SUE is standardized unexpected earnings. BM is log book-to-market ratio. MOM is the lag 12 month cumulative return. INSTOWN is institutional ownership. VOLATILITY is the annualized daily volatility calculated using the data from the month preceeding the conference call. TURN is the average share turnover in the month preceeding the conference call. TONE is the percentage of positive words minus percentage negative words in the text. LNUMEST is the log of one plus number of analysts covering the firm. BLAME is percentage sentences attributing negative performance to industry or economy. SEO is a dummy variable that indicates whether the company engages in SEO in the following 90 days. The regression controls for year-quarter fixed effects and fiscal quarter fixed effects. The standard errors are clustered by PERMNO. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

VARIABLES	PCTNUM	PCTNUM	PCTNUM	PCTNUM
Financial Variables				
SUE	0.0171***			0.0101***
	(0.00362)			(0.00363)
ROA	0.0352***			0.0298***
	(0.00298)			(0.00280)
BM	0.00613**			0.0133***
	(0.00281)			(0.00245)
Log(ME)	-0.00421			0.0418***
	(0.00883)			(0.00774)
LAGRET	0.0255***			0.0227***
	(0.00439)			(0.00368)
ACCRUAL	-0.0193***			-0.0103**
	(0.00353)			(0.00392)
VOLATILITY	0.0000			0.000304
	(0.00265)			(0.00227)
INSTOWN	-0.00777***			0.00827***
	(0.00231)			(0.00266)
LNUMEST	-0.0517***			0.000518
	(0.00658)			(0.00647)
TURN	-0.00683**			-0.00508
	(0.00320)			(0.00307)
Textual Variables				
TONE		-0.105***		-0.113***
		(0.00657)		(0.00590)
LENGTH		-0.163***		-0.180***
		(0.00898)		(0.0130)
BLAME		-0.0122***		-0.0121***
		(0.00356)		(0.00364)
Issuance Variables				
SEO			0.115***	0.0910***
			(0.0241)	(0.0258)
SEO*ROA			0.0547***	0.0337***
			(0.0114)	(0.0119)
SEO*SUE			0.00505	-0.0157
			(0.0180)	(0.0171)

Observations	59,411	60,662	60,657	59,411
R-squared	0.146	0.206	0.137	0.212

Table 4: Investor Reactions to Proportion of PCTNUM

This table tests investors' reactions to the proportion of quantitative information (PCTNUM) in conference call disclosures. The dependent variable is CAR (adjusted using FF 3-factor model) from trading day -1 to 1 relative to the date of the conference call. PCTNUM is percentage of quantitative information in the conference call. $PCTNUM_S$ is the percentage of quantitative information in the statement component. $PCTNUM_{QA}$ is the percentage of quantitative information in the Q&A section. SUE is the standard unexpected earnings, calculated as the difference between realized earnings and analyst forecast earnings and scaled by price. Accrual is the accrued earnings divided by total assets ((IBCY-OANCFY)/ AT). ROA is return on assets. SUE is standardized unexpected earnings. BM is log book-to-market ratio. BM is log book-to-market ratio. MOM is the lag 12 month cumulative return. INSTOWN is institutional ownership. BLAME is percentage of sentences with negative attribution to industry or economy. TONE is the difference between percentages of positive and negative words in the conference call. VOLATILITY is the annualized daily volatility calculated using the data from the month preceeding the conference call. TURN is the average share turnover in the month preceding the conference call. LNUMEST is the log of one plus number of analysts covering the firm. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

VARIABLES	CAR[-1,1]	CAR[-1,1]	CAR[-1,1]
PCTNUM	0.266***	0.181***	
	(0.0446)	(0.0435)	
$PCTNUM_S$			0.312***
			(0.0803)
$PCTNUM_{QA}$			0.00942
			(0.0621)
SUE		2.020***	2.034***
		(0.0880)	(0.0898)
ROA		0.156***	0.152***
		(0.0494)	(0.0486)
BM		0.0212	0.0215
		(0.0524)	(0.0541)
Log(ME)		-0.161**	-0.154**
		(0.0695)	(0.0698)
MOM		-0.242***	-0.239***
		(0.0653)	(0.0663)
ACCRUAL		-0.280***	-0.279***
		(0.0584)	(0.0587)
TONE		0.399***	0.390***
		(0.0495)	(0.0508)
BLAME		-0.298***	-0.314***
		(0.0410)	(0.0414)
VOLATILITY		-0.594***	-0.611***
		(0.188)	(0.194)
INSTOWN		0.0593	0.0684
		(0.0415)	(0.0431)
LNUMEST		0.0269	0.00726
		(0.0578)	(0.0571)
TURN		-0.130*	-0.143*
		(0.0746)	(0.0744)
Observations	60,297	60,075	59,264
R-squared	0.002	0.063	0.064
Number of groups	40	40	40

Table 5: Predicting Post Conference Call Returns

This table test whether investors underreact to the proportion of quantitative information (PCTNUM) in conference call disclosures. The dependent variable is CAR (adjusted using FF 3-factor model) between trading days 2 and 60 after the conference call date. PCTNUM is percentage of quantitative information in the conference call. $PCTNUM_S$ is the percentage of quantitative information in the statement component. $PCTNUM_{QA}$ is the percentage of quantitative information in the Q&A section. SUE is the standard unexpected earnings, calculated as the difference between realized earnings and analyst forecast earnings and scaled by price. Accrual is the accrued earnings divided by total assets ((IBCY-OANCFY)/ AT). ROA is return on assets. SUE is standardized unexpected earnings. BM is log book-to-market ratio. BM is log book-to-market ratio. MOM is the lag 12 month cumulative return. INSTOWN is institutional ownership. BLAME is percentage of sentences with negative attribution to industry or economy. TONE is the difference between percentages of positive and negative words in the conference call. VOLATILITY is the annualized daily volatility calculated using the data from the month preceding the conference call. TURN is the average share turnover in the month preceding the conference call. LNUMEST is the log of one plus number of analysts covering the firm.Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

VARIABLES	CAR[2,60]	CAR[2,60]	CAR[2,60]
$PCTNUM$	0.351***	0.219***	
	(0.0871)	(0.0742)	
$PCTNUM_S$			0.330**
			(0.139)
$PCTNUM_Q$			0.280**
			(0.126)
SUE		0.615***	0.628***
		(0.213)	(0.215)
ROA		0.577***	0.571***
		(0.195)	(0.195)
BM		-0.0681	-0.0832
		(0.128)	(0.128)
Log(ME)		-0.155	-0.157
		(0.164)	(0.169)
MOM		-0.149	-0.157
		(0.296)	(0.296)
ACCRUAL		-1.199***	-1.209***
		(0.169)	(0.170)
TONE		0.146	0.170
		(0.154)	(0.157)
BLAME		-0.482***	-0.496***
		(0.104)	(0.106)
VOLATILITY		0.0410	0.0645
		(0.665)	(0.666)
INSTOWN		0.0295	0.0225
		(0.0845)	(0.0839)
LNUMEST		-0.416**	-0.446**
		(0.196)	(0.199)
TURN		0.0718	0.105
		(0.190)	(0.195)
Observations	60,296	60,074	59,263
R-squared	0.001	0.051	0.053
Number of groups	40	40	40

Table 6: Investor Reactions to Proportion of PCTNUM

This table test whether the PCTNUM is more informative informative in a set of firm characteristics. The dependent variable is CAR (adjusted using FF 3-factor model) between trading days 2 and 60 after the conference call date. PCTNUM is percentage of quantitative information in the conference call. COVDUM is an indicator variable that turns to 1 when the number of analyst covering the firm is higher than the bottom quartile of the sample. MEDUM is an indicator variable that turns to 1 when the firm's market equity is greater than the bottom quartile of the firm. FE is the standard unexpected earnings, calculated as the difference between realized earnings and analyst forecast earnings and scaled by price. Accrual is the accrued earnings divided by total assets ((IBCY-OANCFY)/ AT). ROA is return on assets. SUE is standardized unexpected earnings. BM is log book-to-market ratio. BM is log book-to-market ratio. MOM is the lag 12 month cumulative return. INSTOWN is institutional ownership. BLAME is percentage of sentences with negative attribution to industry or economy. VOLATILITY is the annualized daily volatility calculated using the data from the month preceding the conference call. TURN is the average share turnover in the month preceding the conference call. LNUMEST is the log of one plus number of analysts covering the firm. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

VARIABLES	CAR[-1,1]	CAR[2,60]	CAR[-1,1]	CAR[2,60]
PCTNUM	0.276***	0.377***	0.354***	0.577***
	(0.0631)	(0.125)	(0.0793)	(0.144)
COVDUM*PCTNUM	-0.0105	-0.313**		
	(0.0719)	(0.142)		
COVDUM	-0.0990	0.0110		
	(0.132)	(0.281)		
MEDUM*PCTNUM			-0.117	-0.570***
			(0.0842)	(0.158)
MEDUM			0.311***	-0.936*
			(0.114)	(0.471)
FE	2.027***	0.547***	2.028***	0.556***
	(0.0932)	(0.185)	(0.0934)	(0.184)
ROA	0.157***	0.553***	0.158***	0.543***
	(0.0487)	(0.198)	(0.0499)	(0.196)
BM	0.0106	-0.0491	0.0169	-0.0598
	(0.0533)	(0.127)	(0.0541)	(0.128)
Log(ME)	-0.213***	-0.0383	-0.291***	0.212
	(0.0680)	(0.164)	(0.0601)	(0.149)
MOM	-0.238***	-0.164	-0.235***	-0.171
	(0.0688)	(0.293)	(0.0697)	(0.293)
ACCRUAL	-0.282***	-1.206***	-0.286***	-1.189***
	(0.0597)	(0.175)	(0.0594)	(0.173)
TONE	0.386***	0.140	0.385***	0.122
	(0.0467)	(0.152)	(0.0462)	(0.151)
BLAME	-0.347***	-0.449***	-0.352***	-0.443***
	(0.0416)	(0.102)	(0.0417)	(0.100)
VOLATILITY	-0.574***	0.0366	-0.530***	-0.119
	(0.184)	(0.670)	(0.181)	(0.680)
INSTOWN	0.0634	0.0176	0.0740*	0.0205
	(0.0421)	(0.0881)	(0.0416)	(0.0875)
LNUMEST	0.0908	-0.448**	0.0519	-0.447**
	(0.0663)	(0.212)	(0.0541)	(0.197)
TURN	-0.0931	0.0675	-0.110	0.134
	(0.0751)	(0.200)	(0.0751)	(0.206)
Observations	58,967	58,966	58,967	58,966
R-squared	0.068	0.055	0.068	0.058
Number of groups	40	40	40	40

Table 7: Predicting Forecast Error

This table test whether PCTNUM captures information related to firm fundamentals. The dependent variable is analyst forecast error in the following quarter. PCTNUM is percentage of quantitative information in the conference call. $PCTNUM_S$ is the percentage of quantitative information in the statement component. $PCTNUM_{QA}$ is the percentage of quantitative information in the Q&A section. FE is the standard unexpected earnings, calculated as the difference between realized earnings and analyst forecast earnings and scaled by price. Accrual is the accrued earnings divided by total assets ((IBCY-OANCFY)/ AT). ROA is return on assets. SUE is standardized unexpected earnings. BM is log book-to-market ratio. BM is log book-to-market ratio. MOM is the lag 12 month cumulative return. INSTOWN is institutional ownership. BLAME is percentage of sentences with negative attribution to industry or economy. TONE is the difference between percentages of positive and negative words in the conference call. VOLATILITY is the annualized daily volatility calculated using the data from the month preceding the conference call. TURN is the average share turnover in the month preceding the conference call. LNUMEST is the log of one plus number of analysts covering the firm.Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

VARIABLES	FE	FE	FE
$PCTNUM$	1.933***	1.944***	
	(0.365)	(0.406)	
$PCTNUM_S$			2.444***
			(0.846)
$PCTNUM_Q$			0.221
			(0.535)
TONE		0.751*	0.661
		(0.419)	(0.430)
BLAME		-1.116***	-1.119**
		(0.409)	(0.429)
BM		-1.763***	-1.735***
		(0.518)	(0.514)
Log(ME)		2.072***	2.001***
		(0.429)	(0.446)
MOM		4.487***	4.520***
		(0.541)	(0.551)
ACCRUAL		-12.34*	-13.14*
		(7.158)	(7.387)
VOLATILITY		-1,427**	-1,437**
		(599.6)	(597.0)
VOLATILITY		0.294	0.246
		(0.264)	(0.259)
LNUMEST		2.132**	1.975**
		(0.850)	(0.838)
TURN		-1.451**	-1.441**
		(0.657)	(0.663)
Observations	57,913	57,696	56,943
R-squared	0.001	0.020	0.021
Number of groups	40	40	40

Table 8: PCTNUM and Information Precision

This table tests whether PCTNUM is significantly related to more precise information environment. The dependent variables are of $|SUE_{t+1}|$ for the quarter following the conference call and the analyst forecast dispersion (DISP) after the earnings announcement. BM is log book-to-market ratio. MOM is the lag 12 month cumulative return. INSTOWN is institutional ownership. VOLATILITY is the annualized daily volatility calculated using the data from the month preceding the conference call. TURN is the average share turnover in the month preceding the conference call. LNUMEST is the log of one plus number of analysts covering the firm. The regression controls for year-quarter fixed effects. Significance level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

VARIABLES	$\|SUE_{t+1}\|$	$\|SUE_{t+1}\|$	DISP	DISP
$PCTNUM$	-0.0319***		-0.0243***	
	(0.00837)		(0.00778)	
$PCTNUM_S$		-0.0114*		-0.0145**
		(0.00587)		(0.00603)
$PCTNUM_{QA}$		-0.000120		0.0186**
		(0.00613)		(0.00855)
BM	0.129***	0.128***	0.134***	0.132***
	(0.0128)	(0.0127)	(0.0134)	(0.0133)
Log(ME)	-0.0947***	-0.0958***	-0.101***	-0.102***
	(0.0162)	(0.0162)	(0.0196)	(0.0195)
MOM	-0.0904***	-0.0895***	-0.0968***	-0.0971***
	(0.0101)	(0.0100)	(0.0116)	(0.0116)
VOLATILITY	0.0616	0.0604	0.107*	0.105*
	(0.0416)	(0.0408)	(0.0553)	(0.0543)
INSTOWN	0.000155	0.00166	0.00769	0.00763
	(0.00695)	(0.00694)	(0.00709)	(0.00709)
LNUMEST	-0.102***	-0.0994***	-0.0332**	-0.0302**
	(0.0126)	(0.0123)	(0.0145)	(0.0137)
TURN	0.125***	0.129***	0.174***	0.179***
	(0.0202)	(0.0188)	(0.0274)	(0.0251)
Observations	58,241	57,457	57,733	56,945
R-squared	0.098	0.097	0.148	0.149