The Effects of Conference Call Tone on Market Perceptions of Value Uncertainty

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Abstract

Quarterly earnings conference calls convey fundamental information as well as manager and analyst opinion about the firm. This study examines how the market's uncertainty regarding firm valuation is affected by abnormal earnings conference call tones. Using textual analysis of all publicly available conference calls, we find measures of abnormally negative conference call tones are positively related to measures of firm value uncertainty from the equity options market. Overall, value uncertainty is more sensitive to analyst tones than management tones. Abnormal differences between analyst and manager tones in the conference call discussion section are strongly associated with increases in value uncertainty.

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I. INTRODUCTION

Quarterly earnings conference calls have been established as an informative disclosure medium which provides incremental value-relevant information reflected in stock prices and trading volume (Frankel, Johnson, and Skinner 1999; Bushee, Matsumoto, and Miller 2003, 2004; Brown, Hillegeist, and Lo 2004). While the vast majority of studies investigating the impact of earnings conference calls focus exclusively on the equities market, there are no studies examining their influence in the options market, whose participants tend to be relatively more informed and sophisticated than the typical stock investor (Black 1975; Barber and Odean 2001). Unlike a stock price which reflects the current average value of the firm, the implied volatilities from options reflect investors' *uncertainty* about the firm's future value. This value uncertainty, or price risk, is distinct from a stock's price just as the interpretation of a distribution's variance is different from that of its mean (Sridharan 2015).[1] The purpose of this study is to explore the effects of the linguistic tones of management and analysts in conference calls with respect to the price risk perceived by options investors. Can the abnormal tones of conference call participants resolve (or intensify) investor uncertainty about the value of the firm?

Anecdotally, both stock and option markets appear to be highly sensitive to conference call messages. For example, when hedge-fund manager David Einhorn asked a series of probing questions on a May 1, 2012, conference call for Herbalife Ltd., the result was a one-day slide of 20% in the firm's stock-market value.[2] At the same time, option implied volatilities for the five post-call days surged by 66% for calls (64% for puts) relative to the five pre-conference call days, indicating a large increase in investor uncertainty about the valuation of Herbalife.

[1] For example, if management discloses information in a conference call which removes uncertainty about its stock's future value, the current price need not change while the implied volatility would decrease.

[2] From Juliet Chung, Joe Light, and Tom McGinty's article in *The Wall Street Journal*, "A Mighty Wind: Sizing Up Fund Manager's Sway," on September 18, 2012.
http://www.wsj.com/articles/SB10000872396390443720204578002362100327312

Conversely, when analysts "started piling on Costco in a conference call" held during the morning hours of October 8, 2013, Costco shares quickly slumped roughly 2%. Then CFO Richard Galanti responded by using Costco's "incredible, giant" rotisserie chicken business as a metaphor for how managers envisioned thriving over the long-run. "…[Once] Galanti started spinning his chicken stories around 10 a.m., the stock climbed all the way back."[3] Around this call date, implied volatilities for the five-day post-call period fell by 10% for calls (13% for puts) relative to the five pre-call days, demonstrating the market-calming ability skilled management can exercise in guiding the perception of conference call discussions even in the presence of unfavorable fundamentals. Thus, the uncertainty about firm value appears even more sensitive to earnings conference calls than the mean firm value reflected in the stock price.

In this study, we determine whether conference call tones can influence investor uncertainty about firm value. To accomplish this, we apply established textual analysis techniques to quarterly earnings conference calls and extract the linguistic tones that call participants convey to investors. Investor uncertainty is quantified using implied volatilities (IV) derived from the Black and Scholes (1973) option pricing model. IV is commonly used as an ex-ante measure of perceived asset price risk (e.g., Patell and Wolfson 1979, 1981; Poterba and Summers 1986; Canina and Figlewski 1993) and an indication of investor expectations about the underlying asset (Bollen and Whaley 2004; Gârleanu, Pedersen, and Poteshman 2009). By construction, it captures option investors' subjective judgments regarding the forward-looking volatility of the underlying stock price over the life of the option (e.g. 30-days, 60-days, 90-days.) In short, IV represents the market's forecast of future volatility and, thus, investor uncertainty about firm valuation.

[3] From Kyle Stock's article in *Bloomberg Business*, "Costco Stands Behind Its Cheap Rotisserie Chicken Strategy," on October 9, 2013.
http://www.bloomberg.com/bw/articles/2013-10-09/costco-stands-behind-its-cheap-rotisserie-chicken-strategy

Our results suggest that investor assessment of value uncertainty is influenced by the word choices of conference call participants. We find that abnormally negative tone (i.e. "a measure of tone management from residuals of a tone model that controls for [the information content in] firm quantitative fundamentals such as performance, risk, and complexity", Huang, Toeh, and Zhang 2014, p.1083) in conference calls leads to an increase in IV. Higher (lower) negativity, or pessimism, leads to more (less) uncertainty. When the sample is parsed by the sign of the corresponding earnings surprise, this relation is predominantly (but not exclusively) observed where the surprise is positive; indicative of conflicting signals confounding the price discovery process. In addition, separate tone measures for managers and analysts reveal that while each group can influence market perceptions of value uncertainty, analyst tones have a greater impact than manager tones. Moreover, when looking at the discussion portion of conference calls, investor uncertainty increases as the spread between analyst tones and manager tones increases. Disclosure events which allow for unscripted questions and answers can increase (decrease) uncertainty in the price discovery process when analyst and manager opinions diverge (converge.) Altogether, our results suggest that abnormal conference call tones have a significant influence on the market's perception of *uncertainty*, in addition to prior findings about price effects.

This study contributes to our understanding of investor uncertainty in the price discovery process by mapping a specific channel of voluntary disclosure by conference call participants through which investors gather price-risk related information. We also contribute to the voluntary disclosure literature by demonstrating that the impact of conference call tones extends beyond the simple conveyance of expected value information to market participants to their perceptions of expected risk as well. Moreover, we add to the understanding of conference call

dynamics and show the extent of managers' and analysts' separate, and combined, ability to either calm or worry the market. In particular, we find evidence consistent with market participants placing a higher degree of trust in signals from analysts as outsiders to the firm. These results have implications for managers who voluntarily engage in conference call disclosures, analysts who participate in such calls, investors who interpret them, and market participants who seek to utilize options as a risk management tool for hedging around earnings announcement dates.

In Section II, we provide a review of the related literature and derive our hypothesis with respect to the effect of abnormal tone on option-related measures of value uncertainty and price risk. Section III details the sample selection and data collection processes, as well as the construction of the variables necessary for the analyses. We describe the empirical research design and results in Section IV. Section V concludes.

II. RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

In a recent examination of the relation between accounting information and future equity volatility, Sridharan (2015) explains the importance of studying an overlooked aspect of basic asset pricing theory in the context of corporate disclosure. Namely, investors attempt to maximize mean returns while minimizing their risk (Markowitz 1952). In other words, they seek to reduce the likelihood that the realized outcome will deviate from the expected mean. Thus, Sridharan (2015) argues that in a mean-variance pricing framework "simply linking disclosures with mean returns is insufficient to fully capture the informativeness of these disclosures for equity valuation. An equally relevant consideration is how these disclosures relate to the risk in equity investment" (p.2079). The options market provides us with an opportunity to do just that;

we are able to test the extent to which conference call disclosures affect value uncertainty insofar as IV captures investor beliefs with respect to the range of potential *future* outcomes.

This is markedly different from other simple measures of stock volatility such as the second moment of returns, or commonly used proxies such as bid-ask spreads and analyst forecast dispersion. Historical volatility is useful, but in isolation is backward looking. While to some extent bid-ask spreads capture contemporaneous price uncertainty insofar as they represent differences between the highest price a buyer is willing to pay and the lowest price at which a seller is willing to sell (at that moment), bid-ask spreads are also largely a function of individual stock liquidity. Analyst forecast dispersion is forward looking, but does not capture *investor* assessment of possible future outcomes. IV enables us to more directly measure investor uncertainty. This is particularly useful when teasing out nuances such as the changes in volatility from an event or the extent of perceived price risk to various investment positions.

Our study is also partially motivated by the early work of Patell and Wolfson (1979, 1981), who provide descriptive evidence of IV leading up to and following earnings announcement dates. Specifically, they analyze options around earnings announcements in order to detect investors' expectations regarding the range of possible stock price reactions. They contend that the options framework presents a viable means of testing forward-looking investor beliefs in situations where disclosures are ambiguous.

Amin and Lee (1997) find that options traders contribute to price discovery with respect to the dissemination of earnings news insofar as they initiate a greater portion of long (short) positions in the days leading up to good (bad) earnings news, where news is defined as the earnings surprise. Skinner (1997) validates the importance of using the options market to better examine earnings announcement disclosures, but argues that Amin and Lee's evidence is weak

and economically limited. However, Billings and Jennings (2011) build on this work by supplying evidence that is consistent with options traders being able to anticipate the magnitude of the market response to unexpected earnings. Regardless of whether options traders anticipate information, or simply react to information, their trades provide us with an important means of analyzing the market's perception of firm risk as of a specific point in time. In this study we use option derived IV because it is the only forward-looking measure of value uncertainty that can be obtained by observing the actions of investors.

Isakov and Pérignon (2001) create a theoretical framework for the evolution of IV around earnings announcement dates. The empirical support they provide for their model using data from the Swiss options market shows that the post-announcement IV path depends on the content of the earnings announcement; market uncertainty is reduced much more quickly (slowly) when the news is good (bad). However, they acknowledge that the earnings surprise is not the sole determinant of the informational content and their ability to model good and bad news is limited to the use of abnormal returns and analyst forecast dispersion. Nofsinger and Prucyk (2003) are similarly limited by the use of market returns to identify good and bad news, but find that bad macroeconomic news increases IV in the options markets, whereas good news is not associated with higher IV.

Using macroeconomic news events and T-Bond, Eurodollar, and Deutschemark options market data to derive IV, Ederington and Lee (1996) find that the unexpected part of an announcement is what drives market reactions and potentially resolves uncertainty. Rogers, Skinner and Van Buskirk (2009) examine unexpected firm disclosure and uncertainty by studying how management earnings forecasts affect IV. They find that the forecasts increase short term volatility, particularly when they convey surprisingly bad news. However, like many

other studies, the analysis relies on event-window stock returns to classify whether the managerial disclosures contain good or bad news.

In contrast, the quarterly earnings conference calls that we use do not suffer from such limitations. Conference call popularity has grown substantially since the implementation of Regulation Fair Disclosure (hereafter Reg FD), rendering them the second most utilized means of voluntary disclosure behind earnings releases themselves (NIRI 2004).[4] Unlike the one-sided press releases, conference calls are an information-rich disclosure medium which provides an important window for management and analysts to express their opinions about recent performance and future firm potential. Most importantly, investors appear to pay keen attention to these calls (Frankel et al. 1999; Bowen, Davis, and Matsumoto 2002; Bushee et al. 2003, 2004).

Frankel et al. (1999) provide evidence of elevated return variances and trading volumes during earnings conference calls suggesting that investors extract relevant information from the calls which is incremental to that contained in the press releases. Bowen et al. (2002) show conference calls assist in lowering analysts' forecast error and also provide some weak evidence indicating they also can decrease analysts' forecast dispersion.[5] Bushee et al. (2003) find that open calls are associated with a greater increase in small trades, consistent with individuals trading on information released during the call, and higher price volatility during the call period. Bushee et al. (2004) show that the implementation of Reg FD, which mandates open access to all firm disclosures, resulted in increased price volatility for firms that previously held calls with

[4] See Bethel (2007) for an overview of the evolution of financial disclosure regulation with a particular emphasis on the implementation of Reg FD in 2000.

[5] Analyst forecast dispersion can serve as a rough proxy for differences in investor beliefs with respect to future earnings. However, unlike option-implied volatility, analyst forecast dispersion does not directly measure investors' degree of value uncertainty nor is it immediately observable.

restricted access. Moreover, they establish that individual investor trading around these events increased following the rule change.

Conference call signals can be subtle and nuanced with the added dynamic of hearing from both managers and analysts. Hollander, Pronk and Roelofsen (2010) show that when managers do not answer analysts' questions investors interpret their silence negatively. Blau, DeLisle and Price (2015) and Druz, Wagner and Zeckhauser (2015) provide evidence suggesting that the reaction to conference call participants' tone depends on the sophistication level of the listener. Price, Doran, Peterson and Bliss (2012) demonstrate that linguistic call tones influence investor beliefs with a significantly positive relation observed between optimistic call tones and stock returns. Indeed, empirical evidence suggests that managers attempt to sway investor perception by strategically managing their word choices and put forth effort to set as positive a tone as possible. Brockman, Li and Price (2015) show that managers attempt to establish a highly positive level of call tone, although other call participants don't necessarily follow suit. They further find that investors react differently to the tones of managers and analysts; investors place more weight on analyst tones as reflected in stock returns following call events. Huang et al. (2014) show that managers' strategic use of press release tone is effective in manipulating investor perceptions with a positive stock return effect at the earnings announcement. Larcker and Zakolyukina (2012) show that the linguistic tone of managerial disclosures is different (e.g. more positive) for firms with subsequent restatements when compared to the linguistic tone of firms who do not issue restatements, suggesting that linguistic features of conference call narratives can be used to identify deceptive behavior.

However, both the market and the courts may punish managers if such behavior is deemed to be deceptive. Rogers, Van Buskirk and Zechman (2011) provide evidence that firms

with unusually optimistic earnings announcements relative to other firms experiencing similar economic circumstances are more likely to be sued for material misrepresentation regarding the value of the firm. Similarly, Blau et al. (2015) find evidence that short sellers profit by targeting firms with unusually optimistic statements by managers. Moreover, the data suggest that managers seek to minimize call risk by limiting the length of conference calls or by avoiding them if possible (Price, Salas, and Sirmans 2015). In an experimental setting, Hales, Kuang and Venkataraman (2011) provide evidence which suggests that the linguistic features of disclosure in the context of the overall information environment may exacerbate bubbles in a bull market and accelerate panics in a bear market. Altogether, conference calls can be a high stakes game.

Importantly, as a whole, the extant conference call literature discussed above establishes a definitive link between revealed call tones and the mean (the first moment) valuation of the firm's stock. However, it largely neglects the variance (the second moment) of the valuation, which Sridharan (2015) argues is just as important as the mean. In other words, to fully understand how the conference call disclosure mechanism affects investors' valuation process, it is imperative to not only assess the impact on the mean value but also on the uncertainty about that mean value. By ignoring variance researchers implicitly assume that, when forming a valuation estimate, investors either have no uncertainty or uncertainty is constant and homogeneous across all firms. We remove the implicit assumption that exists in current literature by explicitly examining the relation between earnings conference call tones and investors' perceived price risk (i.e. value uncertainty).

Given the preponderance of evidence in the literature establishing IV as the premier measure of investors' forward-looking volatility, we use IV to investigate whether the influence of conference call tones extends beyond the equities market and the stock price's first moment.

That is, given the potential variability in market outcomes corresponding to earnings conference calls and the observed increases in stock price volatility around conference call events, we ask whether the linguistic features of such calls can influence investors' forecasts of price uncertainty as measured by IV. Our primary hypothesis is that unexpected quarterly earnings conference call tones will impact option traders' perceptions of stock price risk; where we expect greater negativity to be associated with greater uncertainty and less negativity to be associated with the resolution of uncertainty.

Further, given the interactive nature of the conference call medium where both managers and analysts express opinions about the firm, we further ask whether option traders differentiate between these two sources of information. As outsiders to the firm, analysts' views may be more trusted consistent with prior findings for outside directors (e.g., Duchin, Matsusaka, and Ozbas, 2010). Thus, our secondary hypothesis is that manager- and analyst-derived call tones will differentially impact option traders' perceptions of stock price risk. We expect greater weight to be placed on the unexpected tones of analysts as more trustworthy sources of information about firm uncertainty.

III. SAMPLE AND VARIABLE DESCRIPTIONS

Conference Call Sample Selection

We construct our sample according to the steps in Table 1, Panel A. The initial list of firm conference call transcript observations comes from the FD (Fair Disclosure) database provided by LexisNexis.[6] We download all 302,274 transcripts in this database, which spans the universe of transcripts filed under Reg FD. This sample includes corporate calls, as well as other

[6] Corporate conference call transcripts are publically available under Reg FD which was promulgated by the SEC in August 2000 (17 CFR 243.200). Compliant firms publish transcripts of their conference calls on the Fair Disclosure Wire. LexisNexis, the legal-information services provider, has archived these transcripts in their FD Database.

calls such as calls hosted by state and federal agencies. We next check for data sufficiency. Following Panel A of Table 1, we only keep earnings conference call observations with sufficient data on Compustat[7] (52,658 observations), and sufficient data in our options database (7,745 observations). Lastly, we write C++ computer code that identifies each word, by speaker, within a given conference call transcript and then tabulates the speaker-specific frequency distribution of those words which correspond to predefined word lists (i.e. specialized dictionaries) associated with categories of interest (e.g. positive, negative).[8] This process enables us to quantify the tones attributable to each of the distinct call components - the introductory remarks by management, the analyst questions, and the managerial responses.

Following Brau, Cicon and McQueen (2016), we control for prefixes and negation in this study. Prefix control allows for "ability" and "approve" to be on the positive word list as well as "inability" and "disapprove" on the negative word list. A word is negated when preceded by a word such as "not," that reverses the word's meaning. We incorporate six negation words used in Loughran and McDonald (2011): "neither," "never," "no," "nobody," "none," and "not." To their list we add another twenty-two negation words.[9] Additionally, we add "too" to our negation list since, for example, "too strong" often carries a negative connotation whereas "strong" is generally positive. Thus, in the phrase "was always right," we consider "right" as a positive word, whereas, in the phrase "was never right," we consider "right" combined with "never" as negative. We negate when any one of these twenty-nine negation words occurs within two

[7] We use a computerized matching algorithm which requires the company name in Compustat to exactly match the company name in the conference call.
[8] See Loughran and McDonald (2011) for the dictionary used to categorize words and a detailed description of this process as applied in financial statements research.
[9] These words are: "aren't," "cannot," "can't," "couldn't," "didn't," "doesn't," "don't," "hadn't," "hasn't," "haven't," "isn't," "mustn't," "needn't," "nor," "nothing," "nowhere," "shouldn't," "wasn't," "weren't," "without," "won't," and "wouldn't."

words preceding a financial statement dictionary word (e.g., "not actually reduced" would also be considered positive).

Following Loughran and McDonald (2011, 2016) our tone measures focus on negativity, or pessimism. Additionally, we implement the term weighting scheme from Equation (1) of Loughran and McDonald (2011). Term weighting uses a two-part approach, a local weighting scheme and a global weighting scheme which are combined as a numerator and a denominator. The local weighting scheme (numerator) accounts for word occurrences in the individual documents. The global weighting scheme (denominator) accounts for the word distribution across all documents. This technique assigns weights to each term based on the frequency with which it appears across the entire corpus of text, which controls for the impact of words that are simply a mechanical feature of the particular communications medium. For example, in a conference call Q&A session the word QUESTION tends to account for roughly half of the tabulation of negative words from the Loughran and McDonald (2011) negative word list even though this term generally does not have a negative connotation. (e.g. "Let me just ask one last question.") Consistent with recent conference call textual analysis by Brockman, Cicon, Li and Price (2017), once the weighting scheme is applied the weighted usage of the word QUESTION only accounts for 2.64% of the *negative* terms used in our sample.

In Table 1, Panel B, we report the ten most frequently occurring negative words and negated positive words. We report the negative words in column 1, and the percentage of the total count of negative words that these words represent in column 2. In column 3 we report the most frequently occurring negated positive words. Finally, in column 4 we report the percentage of the total count of negated positive words that these words represent. Following the use of the term QUESTION at 2.64%, the next most frequently occurring negative word is LOSS at 2.33%,

and the tenth most frequently occurring negative word is AGAINST at 1.15%. Overall, the occurrences of negative words are reasonably well distributed and no single word, or group of words, accounts for an overly large portion of the sample. We see a similar distribution occurring in the negated positive word list, where the most frequently occurring negated positive word is GROWTH at 0.65% and the tenth most frequently occurring negated positive word is STRONG which accounts for 0.38% of the sample. In summary, the occurrences of both the negative and negated positive words appear reasonably well distributed which suggest that no single word, or group of words, biases our sample.

Table 2 reports the distribution of this sample across industry and time. Panel A reports that the largest industry in our sample is "Business Equipment" with a total of 1,722 conference call observations which represents 22.23% of the sample. Health is second at 1,237 observations (15.97%) followed by Manufacturing at 1,108 observations (14.31%). The industry with the smallest number of observations is Consumer Telecom at 130 (1.68%). All of the (Fama and French, 1997) 12-industry categories are represented in the sample. Panel B reports the distribution of the sample by year. The bulk of the sample is distributed over the years 2005 through 2011. The year 2007 (1,328) has the greatest number of observations and the year 2002 has the least (1).

Firm Characteristics, Fundamentals, and Options Variables Construction

We obtain firm accounting and business segment data for our sample of post-Reg FD conference call firms from Compustat, price data from CRSP, institutional ownership from Thomson Reuters, analyst data from IBES, and option data from OptionMetrics. The

requirement that the firms have exchange-traded options biases our sample toward larger and more actively traded firms (Whaley 2006).

Our firm characteristic control variables build on the expected conference call tone model from Huang et al. (2014). We create the variables ROA, MOM, SIZE, BM, STD_RET, STD_EARN, AGE, BUSSEG, GEOSEG, LOSS, ΔEARN, SUE, and AF following their methods. We then expand the Huang et al. set of explanatory variables to include those deemed by Altman (1968) as important to determining financial distress. These additional variables are sales growth measured over the previous year (SGROWTH), working capital to total assets (WCAPRAT), retained earnings to total assets (RERAT), EBIT to total assets (EBITRAT), leverage as total liabilities to total assets (DEBTRAT), and sales to total assets (SALESRAT). All variable definitions may be found in the Appendix.

Since the market's perception of the firm post-conference call is largely due to updated fundamentals as well as the information from their call presentation, we construct an earnings surprise measure SUE from the revealed earnings for the quarter relative to analyst forecasts for that quarter's earnings from IBES, following Livnat and Mendenhall (2006).

We measure the market's post-conference call perception of the riskiness of the firm using the natural log of IV data from OptionMetrics. Specifically, we capture the IV starting two days after the earnings call from the standardized options file in OptionMetrics for the 30-day, 60-day, and 90-day maturities and average the IV over a 5 trading-day window (t=0 to t=4).[10] We consider the levels of implied volatility for the standardized at-the-money (ATM) call and put options, CALLVOL and PUTVOL, respectively. To avoid biases introduced by scaling

[10] The standardized options file uses a kernel-smoothing technique to interpolate a constant-maturity contract on each day for a given maturity from actual price data. This enables a cleaner time series comparison by keeping option maturity constant during the entire observation window, thereby avoiding term structure issues. Hentschel (2003) suggests such a method can reduce problems related to asynchronous timing and model misspecification.

issues, we also log-transform the call and put IVs to LnCALLVOL and LnPUTVOL.[11] The implied volatility levels measure the overall expected level of future firm price risk.

IV. RESEARCH DESIGN AND RESULTS

Measuring Tone and Abnormal Tone

The tone measures for each portion of each call are constructed following Loughran and McDonald (2011, 2016) as the number of negative words in a particular section divided by the total number of words in that section. The number of negative words includes the combined counts for both non-negated negative words and negated positive words. The tones are calculated separately for management during the introductory session of the call (I_NEG), management during the question and answer (Q&A) portion of the call (M_NEG), and analysts during the Q&A session of the call (A_NEG). Then, following Huang et al. (2014), Brockman et al. (2015), and Druz et al. (2015), we orthogonalize the tones by regressing each tone variable on established tone determinants (e.g. performance, operating risks, growth opportunities, firm complexity, analysts' estimates, etc.) and capture that portion of the tone which is otherwise unexplained (i.e. abnormal):

$$\begin{aligned} TONE_{i,t} = \; & \alpha + \beta_1 ROA_{i,t} + \beta_2 MOM_{i,t} + \beta_3 SIZE_{i,t} + \beta_4 BM_{i,t} + \beta_5 STD\_RET_{i,t} \\ & + \beta_6 STD\_EARN_{i,t} + \beta_7 AGE_{i,t} + \beta_8 BUSSEG_{i,t} + \beta_9 GEOSEG_{i,t} + \beta_{10} LOSS_{i,t} \\ & + \beta_{11} \Delta EARN_{i,t} + \beta_{12} SUE_{i,t} + \beta_{13} AF_{i,t} + \beta_{14} SGROWTH_{i,t} + \beta_{15} WCAPRAT_{i,t} \\ & + \beta_{16} RERAT_{i,t} + \beta_{17} EBITRAT_{i,t} + \beta_{18} DEBTRAT_{i,t} + \beta_{19} SALESRAT_{i,t} + f_{i,t} \\ & + \varepsilon_{i,t} \end{aligned}$$

[11] Volatilities, both implied and realized, are log-normally distributed. Therefore, in many of the empirical analyses, we take the natural log of the implied volatilities to normalize the distributions (see, for example, Christensen and Prabhala 1998)Christensen BJ, Prabhala NR. The relation between implied and realized volatility. Journal of Financial Economics 1998;50; 125-150.

(1)

Here $f_{i,t}$ represents a vector of fixed effects that includes firm, year-quarter, and Fama and French (1997) industry dummies. We are concerned with the portion of manager and analyst tones that are abnormal and not driven by quantifiable fundamentals. It is these measures that reflect the unexpected opinions of management and analysts rather than the underlying known facts about firm fundamentals and characteristics. We also exclude the tone of other parties in the same or other sections in the abnormal tone regression to avoid asynchronicity problems. Thus, after fitting the model in Eq. (1) to each of our three tones (I_NEG, M_NEG, A_NEG), we capture the regressions' residuals (i.e. the differences between the actual and predicted values) and term them I_ABNEG, M_ABNEG, and A_ABNEG.[12] These three variables represent the unexpected (abnormal) negativity, or pessimism, of management in the introductory and Q&A portions of the call and of the analysts, respectively.

Table 3 presents the summary statistics of the abnormal tone variables as well as other variables to be used in further analyses. The mean abnormal tones for management introduction, management Q&A, and analyst Q&A (I_ABNEG, M_ABNEG, and A_ABNEG, respectively) are all very close to zero, as expected since they are residuals from OLS regressions. However, the medians reveal greater negativity in the discussion portion of the conference calls relative to the introductory remarks with 0.020 and 0.021 for M_ABNEG and A_ABNEG, respectively, compared to 0.006 for I_ABNEG. Their standard deviations range from 0.388 (I_ABNEG) to 0.466 (A_ABNEG).

Table 4 shows the correlations between the variables. The correlation between abnormal tone variables by section, I_ABNEG and M_ABNEG (A_ABNEG) is 0.20 (0.16), and the

[12] Appendix B, in addition to displaying summary statistics and correlations of the variables, presents the results from estimating equation (1).

correlation between M_ABNEG and A_ABNEG is 0.23. The noteworthy implication is that abnormal tone appears to have a common signal component across conference call segments and roles: when managers are optimistic (i.e. less pessimistic) in the introduction, they are more likely to be optimistic in the Q&A, as are the analysts. However, while the correlations between abnormal tones are positive they are not high, consistent with heterogeneity of beliefs by the call participants about the firm in excess of fundamental information. It is also interesting to note that a strong positive correlation, 0.08, is observed between the abnormal introductory tone (I_ABNEG) and the total word count for the introductory section (ICOUNT). This suggests that when management is more negative in their presentation, they have more explaining to do. Similarly, the positive correlation between abnormal analyst tone (A_ABNEG) and total word count for managers in the Q&A section (MCOUNT) of 0.11 indicates that when analysts are more pessimistic about the future outlook of the firm, managers are obliged to provide longer answers to the analyst questions.

Univariate Relations -- Uncertainty and Abnormal Tones

The purpose of our study is to examine the relation between these three abnormal tone measures, representing that discretionary part of conference call tone not determined by quantifiable firm fundamentals, and the implied volatility (IV) variables as measures of price risk/uncertainty. If the abnormal portion of conference call tone that is unrelated to firm performance conveys useful information to market participants about the riskiness of the firm, we should expect to find a significant relationship between these two measures.

As a first glance, we note the unconditional correlation coefficients between the abnormal tone measures (I_ABNEG, M_ABNEG, and A_ABNEG) and the IV variables (CALLVOL and PUTVOL) in Table 4 are all positive and range from 0.01 to 0.02. This potentially suggests that higher negativity may be associated with higher uncertainty. To gain further insight into the IV distributions as they relate to the tone measures, we next perform portfolio sorts. In this preliminary test of relations between IV and abnormal call tones, each quarter we sort the sample into quartiles by the various ABNEGs and examine the variation in implied volatility measures across the quartiles.

Table 5 presents results from sorting CALLVOL (Panel A) and PUTVOL (Panel B) by I_ABNEG, M_ABNEG, and A_ABNEG. For all cases three different option contract windows (30-, 60-, and 90-days) are examined. In each panel, the first column shows the medians of the respective abnormal negativity measures, which stack monotonically from low to high by construction. The top portion of each panel shows sorts by I_ABNEG. There are no strongly discernable patterns, other than positive but insignificant differences (based on t-tests) between the high and low quartiles. The middle portion of each panel shows sorts by M_ABNEG, where t-tests show 2 out of 6 sorts show significantly positive differences at the 5% and 10% levels between the high and low quartiles. However, the Wilcoxon ranksum tests show that all six differences are statistically significant at the 5%. In the bottom portion of each panel, where CALLVOL and PUTVOL are sorted by A_ABNEG, t-tests (Wilcoxon ranksum tests) show the differences between the high and low portfolios are positive and significant at least at the 5% (1%) level in all 6 sorts. This preliminarily suggests that the negativity of different conference call participants has differential effects on value uncertainty, where investors show some reaction to manager tones but are clearly more responsive to analyst tones when considered in isolation.

These tests involve simple sorts on abnormal tones, and thus there could be confounding elements that may be biasing the results. We next turn to panel regressions to study the relationship between abnormal tone and value uncertainty while controlling for other effects.

Multivariate Regressions -- Uncertainty and Abnormal Tones

The following regression model is used to explore the relationship between abnormal tone and market-based risk measures from options data:

$$IV\ MEASURE_{i,t} = \alpha + \gamma_1 I\_ABNEG_{i,t} + \gamma_2 M\_ABNEG_{i,t} + \gamma_3 A\_ABNEG_{i,t} + \gamma_4 SUE_{i,t} + \gamma_5 SIZE_{i,t} + \gamma_6 MB_{i,t} + \gamma_7 MOM_{i,t} + \gamma_8 EXPER_{i,t} + \gamma_9 CALLAN_{i,t} + \gamma_{10} ANALYST_{i,t} + \gamma_{11} IO_{i,t} + \gamma_{12} ICOUNT_{i,t} + \gamma_{13} MCOUNT_{i,t} + \gamma_{14} ACOUNT_{i,t} + f_{i,t} + \epsilon_{i,t} \quad (2)$$

Here SUE is the standardized unexpected earnings, SIZE is the log of the firm's market capitalization, MB is the market to book equity ratio, MOM is the buy and hold return over the previous 60 trading days, EXPER is the number of earnings conference calls the firm has previously held, CALLAN is the log of the number of analysts who speak in the Q&A portion of the call, ANALYST is the log of the number of analysts who issue earnings forecasts for the firm, and IO is the percentage of total outstanding shares owned by institutional investors. Li (2008) and Loughran and McDonald (2014) show that the sheer length of financial statements affects investors' interpretation of the presented information as well as predicts future firm performance. Since similar effects may exist in conference calls (e.g. Skinner 2003; Matsumoto, Pronk, and Roelofsen 2011), we also control for the length of the call by counting the total

number of words spoken by the participants: ICOUNT is the log of the number of words spoken by management in the introductory session of the call, MCOUNT is the log of the number of words spoken by management in the Q&A session of the call, and ACOUNT is the log of the number of words spoken by analysts in the Q&A session of the call. The IV MEASURE is one of the various implied volatility measures discussed in the previous section and $f_{i,t}$ is a vector of fixed effects that includes year-quarter and Fama and French (1997) industry dummy variables. The time fixed effects capture any correlations with omitted variables that are related to the timing of the conference calls. Thus, they control for time-varying macro-economic conditions that may affect the value uncertainty of all firms. The regression estimations' standard errors are clustered by time and industry according to Petersen (2009) and Gow, Ormazabal and Taylor (2010).[13] In order to reduce the impact of outliers, all variables in these regressions are Winsorized at the 1% and 99% levels. If the estimated values for γ_1, γ_2, or γ_3 are statistically different than zero, then there will be evidence of a link between abnormal tones and investor uncertainty about firm values.

The regression results for call option contracts of 30-, 60-, and 90-days are shown in Table 6, Panel A, and the put option contract results are shown in Panel B. The coefficients for abnormal introductory tones (I_ABNEG) are all positive, with 3 of 6 at statistically significant levels. The coefficients for the 90-day window regressions are consistently significant at the 5% level, providing evidence that the scripted introductory statements in the quarterly calls affect investor perceptions of value uncertainty for the upcoming quarter. The abnormal manager Q&A tones (M_ABNEG), while positive, are not significant. Consistent with the prior sorts,

[13] The sample is an unbalanced panel where a large number of firms appear in the data only once. Thus, rather than cluster errors at the firm level, we cluster at the industry level to ensure there are sufficient numbers of firms per cluster (Thompson 2011Thompson SB. Simple formulas for standard errors that cluster by both firm and time. Journal of Financial Economics 2011;99; 1-10). However, the results are similar when standard errors are clustered by firm.

abnormal analyst tone coefficients (A_ABNEG) are positive and highly significant at the 1% level for 6 of 6 regressions, covering all options contract windows. Investor uncertainty is strongly influenced by the degree to which analysts express negativity in the discussion portion of the calls. Higher abnormal negativity leads to higher uncertainty.

When looking at the control variables in Table 6, Panels A and B, we note that SIZE is consistently negative and MB is consistently positive. Large value firms have less pricing uncertainty associated with the call event and small growth firms have greater levels of IV. Moreover, as returns momentum (MOM) increases the uncertainty decreases. There is also some evidence, particularly in the longer contract windows, to show that when firms have more experience (EXPER) with holding conference calls they are better able to reduce uncertainty, all else equal. Larger numbers of analysts on a given call (CALLAN) appears to add clarity to investor perceptions, while greater numbers of analysts covering a given firm (ANALYST) – but not necessarily participating on the call – increases uncertainty. Taken together, the coefficients on these two analyst variables (CALLAN and ANALYST) highlight the importance that investors place on the role played by analysts. That is, investors appear to want analysts on the calls; when analysts cover a given firm *and* are on the call uncertainty is more likely to be resolved. Institutional investors are important insofar as the greater the level of institutional ownership (IO) the less uncertainty associated with a given call. Additionally, although the evidence is limited, the longer analysts speak (ACOUNT) the more likely there is to be higher uncertainty; unclear firm situations may lead to more questioning by analysts. Lastly, the controls for the IV from the prior quarter (Lag LnCALLVOL and Lag LnPUTVOL) are strongly related to future IV. High levels of past IV lead to high levels of future IV. The combination of these highly significant control variables and firm fixed effects result in R-squared values

ranging from 0.90 to 0.94 across the 6 regressions. This validates the specification in Equation (2) and provides confidence in the strength of the results for our variables of interest (abnormal call tones). However, for brevity, the control coefficients are not shown in subsequent regressions – although they remain consistent.

Barberis, Shleifer and Vishny (1998), Veronesi (1999), and Nofsinger and Prucyk (2003) show that investors' uncertainty reacts differently to good news than to bad news. This motivates us to separate the sample into good news and bad news events. Since the conference call pertains to earnings announcements, we use the unexpected component of earnings (SUE) to delineate good news from bad by separating the sample into calls associated with either negative (bad news) or positive (good news) SUE.

Table 7 provides regression results for both call and put derived IV, when SUE is <0 (Columns 1 and 3) and when SUE is >0 (Columns 2 and 4), for 30-day (Panel A), 60-day (Panel B), and 90-day (Panel C) windows. Like before, the A_ABNEG coefficients are all positive and, with the partitions, are significant in 8 of 12 regressions. We also find some significantly positive coefficients on I_ABNEG and M_ABNEG, but they are typically not as strong as the A_ABNEG coefficients. The most interesting aspect of this partition is that we observe most of the significance on our variables of interest to be in columns (2) and (4), where observations are constrained to the SUE>0 case. When the earnings signal is unexpectedly positive and the (primarily analyst) call tones are abnormally negative, the market shows greater levels of pricing uncertainty.

Multivariate Regressions – Uncertainty over a Longer Window

We next investigate if the conference call negativity has a long lasting effect on the option-implied volatilities. Instead of a 5 trading-day post conference call window, we average implied volatilities over the 20 trading-day post call window and re-estimate equation (2). The results are presented in Table 8. Again, for brevity, the control variables are included in the estimations but not reported.

Consistent with the results reported in Table 6, the coefficients for abnormal introductory tones (I_ABNEG) are again all positive, with 4 of 6 being statistically significant at least at the 10% level. The abnormal analyst tone coefficients (A_ABNEG) are also all positive and significant at least at the 5% level in 5 of the 6 estimations. Thus, the evidence suggests investor uncertainty about firm value is not only increased by negativity by management in the call introduction and analysts in the Q&A portion of the call, but that these effects are long-lasting.

Multivariate Regressions -- Uncertainty and Abnormal Tone Spreads

Thus far the abnormal tone measures have been considered independent of one another. However, it is reasonable to think that abnormal differences (similarities) in the revealed tones of various groups of call participants could elevate (reduce) pricing uncertainty. To examine the effect of tone differences we repeat the regressions from Equation (2) where we substitute an abnormal tone spread and a baseline abnormal tone measure, in each specification, for the three separate abnormal tone measures used previously.

The results are presented in Table 9, where measures of call IV (Panel A) and put IV (Panel B) over the 30-, 60-, and 90-day contract windows are considered. For both panels, the specifications in columns (1), (4), and (7) include the abnormal spread between M_NEG and I_NEG, where the abnormal introductory tone is used as the baseline. The spread between

manager Q&A tones and manager introductory tones does not have significant explanatory power for either call or put derived IV. However, the baseline (I_ABNEG) is significantly positive in 3 of 6 regressions.

The abnormal spread between analysts (A_NEG) and the introductory statements (I_NEG) are shown in columns (2), (5), and (8) of both panels, where the abnormal introductory tone is used as the baseline. This spread is positive and significant in 4 of 6 regressions, with 3 of the coefficients significant at the 1% level. The baseline tone coefficient (I_ABNEG) is significant at the 5% level or better in all 6 cases. The incremental difference between analyst tones and introductory statement tones adds to investor uncertainty. Specifically, uncertainty increases as analysts become more negative relative to the prepared statements by managers, consistent with our hypothesis that analysts are more trusted.

Perhaps the most interesting results are in columns (3), (6), and (9) of both panels. Here the abnormal difference between analysts (A_NEG) and managers (M_NEG) in the open discussion portion of the call are considered, where abnormal manager Q&A tone is the baseline. In 6 of 6 regressions the coefficients on the abnormal tone spreads and the baseline tone measures are all positive and significant at the 1% level. The market listens to the open discussion of the conference calls and draws inferences from the revealed abnormal tone differences between analysts and managers. When analyst negativity is abnormally greater than the manager Q&A negativity, the market strongly updates its beliefs about firm risk consistent with concerns about relative trustworthiness of the two parties. As these differences become more pronounced the pricing uncertainty, as shown by call and put option implied volatilities, increases significantly.

V. CONCLUSION

Quarterly earnings conference calls are an important medium through which managers and analysts are able to communicate with each other, and with capital market participants. Such voluntary disclosures, which are uniformly open to the public after the implementation of Reg FD in 2000, provide investors with an opportunity to gather information and update their firm valuations. The literature shows conference call tones to be informative, providing value-relevant information which is incremental to the preceding earnings announcement. The generally observed relation is that positive call tone leads to ensuing returns that are similarly positive, while negative call tone leads to negative subsequent returns. Thus, the manner in which conference call communication is received by the market is an important matter with economic consequences that can be substantial.

We examine option implied volatilities (IV) around quarterly earnings conference calls. IV is a commonly used ex-ante measure of perceived asset price risk that helps us understand forward-looking investor beliefs regarding the range of possible stock price outcomes. Given the potential variability in market reactions corresponding to earnings conference calls, and the observed increases in stock price volatility around conference call events documented in the literature, we ask whether the tones of such calls can influence investors' forecasts of future price volatility (i.e. investors' perception of price risk and value uncertainty).

Through established textual/linguistic analysis techniques we find that measures of abnormal conference call tone (i.e. the sentiment revealed by word choices that are not attributable to firm fundamentals) can influence market perceptions of uncertainty in the price discovery process. Overall, we find that measures of abnormal call negativity are positively related to IV. Higher (lower) negativity, or pessimism, leads to more (less) uncertainty. This

relation is particularly evident when the accompanying earnings surprise is positive, revealing the confounding effects of mixed signals. Furthermore, while both manager and analyst tones can influence market perceptions, analyst tones have a stronger impact on investor uncertainty consistent with their more trusted role as outsiders. When considering managers and analysts together, greater abnormal discontinuity in their expressed call tones gives rise to greater price uncertainty; whereas highly similar call tones are associated with more certainty. Altogether, our results suggest that abnormal conference call tones have a significant influence on the market's perception of value uncertainty. Conference call discussions can either agitate or calm the market, depending on the degree to which abnormal negativity is expressed by call participants and extent to which the call provides investors with conflicting signals. This effect is particularly strong when analysts show a more negative tone than management within the same segment of the conference call, further supporting differing levels of investor trust about the statements of the two parties.

Altogether, this study contributes to the literature in several ways. First, we demonstrate that the impact of conference call tones extends beyond the simple conveyance of value-relevant information to market participants. That is, we show linguistic call tones have the ability to influence traders' perceptions of *uncertainty* about value as well. Second, we expand the general understanding of investor risk perception in price discovery by mapping a specific channel of voluntary disclosure through abnormal tone by which investors gather price-risk related information. Third, we add to the understanding of conference call dynamics and investor beliefs about the trustworthiness of signals by firm insiders and outsiders by showing the extent of managers' and analysts' separate, and combined, abilities to calm (or upset) the market.

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TABLE 1
Sample Selection

This table reports our sample selection procedure as well as the most frequently occurring positive and negative words in our sample. In Panel A we begin our sample selection procedure by identifying all conference calls in the Fair Disclosure database. This database is very large and contains 302,274 observations. However, not all of these are corporate conference calls, some are conference calls by state and federal agencies. Furthermore, not all firms with conference called are reported on Compustat. When we limit our search to just corporate conference calls with financial data available on Compustat, the number drops to 52,658 transcripts. We further limit our sample to those firms with reported option data. This leaves us with a sample size of 7,745 firm observations. Panel B reports the ten most frequently occurring positive and negative words. We report the positive words in column 1, and the percentage of the total count that this word represents in column 2. In column 3 we report the most frequently occurring negative words. Finally, in column 4 we report the percentage of the total count that this negative word represents.

Panel A: Attrition of data due to matching

Data Selection Step	Observations
Size of the LexisNexis Fair Disclosure database (as of October 2013)	302,274
Number of transcripts exactly matched to Compustat firms	52,658
Observations which matched to option data	7,745

Panel B: Most frequently used negative and negated positive words

Top 10 Negative Words	Percent of Negative Words	Top 10 Negated Positive Words	Percent of Positive Words
QUESTION	2.64%	GROWTH	0.65%
LOSS	2.33%	CHANGE	0.65%
DECLINE	1.85%	CONSOLIDATED	0.56%
ILL	1.65%	SIGNIFICANT	0.52%
RESTRUCTURING	1.61%	INCREASE	0.49%
LOSSES	1.43%	MARKET	0.48%
NEGATIVE	1.30%	CHANGED	0.48%
DECLINED	1.29%	LAST	0.47%
DIFFICULT	1.27%	RIGHT	0.44%
AGAINST	1.15%	STRONG	0.38%

TABLE 2
Distribution of Sample over Industry and Time

This table reports the sample distribution by industry and by year. The complete sample is composed of 7,745 conference call transcript observations. It spans the time period of 2002 through to 2012. Panel A reports distribution by Fama French 12 industry classifications. Panel B reports distribution by year.

Panel A	Number of Transcripts	Percent of Total
Business Equipment	1722	22.23%
Chemicals	287	3.71%
Durables	135	1.74%
Energy	506	6.53%
Health	1237	15.97%
Manufacturing	1108	14.31%
Financial	267	3.45%
Non-Durables	286	3.69%
Other	795	10.26%
Shops	663	8.56%
Telecom	130	1.68%
Utilities	609	7.86%
Total	7745	100%

Panel B	Number of Transcripts	Percent of Total
2002	1	0.01%
2003	35	0.45%
2004	203	2.62%
2005	980	12.65%
2006	892	11.52%
2007	1328	17.15%
2008	781	10.08%
2009	1048	13.53%
2010	1062	13.71%
2011	1405	18.14%
2012	10	0.13%
Total	7745	100%

TABLE 3
Descriptive Statistics

This table provides descriptive statistics for the variables used in the analyses to the relation between abnormal tones and value uncertainty. Individual variable definitions are outlined in Appendix A.

Variables	N	Mean	Standard Deviation	1st Percentile	25th Percentile	Median	75th Percentile	99th Percentile
CALLVOL (30-day)	7716	0.452	0.214	0.146	0.301	0.406	0.554	1.184
CALLVOL (60-day)	7705	0.446	0.209	0.146	0.298	0.401	0.544	1.167
CALLVOL (90-day)	7694	0.442	0.202	0.146	0.298	0.401	0.540	1.138
PUTVOL (30-day)	7716	0.457	0.215	0.150	0.304	0.409	0.558	1.223
PUTVOL (60-day)	7705	0.450	0.210	0.149	0.301	0.405	0.550	1.188
PUTVOL (90-day)	7694	0.447	0.204	0.150	0.302	0.405	0.545	1.172
LnCALLVOL(30-day)	7716	-0.897	0.455	-1.925	-1.200	-0.902	-0.590	0.169
LnCALLVOL(60-day)	7705	-0.910	0.451	-1.923	-1.211	-0.913	-0.608	0.155
LnCALLVOL(90-day)	7694	-0.914	0.442	-1.921	-1.211	-0.914	-0.617	0.129
LnPUTVOL (30-day)	7716	-0.886	0.450	-1.895	-1.190	-0.894	-0.584	0.201
LnPUTVOL (60-day)	7705	-0.898	0.447	-1.904	-1.202	-0.904	-0.598	0.173
LnPUTVOL (90-day)	7694	-0.901	0.440	-1.900	-1.197	-0.904	-0.607	0.159
I_ABNEG	7737	0.001	0.388	-1.124	-0.228	0.006	0.254	0.912
M_ABNEG	7737	0.001	0.424	-1.376	-0.225	0.020	0.273	0.972
A_ABNEG	7737	0.001	0.466	-1.476	-0.255	0.021	0.310	1.010
AB(M_NEG-I_NEG)	7737	0.000	0.005	-0.012	-0.003	0.000	0.003	0.012
AB(A_NEG-I_NEG)	7737	0.000	0.005	-0.013	-0.003	0.000	0.003	0.013
AB(A_NEG-M_NEG)	7737	0.000	0.004	-0.012	-0.003	0.000	0.003	0.012
SUE	7737	0.001	0.008	-0.032	0.000	0.001	0.002	0.031
SIZE	7737	14.212	1.542	11.393	13.070	14.012	15.146	18.447
MB	7737	3.021	3.761	-12.886	1.511	2.318	3.747	21.222
MOM	7737	0.032	0.191	-0.460	-0.077	0.029	0.133	0.647
EXPER	7694	1.541	0.957	0.000	0.693	1.609	2.303	3.258
CALLAN	7737	3.563	0.528	1.792	3.296	3.638	3.932	4.443
ANALYST	7737	1.540	0.848	0.000	1.099	1.609	2.197	3.296

IO	7737	0.558	0.125	0.189	0.489	0.584	0.644	0.795
ICOUNT	7737	7.880	0.451	6.382	7.631	7.936	8.185	8.758
MCOUNT	7737	7.750	0.641	5.493	7.467	7.880	8.185	8.766
ACOUNT	7737	7.057	0.532	5.198	6.787	7.146	7.421	7.977

TABLE 4
Variable Correlations

This table provides pairwise correlation coefficients for the variables used in the analyses to the relation between abnormal tones and value uncertainty. Individual variable definitions are outlined in Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1) CALLVOL (90-day)	1.00																	
(2) PUTVOL (90-day)	0.97	1.00																
(3) I_ABNEG	0.02	0.02	1.00															
(4) M_ABNEG	0.01	0.01	0.20	1.00														
(5) A_ABNEG	0.01	0.02	0.16	0.23	1.00													
(6) AB(M_NEG-I_NEG)	-0.01	-0.01	-0.61	0.52	0.04	1.00												
(7) AB(A_NEG-I_NEG)	-0.01	0.00	-0.55	0.04	0.61	0.55	1.00											
(8) AB(A_NEG-M_NEG)	0.00	0.01	0.00	-0.47	0.64	-0.38	0.55	1.00										
(9) SUE	-0.03	-0.04	0.01	0.00	0.00	0.00	0.00	0.00	1.00									
(10) SIZE	-0.55	-0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.00								
(11) MB	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.10	1.00							
(12) MOM	-0.15	-0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	-0.02	1.00						
(13) EXPER	0.07	0.06	-0.01	0.01	0.02	0.01	0.02	0.01	0.03	-0.05	-0.04	0.03	1.00					
(14) CALLAN	-0.15	-0.14	0.00	0.05	0.07	0.01	0.01	0.00	0.02	0.21	-0.01	-0.01	-0.01	1.00				
(15) ANALYST	-0.17	-0.17	0.01	0.00	-0.01	-0.01	-0.01	-0.01	0.01	0.47	0.03	0.00	0.06	0.20	1.00			
(16) IO	-0.16	-0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.16	-0.05	-0.03	0.06	0.18	0.23	1.00		
(17) ICOUNT	-0.03	-0.03	0.08	-0.01	-0.01	-0.05	-0.04	0.01	0.02	0.17	0.03	-0.03	0.05	-0.09	0.10	0.10	1.00	
(18) MCOUNT	-0.07	-0.07	0.00	0.11	0.06	0.03	0.02	-0.02	0.03	0.18	0.03	-0.03	0.04	0.54	0.19	0.21	0.15	1.00
(19) ACOUNT	-0.15	-0.15	0.01	0.06	0.08	0.01	0.01	0.00	0.03	0.29	0.01	-0.02	0.02	0.89	0.27	0.24	-0.02	0.63

TABLE 5
Implied Volatility Measures Sorted by Abnormal Negativity

This table contains medians of implied volatility levels when sorted into quartiles by abnormal negativity measures for the various parts of the call (Introduction, Manager Q&A, and Analyst Q&A). IV levels are averaged over a 5 trading-day window (t=0 to t=4). Individual variable definitions are outlined in Appendix A. ***, **, * denotes statistically significant differences between the high and low quartiles at the 0.01, 0.05, and 0.10 levels, respectively. T-test statistics are in parentheses and Wilcoxon rank-sum z-statistics are in square brackets.

Panel A: Call Implied Volatilities				
I_ABNEG	Abnormal Negativity	30d CALLVOL	60d CALLVOL	90d CALLVOL
1 (L)	-0.510	0.449	0.443	0.440
2	-0.094	0.459	0.452	0.446
3	0.128	0.450	0.444	0.441
4 (H)	0.478	0.460	0.453	0.449
H-L	0.988	0.011	0.010	0.009
(t-statistic)	(128.31)***	(1.59)	(1.40)	(1.31)
[Wilcoxon z-stat]	[54.00]***	[1.69]*	[1.73]*	[1.68]*
M_ABNEG	Abnormal Negativity	30d CALLVOL	60d CALLVOL	90d CALLVOL
1 (L)	-0.560	0.447	0.442	0.440
2	-0.086	0.456	0.451	0.446
3	0.140	0.453	0.444	0.440
4 (H)	0.504	0.463	0.455	0.450
H-L	1.064	0.016	0.013	0.010
(t-statistic)	(115.78)***	(2.25)**	(1.78)*	(1.50)
[Wilcoxon z-stat]	[54.01]***	[2.46]**	[2.24]**	[2.00]**
A_ABNEG	Abnormal Negativity	30d CALLVOL	60d CALLVOL	90d CALLVOL
1 (L)	-0.620	0.454	0.449	0.446
2	-0.098	0.441	0.435	0.432
3	0.166	0.448	0.440	0.436
4 (H)	0.552	0.475	0.468	0.461
H-L	1.172	0.021	0.019	0.016
(t-statistic)	(124.23)***	(2.77)***	(2.56)**	(2.25)**
[Wilcoxon z-stat]	[54.01]***	[3.63]***	[3.41]***	[3.01]***

TABLE 5 - *Continued*

Panel B: Put Implied Volatilities				
I_ABNEG	Abnormal Negativity	30d PUTVOL	60d PUTVOL	90d PUTVOL
1 (L)	-0.510	0.454	0.448	0.446
2	-0.094	0.463	0.456	0.452
3	0.128	0.455	0.448	0.446
4 (H)	0.478	0.464	0.458	0.454
H-L	0.988	0.011	0.009	0.008
	(128.31)***	(1.47)	(1.28)	(1.20)
[Wilcoxon z-stat]	[54.00]***	[1.58]	[1.55]	[1.60]
M_ABNEG	Abnormal Negativity	30d PUTVOL	60d PUTVOL	90d PUTVOL
1 (L)	-0.560	0.452	0.448	0.445
2	-0.086	0.462	0.456	0.452
3	0.140	0.456	0.448	0.445
4 (H)	0.504	0.466	0.458	0.455
H-L	1.064	0.015	0.011	0.010
	(115.78)***	(1.97)**	(1.46)	(1.44)
[Wilcoxon z-stat]	[54.01]***	[2.37]**	[2.13]**	[2.09]**
A_ABNEG	Abnormal Negativity	30d PUTVOL	60d PUTVOL	90d PUTVOL
1 (L)	-0.620	0.459	0.454	0.450
2	-0.098	0.446	0.440	0.438
3	0.166	0.452	0.445	0.442
4 (H)	0.552	0.478	0.472	0.467
H-L	1.172	0.018	0.018	0.017
	(124.23)***	(2.46)**	(2.41)**	(2.43)**
[Wilcoxon z-stat]	[54.01]***	[3.33]***	[3.26]***	[3.17]***

TABLE 6
Call and Put Option Implied Volatilities

This table presents results from regressing measures of call (Panel A) and put (Panel B) implied volatility derived from options with 30-, 60-, and 90-day maturities on abnormal conference call negativity for the various parts of the call (Introduction, Manager Q&A, and Analyst Q&A) and controls. IV levels are averaged over a 5 trading-day window (t=0 to t=4). Time (year-quarter) and industry fixed effects (indicator variables) are included. Standard errors are clustered by industry and time following Petersen (2009) and Gow et al. (2010). Individual variable definitions are outlined in Appendix A. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Robust t-statistics are presented in parentheses.

Panel A	(1)	(2)	(3)
	30d LnCALLVOL	60d LnCALLVOL	90d LnCALLVOL
I_ABNEG	0.007	0.005	0.008**
	(1.28)	(1.06)	(2.15)
M_ABNEG	0.005	0.002	0.002
	(1.11)	(0.72)	(0.48)
A_ABNEG	0.010***	0.009***	0.005**
	(2.83)	(3.15)	(2.02)
SUE	-0.167	-0.163	-0.094
	(-1.17)	(-1.30)	(-0.48)
SIZE	-0.029***	-0.025***	-0.017***
	(-12.12)	(-9.31)	(-8.04)
MB	0.001***	0.001***	0.001***
	(3.12)	(3.05)	(2.68)
MOM	-0.030*	-0.038**	-0.036**
	(-1.88)	(-2.25)	(-2.42)
EXPER	-0.001	-0.003	-0.004**
	(-0.62)	(-1.52)	(-2.18)
CALLAN	-0.011***	-0.010**	-0.008***
	(-4.22)	(-2.41)	(-2.60)
ANALYST	0.009***	0.004*	0.003
	(3.34)	(1.96)	(1.07)
IO	-0.079***	-0.065***	-0.039**
	(-4.09)	(-3.36)	(-2.20)
ICOUNT	0.000	-0.001	0.002
	(0.01)	(-0.35)	(0.60)
MCOUNT	-0.004	0.000	-0.001
	(-1.02)	(0.13)	(-0.33)
ACOUNT	0.012*	0.007	0.009
	(1.96)	(1.49)	(1.54)
Lag LnCALLVOL	0.861***	0.894***	0.916***
	(77.94)	(108.41)	(166.31)
Constant	0.176***	0.145***	0.023
	(5.53)	(3.76)	(0.50)
Obs.	7626	7622	7612
Adj. R-squared	0.90	0.92	0.94

TABLE 6 - *Continued*

Panel B	(1)	(2)	(3)
	30d LnPUTVOL	60d LnPUTVOL	90d LnPUTVOL
I_ABNEG	0.008*	0.005	0.007**
	(1.65)	(1.22)	(1.98)
M_ABNEG	0.004	0.002	0.004
	(0.97)	(0.52)	(1.52)
A_ABNEG	0.007***	0.008***	0.007***
	(4.80)	(3.52)	(2.97)
SUE	-0.371*	-0.318**	-0.276
	(-1.84)	(-2.10)	(-1.47)
SIZE	-0.026***	-0.022***	-0.015***
	(-11.43)	(-8.40)	(-6.26)
MB	0.001***	0.001***	0.001***
	(3.34)	(3.06)	(3.70)
MOM	-0.044***	-0.044***	-0.046***
	(-2.66)	(-2.64)	(-3.22)
EXPER	-0.003	-0.004**	-0.005**
	(-1.49)	(-2.34)	(-2.25)
CALLAN	-0.011***	-0.005	-0.006*
	(-3.24)	(-1.05)	(-1.84)
ANALYST	0.006*	0.002	0.001
	(1.95)	(0.88)	(0.53)
IO	-0.071***	-0.055***	-0.032*
	(-3.41)	(-2.79)	(-1.73)
ICOUNT	-0.003	-0.001	0.001
	(-0.76)	(-0.27)	(0.22)
MCOUNT	-0.004	-0.002	-0.002
	(-1.01)	(-0.44)	(-0.50)
ACOUNT	0.011	0.005	0.010*
	(1.56)	(0.77)	(1.70)
Lag LnPUTVOL	0.870***	0.904***	0.927***
	(74.87)	(87.58)	(107.93)
Constant	0.173***	0.137***	0.005
	(6.65)	(7.22)	(0.17)
Obs.	7626	7622	7612
Adj. R-squared	0.90	0.93	0.94

TABLE 7
Call and Put Option Implied Volatilities by SUE Category

This table presents results from regressing measures of call (Columns 1 & 2) and put (Columns 3 & 4) implied volatility derived from options with 30-, 60-, and 90-day maturities on abnormal conference call negativity for the various parts of the call (Introduction, Manager Q&A, and Analyst Q&A) and controls, for subsamples where SUE<0 and SUE>0. IV levels are averaged over a 5 trading-day window (t=0 to t=4). Time (year-quarter) and industry fixed effects (indicator variables) are included. Standard errors are clustered by industry and time following Petersen (2009) and Gow et al. (2010). Individual variable definitions are outlined in Appendix A. For brevity, control variables are not shown. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Robust t-statistics are presented in parentheses.

Panel A	(1) 30d LnCALLVOL, SUE<0	(2) 30d LnCALLVOL, SUE>0	(3) 30d LnPUTVOL, SUE<0	(4) 30d LnPUTVOL, SUE>0
I_ABNEG	0.007	0.008	0.014	0.008**
	(0.66)	(1.60)	(1.00)	(2.49)
M_ABNEG	0.015	-0.002	0.007	-0.002
	(1.41)	(-0.33)	(1.60)	(-0.33)
A_ABNEG	0.007	0.010***	0.007	0.006*
	(1.33)	(2.59)	(1.34)	(1.85)
Controls	Yes	Yes	Yes	Yes
Obs.	2132	4886	2132	4886
Adj. R-squared	0.89	0.90	0.89	0.90

Panel B	(1) 60d LnCALLVOL, SUE<0	(2) 60d LnCALLVOL, SUE>0	(3) 60d LnPUTVOL, SUE<0	(4) 60d LnPUTVOL, SUE>0
I_ABNEG	0.004	0.006	0.010	0.008**
	(0.42)	(1.48)	(0.90)	(2.49)
M_ABNEG	0.010*	-0.001	0.004	-0.002
	(1.86)	(-0.22)	(0.98)	(-0.33)
A_ABNEG	0.006	0.011***	0.009*	0.006*
	(1.56)	(2.90)	(1.78)	(1.85)
Controls	Yes	Yes	Yes	Yes
Obs.	2132	4875	2132	4875
Adj. R-squared	0.91	0.94	0.91	0.94

Panel C	(1) 90d LnCALLVOL, SUE<0	(2) 90d LnCALLVOL, SUE>0	(3) 90d LnPUTVOL, SUE<0	(4) 90d LnPUTVOL, SUE>0
I_ABNEG	0.008	0.007**	0.011	0.004
	(0.96)	(2.05)	(1.42)	(1.54)
M_ABNEG	0.004	0.000	0.005	0.002
	(1.00)	(0.01)	(0.96)	(0.38)
A_ABNEG	0.006	0.006*	0.011***	0.006**
	(1.13)	(1.69)	(2.90)	(2.21)
Controls	Yes	Yes	Yes	Yes
Obs.	2131	4875	2131	4875
Adj. R-squared	0.93	0.94	0.93	0.94

TABLE 8
Call and Put Option Implied Volatilities over a Long Post-Event Window

This table presents results from regressing measures of call (Columns 1-3) and put (Columns 4-6) implied volatility derived from options with 30-, 60-, and 90-day maturities on abnormal conference call negativity for the various parts of the call (Introduction, Manager Q&A, and Analyst Q&A) and controls. IV levels are averaged over a 20 trading-day window (t=0 to t=19). Time (year-quarter) and industry fixed effects (indicator variables) are included. Standard errors are clustered by industry and time following Petersen (2009) and Gow et al. (2010). Individual variable definitions are outlined in Appendix A. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Robust t-statistics are presented in parentheses.

Panel A	(1)	(2)	(3)	(4)	(5)	(6)
	30d LnCALLVOL	60d LnCALLVOL	90d LnCALLVOL	30d LnPUTVOL	60d LnPUTVOL	90d LnPUTVOL
I_ABNEG	0.007	0.006	0.008**	0.007*	0.005*	0.006***
	(1.55)	(1.49)	(2.33)	(1.89)	(1.95)	(2.88)
M_ABNEG	-0.001	-0.000	0.000	-0.002	0.001	0.001
	(-0.34)	(-0.12)	(0.07)	(-0.66)	(0.26)	(0.47)
A_ABNEG	0.007**	0.005***	0.003	0.007***	0.006***	0.005**
	(2.25)	(2.94)	(1.47)	(4.17)	(2.73)	(1.99)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	7639	7646	7633	7639	7646	7633
Adj. R-squared	0.91	0.92	0.94	0.91	0.93	0.94

TABLE 9
Abnormal Differences in Negativity across Call Participants

This table presents results from regressing measures of call (Panel A) and put (Panel B) implied volatility derived from options with 30-, 60-, and 90-day maturities on abnormal differences in negativity for the various parts of the call (Introduction, Manager Q&A, and Analyst Q&A) and controls. IV levels are averaged over a 5 trading-day window (t=0 to t=4). Time (year-quarter) and industry fixed effects (indicator variables) are included. Standard errors are clustered by industry and time following Petersen (2009) and Gow et al. (2010). Individual variable definitions are outlined in Appendix A. For brevity, control variables are not shown. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Robust t-statistics are presented in parentheses.

Panel A	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	30d LnCALLVOL	30d LnCALLVOL	30d LnCALLVOL	60d LnCALLVOL	60d LnCALLVOL	60d LnCALLVOL	90d LnCALLVOL	90d LnCALLVOL	90d LnCALLVOL
AB(M_NEG-I_NEG)	0.020			-0.234			-0.194		
	(0.04)			(-0.47)			(-0.50)		
I_ABNEG	0.010			0.006			0.008***		
	(1.53)			(1.11)			(4.20)		
AB(A_NEG-I_NEG)		0.861*			0.744			0.541	
		(1.90)			(1.59)			(1.44)	
I_ABNEG		0.016**			0.013**			0.0134***	
		(2.30)			(2.09)			(3.36)	
AB(A_NEG-M_NEG)			1.374***			1.346***			1.031***
			(2.62)			(2.89)			(2.74)
M_ABNEG			0.015***			0.013***			0.010***
			(2.79)			(3.42)			(2.81)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	7626	7626	7626	7622	7622	7622	7612	7612	7612
Adj. R-squared	0.90	0.90	0.90	0.92	0.92	0.92	0.94	0.94	0.94

Panel B	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	30d LnPUTVOL	30d LnPUTVOL	30d LnPUTVOL	60d LnPUTVOL	60d LnPUTVOL	60d LnPUTVOL	90d LnPUTVOL	90d LnPUTVOL	90d LnPUTVOL
AB(M_NEG-I_NEG)	-0.174			-0.274			0.084		
	(-0.33)			(-0.60)			(0.26)		
I_ABNEG	0.009**			0.005			0.009***		
	(2.04)			(1.28)			(4.52)		
AB(A_NEG-I_NEG)		0.698**			0.723**			0.854***	
		(2.32)			(1.98)			(2.77)	
I_ABNEG		0.015***			0.012***			0.015***	
		(3.83)			(3.18)			(4.31)	
AB(A_NEG-M_NEG)			1.245***			1.273***			1.261***
			(5.28)			(3.97)			(3.70)
M_ABNEG			0.013***			0.011***			0.013***
			(3.41)			(3.79)			(5.95)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	7626	7626	7626	7622	7622	7622	7612	7612	7612
Adj. R-squared	0.90	0.90	0.90	0.92	0.92	0.92	0.94	0.94	0.94

APPENDIX A

Variable Definitions:

I_NEG	[(number of non-negated negative words + number of negated positive words) ÷ (number of total words)] in the introduction portion of the conference call
M_NEG	[(number of non-negated negative words + number of negated positive words) ÷ (number of total words)] by management in the Q&A portion of the conference call
A_NEG	[(number of non-negated negative words + number of negated positive words) ÷ (number of total words)] by analysts in the Q&A portion of the conference call
I_ABNEG	Management's unexpected negativity in the introduction portion of the conference call, calculated from equation (1)
M_ABNEG	Management's unexpected negativity in the Q&A portion of the conference call, calculated from equation (1)
A_ABNEG	Analyst's unexpected negativity in the Q&A portion of the conference call, calculated from equation (1)
ROA	Earnings before extraordinary items ÷ beginning total assets
MOM	Buy-and-hold monthly returns for 60 trading days prior to the conference call
SIZE	Ln(market value of equity at the fiscal year end)
MB	Market-to-book ratio measured at the fiscal year end
STD_RET	Standard deviation of *RET* over the last 12 months ending three months after the fiscal year end
STD_EARN	Standard deviation of *EARN* over the last five years
AGE	Ln(1 + number of years since a firm appears in CRSP monthly file)
BUSSEG	Ln(1 + number of business segments)
GEOSEG	Ln(1 + number of geographic segments)
LOSS	1 if *EARN* is negative, 0 otherwise
EARN	Earnings before extraordinary items ÷ beginning total assets
ΔEARN	Change in *EARN*
SUE	(IBES actual EPS – median of most recent analysts' forecasts) ÷ stock price at the fiscal year end
AF	Analyst consensus forecast for one year ahead EPS ÷ stock price at the fiscal year end
EBITRAT	Operating income before interest, taxes, and depreciation ÷ beginning total assets
SGROWTH	Change in sales from sales 4 quarters prior ÷ sales 4 quarters prior
WCAPRAT	Working capital ÷ beginning total assets
RERAT	Retained earnings ÷ beginning total assets
DEBTRAT	Total outstanding debt ÷ beginning total assets
SALESRAT	Total revenue ÷ beginning total assets
EXPER	Ln(1 + number of previous calls the firm has held)
CALLAN	Ln(1 + number of analysts which speak during the call)
ANALYST	Ln(1 + number of analysts which issue earnings forecasts for the firm)
IO	The percentage of outstanding shares owned by institutional investors
ICOUNT	Ln(1 + number of total words spoken by management in the introduction portion of the conference call)
MCOUNT	Ln(1 + number of total words spoken by management in the Q&A portion of the conference call)
ACOUNT	Ln(1 + number of total words spoken by analysts in the Q&A portion of the conference call)
CALLVOL	Implied volatility of at-the-money call options averaged over a 5 trading-day window (t=0 to t=4, where t=0 is the call date)
PUTVOL	Implied volatility of at-the-money put options averaged over a 5 trading-day window (t=0to t=4, where t=0 is the call date)

APPENDIX B

Table B1: Descriptive Statistics

This table provides descriptive statistics for the variables used in the first stage regressions for abnormal tone calculation Individual variable definitions are outlined in Appendix A.

First Stage Variables	Mean	Standard Deviation	Minimum	25th Percentile	Median	75th Percentile	Maximum
I_NEG	0.011	0.006	0.002	0.006	0.010	0.014	0.029
M_NEG	0.009	0.004	0.001	0.006	0.009	0.012	0.025
A_NEG	0.010	0.005	0.001	0.006	0.009	0.013	0.026
Ln(I_NEG)	-4.695	0.573	-6.492	-5.051	-4.645	-4.304	-3.539
Ln(M_NEG)	-4.824	0.542	-6.854	-5.116	-4.757	-4.462	-3.698
Ln(A_NEG)	-4.750	0.569	-6.790	-5.050	-4.670	-4.366	-3.664
ROA	0.004	0.046	-0.232	0.002	0.012	0.023	0.087
MOM	0.032	0.190	-0.461	-0.077	0.029	0.133	0.651
SIZE	14.208	1.539	11.308	13.069	14.011	15.145	18.447
MB	3.017	3.771	-13.171	1.511	2.317	3.745	21.267
STD_RET	0.470	0.237	0.142	0.301	0.419	0.578	1.324
STD_EARN	0.469	0.591	0.040	0.151	0.265	0.530	3.752
AGE	8.719	0.806	7.172	8.134	8.643	9.424	10.308
BUSSEG	1.125	0.523	0.693	0.693	0.693	1.609	2.398
GEOSEG	1.176	0.531	0.693	0.693	1.099	1.609	2.639
LOSS	0.221	0.415	0.000	0.000	0.000	0.000	1.000
ΔEARN	0.009	0.651	-3.041	-0.100	0.010	0.130	3.100
SUE	0.001	0.007	-0.033	0.000	0.001	0.002	0.031
AF	0.031	0.077	-0.359	0.021	0.046	0.066	0.177
SGROWTH	-0.055	0.323	-0.810	-0.187	-0.088	0.010	1.751
WCAPRAT	0.251	0.230	-0.135	0.063	0.215	0.405	0.835
RERAT	-0.163	1.101	-6.007	-0.104	0.155	0.332	0.936
EBITRAT	0.011	0.054	-0.257	0.006	0.020	0.036	0.118
DEBTRAT	0.000	0.000	0.000	0.000	0.000	0.000	0.003
SALESRAT	0.251	0.192	0.003	0.122	0.206	0.312	1.047

Table B2: Correlations

This table provides unconditional correlation coefficients for the variables in the first stage regressions used to obtain abnormal tones. Individual variable definitions are outlined in Appendix A.

First Stage Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(1) Ln(I_NEG)	1.000																				
(2)Ln(M_NEG)	0.330	1.000																			
(3) Ln(A_NEG)	0.256	0.311	1.000																		
(4) ROA	-0.092	-0.008	0.023	1.000																	
(5) MOM	-0.083	-0.075	-0.106	0.000	1.000																
(6) SIZE	-0.002	0.045	0.100	0.331	-0.002	1.000															
(7) BM	-0.076	-0.022	-0.005	0.035	-0.020	0.101	1.000														
(8) STD_RET	0.035	-0.005	-0.062	-0.316	0.049	-0.545	-0.031	1.000													
(9) STD_EARN	0.076	0.027	0.013	0.004	0.017	0.068	-0.108	0.117	1.000												
(10) AGE	0.093	0.057	0.069	0.167	-0.015	0.406	-0.059	-0.332	-0.002	1.000											
(11) BUSSEG	0.057	0.052	0.088	0.131	0.012	0.249	-0.063	-0.210	0.071	0.319	1.000										
(12) GEOSEG	-0.019	0.006	0.027	0.139	0.015	0.165	-0.025	-0.049	0.011	0.115	0.144	1.000									
(13) LOSS	0.081	-0.005	-0.038	-0.688	0.010	-0.356	0.019	0.369	0.065	-0.193	-0.148	-0.108	1.000								
(14) ΔEARN	-0.024	-0.004	0.000	0.045	-0.043	0.018	0.007	0.006	-0.004	-0.001	0.003	0.002	-0.046	1.000							
(15) SUE	-0.039	-0.015	-0.019	0.167	0.010	-0.011	0.002	0.039	0.024	-0.001	0.008	0.001	-0.150	0.025	1.000						
(16) AF	0.013	0.047	0.085	0.581	-0.018	0.306	-0.097	-0.316	0.044	0.205	0.185	0.101	-0.534	0.003	0.007	1.000					
(17) SGROWTH	0.145	0.057	0.049	0.082	-0.010	-0.014	-0.063	-0.009	0.016	0.045	0.033	-0.009	-0.034	0.000	0.066	0.075	1.000				
(18) WCAPRAT	-0.064	-0.015	-0.061	-0.175	-0.013	-0.387	0.122	0.261	-0.178	-0.264	-0.232	0.099	0.230	0.008	0.037	-0.312	0.001	1.000			
(19) RERAT	-0.004	0.045	0.089	0.608	-0.017	0.356	-0.077	-0.374	-0.031	0.260	0.204	0.136	-0.480	0.001	-0.030	0.574	0.012	-0.281	1.000		
(20) EBITRAT	-0.099	-0.013	0.019	0.949	-0.001	0.320	0.050	-0.308	-0.016	0.157	0.115	0.102	-0.689	0.053	0.164	0.527	0.078	-0.170	0.561	1.000	
(21) DEBTRAT	0.126	0.050	0.028	-0.078	0.017	-0.038	-0.176	0.109	0.279	0.059	0.089	-0.135	0.080	-0.028	0.030	0.075	0.023	-0.368	0.028	-0.071	1.000
(22) SALESRAT	0.004	0.039	0.078	0.272	0.003	-0.037	0.017	-0.013	-0.037	-0.069	0.028	-0.018	-0.233	0.022	0.055	0.221	0.061	-0.046	0.208	0.275	-0.114

Table B3: First Stage Regressions for Abnormal Tone Construction

This table shows the first stage regression results used to obtain measures of abnormal conference call negativity. The natural log of the negativity measures for the various parts of the call (Introduction, Manager Q&A, and Analyst Q&A) are individually regressed on controls for firm fundamentals, characteristics, and analyst estimates. Firm, year-quarter, and industry fixed effects (indicator variables) are included. Individual variable definitions are outlined in Appendix A. ***, **, * denotes statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Robust t-statistics are presented in parentheses.

	Intro Negativity	Mgmt Q&A Negativity	Analyst Q&A Negativity
ROA	-0.437*	-0.257	-0.380
	(-1.86)	(-1.00)	(-1.36)
MOM	-0.214***	-0.157***	-0.226***
	(-6.74)	(-4.50)	(-5.96)
SIZE	-0.021	0.046**	0.054**
	(-1.08)	(2.18)	(2.32)
MB	0.001	0.001	0.004*
	(0.45)	(0.58)	(1.71)
STD_RET	0.060	0.103*	0.061
	(1.07)	(1.68)	(0.91)
STD_EARN	-0.022	0.006	0.000
	(-1.24)	(0.32)	(0.01)
AGE	0.130*	-0.025	0.013
	(1.81)	(-0.31)	(0.15)
BUSSEG	0.053	0.038	-0.030
	(1.53)	(1.01)	(-0.72)
GEOSEG	-0.003	-0.057	-0.118***
	(-0.08)	(-1.39)	(-2.63)
LOSS	0.031	0.015	0.035
	(1.45)	(0.65)	(1.37)
ΔEARN	-0.015*	-0.009	-0.008
	(-1.90)	(-0.99)	(-0.83)
SUE	-0.525	-0.066	0.168
	(-0.62)	(-0.07)	(0.17)
AF	0.305**	0.467***	0.263
	(2.18)	(3.05)	(1.58)
SGROWTH	0.117***	0.050**	0.027
	(5.78)	(2.28)	(1.12)
WCAPRAT	-0.061	-0.039	-0.061
	(-0.88)	(-0.51)	(-0.74)
RERAT	0.018	-0.012	-0.027
	(1.08)	(-0.65)	(-1.31)
EBITRAT	-0.545*	-0.511	-0.252
	(-1.71)	(-1.46)	(-0.66)
DEBTRAT	-66.450**	-14.551	-40.892

	(-2.44)	(-0.49)	(-1.25)
SALESRAT	-0.458***	-0.312**	-0.026
	(-3.95)	(-2.46)	(-0.19)
Constant	-6.698***	-6.419***	-7.094***
	(-6.85)	(-5.98)	(-6.07)
Obs.	7745	7745	7745
Adj. R-squared	0.43	0.23	0.17