Tips and Tells from Managers:

How Analysts and the Market Read Between the Lines of Conference Calls

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Abstract

Stock prices react significantly to the tone (negativity of words) managers use on earnings conference calls, not merely the factual information conveyed. This reaction, though both subtle and understudied, reflects the reasonably rational use of information. "Tone surprise" is the residual when negativity in managerial tone is regressed on the firm's recent economic performance and CEO fixed effects. While tone surprises predict future earnings, inexperienced analysts overreact (underreact) to tone surprises in presentations (answers). Experienced analysts respond appropriately. In those firms where tone surprises predict future earnings and analyst uncertainty more strongly, price movement is greatest. Post-call price drift suggests less-than-full-use of information embedded in managerial tone.

1 Introduction

This paper shows that stock market analysts and investors read "between the lines" of what managers say in earnings conference calls. These participants infer valuable information about future earnings and uncertainties, and react in a manner that moves the market in the appropriate direction. The analysis documents, in a more complete and direct manner than have prior studies, the link between managerial tone (primarily the degree of negativity in word choice), and company fundamentals, analyst responses, and stock price reactions.

It is well known and hardly surprising that market participants react strongly to news on directly value-relevant information, such as earnings, that is contained in earnings press releases, and to other concrete information in documents such as 10-K filings and corporate annual reports. Interestingly, however, other aspects of the communication also matter. The market reacts to tone in 10-Ks (Loughran and McDonald (2011)), and tone in earnings press releases is also informative (Demers and Vega (2010) and Davis, Piger, and Sedor (2012)). Some studies show as well that the short-term stock market reaction reflects how – that is, using which linguistic tone and with which vocal cues – managers speak during the earnings conference call (Mayew and Venkatachalam 2012; Price, Doran, Peterson and Bliss 2012).[1]

Why does managerial tone matter for the market reaction to corporate communications? Are market participants rationally distilling value-relevant information from tone, over and above observables such as earnings and the information in analysts' forecasts?[2] To investigate the rational reactions hypothesis, we structure our analysis around the basic idea that the value of

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[1] Besides tone a number of papers have considered the role of readability of corporate communications (Li 2008; Loughran and McDonald 2013). Media news content about companies also has provided an important focus of the literature (Ober, Zhao, Davis and Alexander 1999; Tetlock 2007; Tetlock, Saar-Tsechansky and Macskassy 2008; Engelberg 2009). See Li (2011) for a survey of textual-analysis studies.

[2] Earlier studies had shown that stock market participants react to conference call (Frankel, Johnson and Skinner 1999) as well as even during the call (Matsumoto, Pronk and Roelofsen 2011) and had argued that this provides evidence that conference calls provide investors with information.

a company is the sum of the expected future cash flows, discounted at rate *r*. If managerial speech drives the stock market reaction in rational ways, speech must predict either expected future cash flows, or influence uncertainty (which in turn would affect the discount rate), or do both.

We study earnings conference calls for S&P 500 companies from 2004 to 2012. We first document a variety of factors that lead managers to be negative: poor recent economic performance by the company or the economy, and recent uncertainty. Managers usually respond to analysts' negativity in questions with negativity in answers.

Controlling for the determinants of negativity as well as for CEO fixed effects, we compute residual, "excessive" negativity, that is, the *tone surprise*. We posit that the managers' choice of words is determined by their total information. This includes information about the past, most of which has already been disclosed or soon will be. But it also includes information that cannot be revealed in concrete fashion, internal and non-quantifiable information, such as the managers' expectations for the future. Managers might wish to reveal or conceal information in this latter class. Whether purposeful or inadvertent, tone surprise captures the negative elements in managers' speech that are not justified by previous recorded performance. Our prime tests are whether tone surprise contains value-relevant information for the future, and whether the stock market recognizes this.

Past work suggests that the stock market may react rationally to managerial tone, and not merely concrete information. Positivity in earnings press releases is associated with higher future return on assets (Davis, Piger and Sedor 2012), and the harder future returns are to assess, as in growth firms, the stronger is this effect (Demers and Vega 2010). More favorable disclosures in 10-K and 10-Q filings are associated with less dispersion in analysts' estimates and lower stock volatility (Kothari, Li, and Short (2009) and Loughran and McDonald (2011)); both are

indicators of uncertainty about the firm's future. However, past work also contains negative findings. The frequency of negative words in 10-K filings is positively correlated with positive future earnings surprises (Loughran and McDonald 2011). No robust association between unexpected future earnings and current linguistic tone (or vocal cues) emerged in a smaller sample of conference calls (Mayew and Venkatachalam (2012)).

To shed light on this cluster of issues, we test two sets of hypotheses. First, we examine whether more positive tone predicts better future performance, favorable analyst reactions, and/or lower uncertainty (Hypothesis 1). Second, we recognize that evidence supporting Hypothesis 1 does not necessarily imply that the market's reaction to tone is rational. Therefore, we conduct three additional tests that focus on rationality. First, we determine whether experienced analysts distill this information from managerial tone more accurately – i.e. produce superior forecasts -- than their less experienced peers (Hypothesis 2A). Second, we expect that for firms for whom the stock market reacts more strongly to unusual managerial tone, that tone also more strongly predicts the determinants of company value, future earnings and uncertainty (Hypothesis 2B). Third, to parse between rational and bubble reactions to managerial tone, we test whether stock price levels persist over the quarter following the conference call (Hypothesis 2C).

We find support for Hypothesis 1 and for Hypotheses 2A, 2B and 2C. First, tone surprises significantly predict future earnings. Interestingly, the effects are asymmetric: Excessive negativity predicts significantly lower future unexpected earnings, but excessive positivity does not predict significantly higher future unexpected earnings (after controlling for analyst forecasts that have been updated after the conference call). These results hold controlling for other speech characteristics, such as the use of uncertain words. Importantly, sell-side analysts revise downwards (upwards) their forecasts for the next quarter if the manager adopts an excessively negative (positive) tone. Our prime measure of uncertainty is the post-call standard deviation of

analyst forecasts regarding next quarter's earnings. Following negative tone that dispersion increases, as do the number of forecast revisions during the following quarter. As a further indicator of uncertainty, bid-ask spreads also increase from the day before the conference call to three days after. In sum, these results support Hypothesis 1.

We also obtain substantial evidence supporting the more targeted Hypotheses 2A, 2B, and 2C. First, interestingly, experienced analysts do much better than novice analysts in reacting appropriately to tone surprises in both presentations and managers' answers. This confirms Hypothesis 2A.

A second strand of our analysis examines whether managerial tone proves more important when objective information is less informative. As posited by Hypothesis 2B, tone surprises in presentations more strongly predict future earnings for firms with a large (positive or negative) earnings surprise. Similarly, in these "cloudy" firms excessive negativity in managers' presentations and answers more strongly magnifies uncertainty (as indicated by higher variability of analysts' forecasts). Finally, as expected, the stock market does react more to tone surprises in such firms. Importantly, our results suggest that tone surprise in presentations is reflected in stock prices because it predicts future earnings and higher uncertainty, while tone surprise in answers works mostly through increasing uncertainty. By tying together the results on earnings, uncertainty, and stock price reactions, these findings provide further evidence of a predominantly rational basis for stock market reactions to tone.

Third, consistent with Hypothesis 2C, stock prices tend to persist after their initial stock price reaction, as would be required for a rational response.

The rest of this paper is organized as follows. Section 2 describes our data. Section 3 examines how quarterly performance influences a manager's negativity. Section 4 investigates whether the managers' word choice provides insight into future earnings, and how analysts

incorporate this information. Section 5 studies (analyst) uncertainty. Section 6 looks at the immediate stock price reaction to managerial speech, and looks at the long-run stock returns of portfolios of firms sorted on managerial tone. Section 7 documents that stock market reactions to managerial tone are stronger precisely where we would expect them to be stronger. Section 8 provides additional results and conducts the robustness analysis. Section 9 concludes.

2   Data and methods

2.1   Tips and tells

Earnings conference calls provide an ideal laboratory for examining how managers transmit information to investors, both purposefully and inadvertently. Conference calls have two components: prepared remarks by management, followed by an improvised section when managers respond to questions from analysts.[3]

It is not clear a priori whether prepared or impromptu remarks should reveal more. If managers wish to convey a message, they can be more confident to convey the appropriate message in their prepared remarks. Such intended messages we label a *tip*.

However, managers may think some information should not be revealed, but gets conveyed nevertheless. Such "messages" we label a *tell*, the equivalent of a poker tell, a clue from behavior that reveals something about the player's assessment of his situation, i.e. poker hand or business prospects. By analogy, a witness in a trial might inadvertently reveal information unintentionally when cross examined, and thus put out a tell. There is a second more subtle class of tips, indirect

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[3] Conference calls have allowed other researchers to study how the tone shifts with the time of day (Chen, Demers and Lev 2012), how companies strategically call on certain analysts (Mayew 2008; Cohen, Lou and Malloy 2013), the role of the communication pattern within the management team (Li, Minnis, Nagar and Rajan 2014), the extent to which asking questions allows analysts to obtain superior information (Mayew, Sharp and Venkatachalam 2013), whether the use of certain words suggests deception as later revealed by fraud (Larcker and Zakolyukina 2012), what the consequences of communication are for short-selling (Blau, DeLisle and Price 2012), or whether vocal dissonance markers help predict the likelihood of accounting restatements (Hobson, Mayew and Venkatachalam 2012).

tips.   The manager may wish to convey information, but not to do so in what looks like a purposeful manner, thus not in prepared remarks. To preserve seemliness or plausible deniability on intent, he might do so in response to a question. Given that answers to likely questions are prepared by managers, managers can prepare to provide indirect tips. Our focus is on managers' speech. However, questions from knowledgeable analysts may also be informative.

2.2   Sample

S&P 500 companies provide the basis for our main analysis. Our sample includes earnings conference calls for the period from 2004 through the end of 2012. Most panel regressions include around 450 companies, though the panel is unbalanced, as transcripts or other data for some quarters are missing for some companies.

2.3   Textual analysis

Of course, using only a written transcript has its limitations, but it is a tool available to all market participants.

2.3.1   Tone of speech

Our principal independent variable is managerial tone. To capture tone, we use the word lists compiled by Loughran and McDonald (2011). They contain 2,329 negative, 354 positive, and 297 uncertain words.[4] The robustness section tests whether an extremely simple approach using a much shorter, self-compiled word list would yield similar results.

We correct for negation, by excluding a positive word from the count when a negation word (no, not, none, neither, never, nobody, *n't) occurs among the three words preceding the positive word (except when there is a comma or a period in that range).

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[4] We use the August 2013 version from http://www3.nd.edu/~mcdonald/Word_Lists.html.

Our measure of tone is the ratio of the number of negative words to the number of positive words managers or analysts of company *j* use in the conference call at time *t*. We label this ratio *Negativity:*

$$Negativity_{jt} = \frac{negative\ words_{jt} - positive\ words_{jt}}{negative\ words_{jt} + positive\ words_{jt} + 1}, \tag{2}$$

and we winsorize negativity at the 1 and 99 percent levels.

As further alternative independent variables, we also use the *negativity ratio,* negative words/positive words, and the frequencies of negative and positive words separately.

We compute our negativity indicators separately for prepared presentations, for analysts' questions, and for the answers of managers, as these parts are fundamentally different. Presentations are prepared and proofread in advance, whereas answers must be improvised to some extent.

2.3.2 Other characteristics of managerial speech

Four additional patterns of speech may indicate troubling times ahead.[5] First, there is *inconsistency in tone*, i.e. significant absolute differences in negativity between presentations (prepared speech) and answers (improvised speech). Such a difference in tone may also indicate that the manager is particularly forthcoming with information in the answers part. Second, we code the use of specific "*uncertain,*" "*weak modal,*" and "*strong modal*" words or constructions, using the Loughran and McDonald (2011) classification. Modal words express levels of confidence. Examples of strong modal words include the words *always, definitely, never*, and *will*. Examples of weak modal words include the words *appears, could, depending*, and *possibly*.

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[5] With the first and the fourth of these measures, we also contribute to the literature by providing some simple, systematic measures of possibly evasive speech patterns, complementing approaches based on hand-collection (as in, for example, Hollander, Pronk, and Roelofsen (2010)).

Third, we calculate the number of words per sentence as a measure of *complexity*.

A fourth indicator is the *use of a "wrong" verb tense*. Arguably, presentations should primarily announce and explain past results. Answers should clarify missed points, explain the current situation, or preview the future. If the presentation has too few sentences using the past tense, the managers may be trying to divert attention from actual outcomes to events that have not yet happened. We define *atypical tense* as the weighted average percentage of the manager's verbs not in the past tense in the presentation and the manager's verbs not in the present or future tense in the answers, weighted by the number of verbs in the two respective parts of the conference call. A related tactic is to *switch the tense* when answering an analyst's question. A switch can go in either direction. Sometimes, analysts who ask about achieved results get future projections. In downbeat or even uncertain times, questions about the current activities or the future opportunities of a company may be answered with favorable stories about past successes.[6] We winsorize these four speech characteristics variables at the 1 and 99 percent levels.

2.4   Company and analyst variables

Earnings per share (hereafter, *earnings*) and EPS forecasts data are from I/B/E/S. Price and returns data are from CRSP. Let $P_{jt-1,+5}$ be the stock price for company j 5 days after an earnings announcement for quarter $t-1$, and let $P_{jt,-5}$ be the stock price for company j 5 days before an

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[6] To automate recognition of verb tenses we use the Natural Language Toolkit library as follows: (1) all words in each sentence are tagged with part-of-speech tags (POS tagging); (2) each tagged sentence is chunked into name and verb phrases; (3) for each verb phrase, its tense is deduced from the POS tag of the first word utilizing a number of heuristics to correct the most common errors of POS tagging; (4) if a sentence contains several verb phrases, its tense is defined as the most common tense among its phrases. If a most common tense is not defined, the sentence tense is not defined. We also hand-code tense usage in several full conference calls and cross-check the results with the automated approach described above. We find that the algorithm we employ does an excellent job in classifying both the presentation and the questions and answers section of the conference call. After we assign the tenses to each sentence we classify them as describing past, present, or future with the conference call day as a reference point. We classify the present perfect tense for our use as past-oriented speech, consistent with the definition of Merriam-Webster dictionary: "present perfect is a verb tense that expresses action or state completed at the time of speaking."

earnings announcement for quarter t. Then the stock return in quarter t is

$$Stock\ return_{jt} = \frac{P_{jt,-5} - P_{jt-1,+5}}{P_{jt-1,+5}}. \qquad (3)$$

Let $e_{t,j}$ be the earnings announced for the company j at quarter t recorded in I/B/E/S and, following Livnat and Mendenhall (2006), let $\hat{e}_{t,j}$ be the corresponding consensus forecast (the most recent mean analyst forecast included in the I/B/E/S detail file during the 90 days before the quarterly earnings announcement). Denote by $P_{t,j}$ the price of shares of company j 5 trading days before the announcement in quarter t. Then,

$$Earnings\ surprise_{jt} = \frac{e_{jt} - \widehat{e_{jt}}}{P_{jt}}. \qquad (4)$$

When a firm performs below expectations, thus indicating a negative surprise, the *earnings surprise decile* will take values from -5 (for the largest negative surprises) to -1 (for the smallest negative surprises). Positive surprises are similarly divided into quintiles, taking the values from 1 to 5 from smallest to largest. Zero surprises are coded as zero. Hence, larger numbers indicate better outcomes.

EPS growth is the fraction by which earnings in a quarter exceed earnings in the same quarter in the prior year.

$$Growth\ in\ earnings_{jt} = \frac{e_{jt} - e_{jt(year-1)}}{e_{jt(year-1)}}. \qquad (5)$$

Market return is the percent value-weighted market return for the period starting 5 days after an earnings announcement for the quarter $t-1$ and ending 5 days prior to the earnings announcement for the quarter t.

Monthly volatility is the monthly stock volatility computed from monthly return data over the previous 48 months.

Pre-call forecast std. dev. is the standard deviation of analysts' forecasts for earnings in

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quarter *t* that are outstanding the day before the earnings announcement of quarter *t*. *Pre-announcement revision frequency* is the fraction of analysts covering a firm who revise their forecasts in the quarter before each quarter's earnings announcement. Frequent revisions indicate that it is more difficult to forecast a firm's earnings.

Post-announcement revision frequency, which we denote *revision frequency,* is the fraction of covering analysts who revise after the conference call of quarter *t* up to the earnings announcement of quarter *t+1*. *Post-call forecast std. dev.* is the standard deviation of analysts' forecasts for earnings in the next quarter (*t+1*) tallied three days after the conference call of quarter *t*. *Change in bid-ask spread* is the change in the average bid-ask spread (divided by the midpoint between the bid and the ask) in the [-3,-1] day window prior to the conference call to the [+1,+3] window following the conference call, multiplied by 100.

Three analyst-specific variables play a role in our analysis. *Forecast Change* is the change in an analyst's forecast for earnings in quarter t+1, from the day before the conference call to three days after the call, divided by the earnings in quarter *t+1,* multiplied by 100.

Forecast error is the difference between an analyst's forecast and the actual earnings, as a fraction of actual earnings multiplied by 100. Let $f_{ijt,t+1}$ be analyst *i*'s forecast for quarter *t+1* outstanding 3 days after the earnings announcement for quarter *t*. We thus define:

$$Forecast\ Error_{ijt} = 100 * \frac{f_{ijt,t+1} - e_{ijt+1}}{e_{ijt+1}}. \qquad (6)$$

Analyst experience with the firm is the natural logarithm of the number of years analyst *i* has covered firm *j*.

As standard control variables we use the natural logarithm of *total assets* and *Tobin's Q*, as well as Fama-French 48 industry fixed effects and/or CEO fixed effects.

We calculate daily excess stock returns following Daniel, Grinblatt, Titman and Wermers

(1997) (DGTW). DGTW provide monthly portfolio returns. We apply their methodology to daily returns to compute *DGTW characteristic-adjusted stock returns.*[7] CAR01 is the two-day, [0,1] DGTW-adjusted stock return on and after the conference call date.[8] We also compute the cumulative DGTW-adjusted returns for up to 60 trading days following the conference call date. We conduct additional studies using market-adjusted, Fama-French-adjusted, and Carhart-adjusted abnormal returns. The results are very similar.

In this analysis, the following variables are winsorized at the 1st and 99th percentiles: earnings surprise, growth in earnings, stock return, the CARs, forecast change, forecast error, change in bid-ask spread, and Tobin's Q. The following variables, which have a bottom value at 0, are winsorized at the 99th percentile level: revision frequency, pre- and post-call forecast standard deviation.

2.5   Descriptive statistics

Tables 1 and 2 displays summary statistics for the variables we use.

TABLES 1 AND 2 ABOUT HERE

On average about 0.87% [0.75%] of all words used in presentations [answers] on conference calls are coded as negative and 1.69% [1.20%] are coded as positive. Both negative and positive

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[7] From each stock return we subtract the return on a portfolio of all CRSP firms matched on market equity, book-to-market, and prior 1-year return quintiles (a total of 125 matching portfolios). Each of these 125 portfolios is reformed each year at the end of June based on the market equity and prior year return (skipping one month) from the end of June of the same year, and book-to-market from the fiscal period end of the preceding year. Book-value of equity is furthermore adjusted using the 48 industry classifications available from Kenneth French's website. The portfolios are value-weighted.

[8] Some conference calls take place during trading hours (which makes it appropriate to include the day of the conference call when calculating stock price reactions), others take place after trading hours. Unfortunately, we do not have exact times for the full sample of calls.

words appear more in presentations than in answers. The ratio of negative to positive words is significantly higher in the improvised answers than in the presentations, 0.72 as opposed to 0.60, resulting in average values of our main measure of negativity of -0.22 and -0.32, respectively. Perhaps this disparity reflects the tendency of CEOs to buff up assessments in presentations or perhaps they think they can do so more judiciously in prepared remarks. However, a major factor is likely to be the negative cast of the analysts' questions to which they must respond. Analyst use 1.66 negative words per positive word. This strong downbeat tilt suggests that analysts differentially ask about concerns whether about the validity of the remarks made in the formal presentations, or more generally about the company's past performance or future prospects.[9]

Our analysis will also examine managers' use of the past, present and future tense. Normally, around half of the phrases in presentations use the past tense, whereas close to two thirds of the phrases in both questions and answers use the present tense. The use of future tense is relatively rare, with fewer than 10% of verbs in any of presentations, answers, and questions in the future tense, though much present tense discussion is implicitly about the future.

Managers sometimes change the tense of a question when providing an answer. On average, in a conference call, 22% of questions using the past tense receive an answer oriented to the present or future. The proportion of present- or future-tense questions receiving past-tense answers is less than a quarter as high, 5%.

3   Managerial tone

While different individuals speak on the conference call, the CEO usually speaks around half of the time (see Li, Minnis, Nagar and Rajan (2014) for an analysis of who speaks when on

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[9] This result accords with Brockman, Li, and Price (2014), who study a sample of 2880 conference calls from the 2004-2007 time period. Their paper and Chen, Nagar, and Schoenfeld (2014) focus on the stock market reaction to analyst tone.

conference calls). We consider all management members' tone jointly, and usually refer to them collectively as the *manager*. However, we posit that the CEO, for whose identity we control with a fixed effect, possibly quite literally "sets the tone."

3.1   Determinants of managerial tone

Managers host a quarterly earnings conference call ostensibly to announce and comment on earnings in the prior quarter. Presumably managers and investors care about other factors as well. We now analyze which performance characteristics most influence the manager's speech.

Table 3 presents the results. The main regressions include quarterly market returns (and, therefore, no quarter dummies) as well as industry fixed effects. We record when CEOs, the presumed tone setters, change. Hence, we also employ CEO fixed effects, and cluster standard errors at the CEO level.

TABLE 3 ABOUT HERE

The table shows that the earnings surprise for a quarter – the difference between actual earnings and market expectations -- plays an important role in determining a manager's tone. So too does the change in earnings compared to the same quarter in the previous year. These findings confirm the importance to managers of beating the market's expectations, as Degeorge, Patel and Zeckhauser (1999) report.

A firm's stock return in the preceding quarter, as expected, correlates negatively with managerial negativity, also after controlling for general market performance. Downbeat returns in the stock market as a whole foster downbeat announcements. Past volatility in the firm's stock

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return as well as greater uncertainty among analysts regarding the earnings of the past quarter is associated with more negativity.

Industry norms may affect tone, with financial firms sober, and "less serious" industries upbeat. Thus, managers in banking and insurance are the most cautious, while the tone of managers in the candy and soda business, as well as those in restaurants and hotels are among the most positive (not reported). Managers of growth firms (high Tobin's Q) speak more positively.

The tone of prepared presentations responds more strongly than do answers to analysts' questions to recent stock returns and earnings. And for the answers themselves, recent stock returns receive relatively greater weight.

Finally, and not surprisingly, the more negative news there is to report, the more negative are both prepared remarks and the analysts' questions. Not surprisingly, more negative questions receive more negative answers. Columns (4) to (6) control for CEO fixed effects, recognizing that individual managers may have word choice propensities (Bamber, Jiang and Wang 2010; Davis, Ge, Matsumoto and Zhang 2014). The results prove similar, with the coefficients being very close to the case with industry fixed effects.[10]

To parse the effects on negative and positive word use, we analyze frequencies looking at each category individually; see Table A-1 in the Supplementary Appendix. As before, negative (positive) words become more (less) frequent when: the economy worsens, a firm's stock price declines, or its earnings come in below the consensus forecast. Indeed, earnings surprise appears to be a crucial result, discussed initially by the managers and questioned subsequently by the analysts. In unreported analysis, we observe an increase in inconsistency in tone between presentations and answers, uncertain words, wrong tense use and tense switches, and to some

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[10] In unreported results, we also find that standard CEO controls, such as CEO age, CEO tenure, CEO outsider status, or CEO/chairman duality do not systematically explain variation in managerial tone, and neither do proxies for general abilities of the CEO, as developed in Custódio, Ferreira and Matos (2013).

extent complexity in association with the need to present poor results.[11]

In sum, recent past performance predicts managerial tone.

3.2   *Tone surprise and its consequences: Overview of main findings*

To assess what we can learn from managerial tone, we focus on the excessive components of managerial tone, that is, the *tone surprise*. We first estimate as a benchmark the normal level of negativity justified by the company's past performance, and controlling for CEO fixed effects. This benchmark model is shown for presentations in regression (4) and for answers in regression (5) of Table 3. *Tone surprise*, or *residual negativity* is the difference between actual negativity and the fitted value. To facilitate interpretation, we standardize all residuals measures to have a zero mean and a standard deviation of one.

The remainder of the paper looks at the relationships of tone surprises to three areas: future earnings (and analysts' earnings forecasts), uncertainty about future earnings, and stock returns. The overarching hypothesis embraces two hypotheses: First, tone conveys information to the market about future earnings and their uncertainty. Second, analysts distill this information, and convey it to investors who then invest utilizing what they have learned. Tone surprise (residual negativity) is our independent variable of prime interest for all of these studies. If that surprise is positive, that is, if managers use a more negative tone than seems "warranted" based on public information, that is a bad sign and vice versa. Thus, we expect positive [negative] tone surprise to predict greater [lesser] future earnings and earnings forecasts, and to raise [lower] uncertainty. These factors in turn imply that stock prices will react negatively to positive tone surprises.

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[11] Frankel, Johnson and Skinner (1999) find that managers are less likely to provide earnings guidance during conference calls when performance deteriorates, consistent with our findings. Matsumoto, Pronk and Roelofsen (2011) instead find that managers are more likely to tilt to future-oriented words when performance is poor. One difference in our methods is that we focus on the verb tense whereas they focus on specific words that arguably are future-oriented.

Table 4 summarizes the main findings in the rest of the paper. Broadly speaking, in columns (1) and (2), we would expect to find negative reactions (thus minuses in the table) for future earnings, earnings forecasts, and immediate stock price reactions. The signs for greater uncertainty, which is a bad factor, should go in the opposite direction. For long-term returns, an insignificant effect would indicate that three days after the call all the information is already impounded into the stock price. We expect the same signs as for immediate stock price reactions if there is a post-conference-call drift (which means that the market moved in the right direction quickly, but did not fully adjust). Instead, if there is a reversal, that is, if tone surprises have an opposite sign in regressions of long-term returns compared to regressions of immediate stock price reactions, this would indicate an inappropriate short-term response.

TABLE 4 ABOUT HERE

Where managers are abnormally negative, columns (3) and (5), we expect earnings and stock price reactions to be negative, but uncertainty to increase. Where managers are less negative than public information would suggest, columns (4) and (6), earnings and stock price reactions should be positive, but uncertainty should decrease.

31 of the 36 entries in the table go in the predicted direction. The remaining five show zero effect. None goes opposite to our predictions. The remainder of the paper presents the empirical tests that derived these results.

4   Managerial tone, future earnings, and earnings forecasts

If managerial tone helps predict earnings, the stock market reaction to managerial tone is likely to

reflect rational information processing. This conclusion would be strengthened if analysts, the key messengers of the financial community, also react sensibly to managerial tone. We examine these two points in turn.

4.1   The information leakage hypothesis

When quarter *t* has its earnings announced, the manager already has some idea of what to expect in the quarter *t*+1. He might reveal his expectations intentionally – thus a tip – for example, to align the market's expectations with his own. Alternatively, he might reveal them unintentionally -- thus a tell -- possibly even without noticing, and quite possibly contrary to his wishes. Whatever the source or the intent of the revelation, the content of the managers' speech unexplained by past results provides information about that company's prospects. Thus we are talking about information leakage: Managers reveal information about future earnings of the company by choosing (purposefully or inadvertently) the speech tone. Given such leakage, tone surprises, that is, excess negativity, will be correlated with earnings in the next quarter.

TABLE 5 ABOUT HERE

Table 5 strongly supports this hypothesis. Consider column (1). We hypothesize that tone surprises would indicate that managers expect lower earnings in the future than past results would suggest. We indeed find that excessively negative tone in both presentations and answers is associated with smaller future earnings.[12]

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[12] We note that using the residual negativity yields, in these basic regressions, the same inferences as using negativity and controlling for the same variables used to explain negativity in Table 3. However, using the tone surprise as the explanatory variable of interest strikes us as more intuitive. Moreover, this approach allows us to consider asymmetric effects of positive and negative residual negativity.

Columns (2) to (6) further develop these results. Columns (2) and (3) expand the earnings prediction model by taking into consideration the forecasts of financial analysts. Column (2) considers the analysts' consensus just before the earnings announcement for quarter t, whereas column (3) computes the analysts' consensus following the earnings announcement for quarter t. The following consensus is the average of all current forecasts on the third day after the earnings announcement, implicitly positing that analysts incorporate new information within three days. Prior research shows that revisions of analysts' forecasts cluster around earnings announcements (Zhang 2008), with most revisions being made on the day of the earnings announcements or on the next trading day. Our results also hold when allowing for a seven-day period. Including lags of earnings also does not change the results. Including the previous quarter's tone surprises also does not affect the results.[13]

Not surprisingly, analyst forecasts predict future earnings effectively. Importantly for this tips-and-tells study, the association between excessive negativity and future earnings still holds strongly, though the coefficients are smaller than in column (1). Comparing columns (2) and (3), it appears that as analysts revise their forecasts, they take account of part of the information conveyed by tone, about a third or one half of what surprise in presentations reveal, and a smaller portion of the tone surprise in answers.[14] We revisit analysts' responses in Section 4.2.

We expect abnormal negativity in residuals to have more predictive power than abnormal positivity: Constraints presumably operate more powerfully on the negative side, that is, there are some things management should not (prefer not to) say about negative news, but which they

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[13] Davis, Piger, and Sedor (2012) and Demers and Vega (2010) find that optimism predicts positive future earnings, which is in line with our results. By contrast, Huang, Teoh, and Zhang (2014) find that abnormally positive tone in annual earnings releases predicts lower future earnings. The difference between our findings and the latter paper's findings may, among other things, be due to a different domain (quarterly earnings conference calls and next quarter's earnings versus annual earnings press releases and earnings multiple years into the future).

[14] For example, in column (2), which does not control for the updated earnings forecast but for the forecast on the day before the call, the coefficient on RNP is -0.053. In column (3), which controls for the updated forecast, the coefficient is -0.036. Thus, analysts capture, on average, (0.053-0.036)/0.053, or about a third, of the information.

could comfortably say about comparably positive news. Unusually negative statements imply overpowering some constraints and inhibiting factors. To examine this conjecture, we separate positive and negative residuals by multiplying them by dummy variables.

The results in column (4) show that excess negativity in presentations and/or answers strongly signals lower earnings in the future, and they do so even after analyst forecast changes have been taken into account (column (5)). Though unusually positive presentations portend higher future earnings, the size of effect is much smaller than that for negative presentations, and after taking into account how analysts adjust their forecasts, it reveals no additional information regarding future earnings. Unusually positive answers have no effect. Additional results, not presented, document that the predictive power of tone for the firm's performance extends to the medium-term horizon, namely up to earnings in the same quarter in the following year.

Column (6) controls for other speech characteristics. Its main result is that tone surprises in both presentations and answers retain their predictive power. In firms where managers use more uncertain and more strong modal words, lower future earnings are to be expected. Perhaps surprisingly, weak modal words are positively associated with future earnings.[15] Differences in tone between presentations and answers, in either direction, relate negatively to future earnings.

In sum, the stock market and future earnings react to tone in the same manner. This provides the first critical component of the hypothesis that the stock market reaction reflects the processing of value-relevant information.

4.2   *Analyst reactions*

The stock market requires a channel for getting informed about tone. No doubt some stock

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[15] This result also holds when not controlling for uncertain words, and is thus not due to the (moderate) correlation between these two word frequencies. One interpretation is that weak modal words capture appropriately careful statements of management.

market investors simply listen to the conference call directly, and respond. For a much broader audience, it is likely that sell-side analysts, the professionals allowed to ask questions in these calls, serve as the conduit of information. That is, analysts read and report on the tea leaves set forth by firm managers. Thus, a market reaction to managerial tone is more likely to be due to information transmission if analysts' forecasts also respond to tone.

The results in Table 6 show how analysts react to tone. Analysts downward-adjust their forecasts when the manager is negative, even controlling for observables (column (1)). (This result contrasts with the findings in Mayew and Venkatachalam (2012) who find no association between linguistic tone and forecast revision activity.) Recall that residual negativity is standardized to have a zero mean and a standard deviation of one. The coefficient of -2.107 means that, on average across analysts, a one standard deviation increase in residual negativity in the presentation section of the conference call reduces the earnings forecast for next quarter by 2.1%, a sizable effect. Column (2) shows that analysts adjust their forecasts in response to tone surprise in presentations in line with what such tone surprises imply for future earnings (recall column (4) of Table 5), though they adjust much more strongly following excessive positive than excessive negative surprises. Analysts less strongly adjust their forecasts in response to tone surprises in answers.

TABLE 6 ABOUT HERE

Another way to understand these results is to recognize that if analysts' forecasts accurately capture the tone of managers' speech, errors in those forecasts should not be related to the degree of the managers' excessive negativity. As can be seen in column (3), RNP is weakly negatively related with the forecast error. By contrast, positive forecast errors (expectations are above actual

earnings) tend to become larger and possibly more frequent when managers are excessively negative in answers. In other words, analysts on average tend to overact to excessively negative presentations, but tend to underreact to excessively negative answers, though neither average effect is statistically significant.[16]

These are averages, but analysts differ significantly in their ability to pick up tips and tells. To assess potential differences, we consider each analyst's experience in covering the firm in question. As can be seen in column (4), analysts who are new to a firm reduce their earnings forecasts the most in response to abnormal negativity in presentations. Thus a one standard deviation increase in residual negativity in the presentation part will lead a novice analyst, one with just one year of experience with the firm, to cut his forecast by a statistically significant 2.4% (= -2.388 +ln(1)*0.188). An analyst with 7 years of experience (the 75th percentile), by contrast, will reduce his forecast by only 2% (= -2.388 + ln(7)*0.190). Computing, from column (5), point estimates and significance levels for the association of residual negativity in presentation with the forecast error, we find that the novice analyst will underforecast future earnings by 2.5% (= -2.498 +ln(1)*0.919), whereas the 7-year analyst's forecast will be statistically indistinguishable from the earnings actually realized.

The results show a different pattern in response to residual negativity in answers. Novice analysts basically do not adjust their forecasts, but experienced analysts do respond to tone surprises in answers. Thus, if residual negativity in answers increases by one standard deviation, a novice analyst will tend to under react and thus over-forecast next quarter's earnings by 2.5%, whereas the 7-year analyst will make a smaller, but still (marginally) significant error of 1.2% (=2.491 +ln(7)*(-0.657)). Fortunately, greater experience further tempers the errors. An analyst

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[16] These results are consistent with the observation in Table 5, column (3), that even after controlling for updated average forecasts, RNP and RNA still tells us something about future earnings. The two sets of analysis differ somewhat, though, as in Table 6 we consider individual analysts as the units of observation.

with 10 years of experience with the firm (the 90th percentile) make no statistically significant error. Interestingly, general experience (number of years working as an analyst) explains less variation (not reported). Analysts have to learn specific manager and firm practices, and when they learn they respond more to residual negativity in answers and less to it in presentations. Presumably, learning to distill valuable information from answers is harder than distilling what is in prepared presentations. The results reported here also hold when we give analysts 7 days to adjust their forecasts after the conference call. Overall, when novice analysts read the tea leaves, they give too much credence to prepared remarks, and too little to less rehearsed answers. The former are more likely tips, the latter more likely tells.

In sum, the results on future earnings and earnings forecasts are consistent with the idea that information regarding future earnings is conveyed through managerial tone.

5 Managerial speech and uncertainty

Negative expectations about earnings depress a stock's price. So too does greater uncertainty about the firm's future, since it drives up the discount rate on those future earnings. This section investigates how the tone in a manager's speech impacts (analyst) uncertainty following the conference call.

TABLE 7 ABOUT HERE

Table 7 documents that residual negativity is strongly positively associated with a greater standard deviation of forecasts regarding next quarter, and with greater revision frequency after the conference call. The results also hold for the change in the forecast dispersion from before

the conference call to just after the call (not shown). Bid-ask spreads increase from before the call to just after the call for companies where management speaks excessively negatively.

We also find that the degree of uncertainty, as reflected in the disparity in analysts' predictions, is greater the greater the difference in tone between presentations and answers, when management uses more uncertain or more strong modal words, and fewer weak modal words.

Collectively, these results imply that negative managerial tone and certain "cloaking" patterns appear to sow uncertainty among analysts – the tea leaf readers for the financial community.

6   Managerial tone and stock returns

6.1   Immediate stock market reactions

We now examine whether the market reads between the lines as well. Columns (1) to (4) of Table 8 consider the immediate stock market reaction, regressing CAR01, the abnormal returns on the day of the conference call plus the immediately following day, on managerial tone. All regressions control for the earnings surprise, several other firm-level controls, and industry and CEO fixed effects.

TABLE 8 ABOUT HERE

Column (1) of Table 8 shows that excessive negativity (in both presentations and answers) relates strongly negatively to the short-term stock market reaction around the earnings announcement. Mayew and Venkatachalam (2012) (for a year 2007 cross-section) and Price, Doran, Peterson and Bliss (2012) (for a 2004-2007 panel) find similar effects. Working with

residual negativity allows us to separate out the effects of abnormal negativity and abnormal positivity; see column (2). The market appears to take abnormal positivity more strongly into account than abnormal negativity.

Columns (3) and (4) of Table 8 investigate how the stock market reacts to the other speech patterns we measure. Inconsistency in tone is by itself negatively related to short-term stock reactions to conference calls. Investors react negatively when managers use complex, long-winded sentences. To some extent, shareholders also respond negatively to management talking in the present or future tense in the presentation part of the earnings call and to management talking in the past tense in the answers part of the call. Shareholders also react negatively to the use of uncertain words. Perhaps surprisingly, but consistently with findings for earnings and uncertainty, investors react favorably to the use of weak modal words by managers.

An additional observation is that when the answers section is longer, investors seem to sense trouble ahead, as can be seen in the negative coefficient on the number of words management speaks in the Q&A part of the conference call. (This result also holds controlling for the number of words analysts speak, which thus controls for the fact that analysts may ask more questions in companies where storm clouds threaten.) Finally, the results also hold controlling for the previous quarter's tone surprise.

Overall, tone surprises stand out as a very robust determinant of stock return reactions.

6.2   *Excess returns over the next quarter*

Next, we consider stock behavior in the quarter following a conference call. If the stock price responds briefly to managerial tone but then reverts back to its level before the call, this would suggest that tone is not related to fundamental value. If the market reaction, by contrast, is rational, initial movements should be sustained. Assuming no reversal, a medium-term study can

also help shed light on how quickly information is incorporated in stock prices.

Given well known results from another arena, on post-earnings announcement drift, it would not be surprising if after part of the information from tone in conference calls was absorbed, there would be further drift in the same direction. For example, to the extent that earnings announcements may not be reliable, this is arguably also true of information contained in tone. Moreover, conservatism may be enhanced because analysts may not have incentives to act based on relatively difficult-to-convey information such as managerial tone. Also recall from Section 4 that within the first three days after the conference call analysts on average revise their earnings forecasts only about half the way of what tone surprises in presentations actually predict for future earnings. For tone surprises in answers, they update their forecasts even less. Thus, we expect to see a drift beyond the initial response time frame.

As a baseline result, we first plot the earnings announcement drift over the quarter following the earnings announcement within our sample. Specifically, we compute cumulative value-weighted excess returns of portfolios formed on the earnings surprise. As described earlier, the returns are characteristics-adjusted following Daniel, Grinblatt, Titman and Wermers (1997).

A familiar picture is seen in Figure 1: Companies in the highest quintile of the earnings surprise experience an immediate positive stock price reaction, but there is a drift (in the same direction) over the quarter that follows; similarly, companies in the lowest quintile of earnings are punished by the market immediately, and then drift downward further following the initial reaction. This is the well-known post-earnings announcement drift (PEAD).

FIGURE 1 ABOUT HERE

Our main interest is with the stock returns of portfolios sorted by managerial negativity.

Figure 2 contains two sub-figures; each shows the characteristics-adjusted excess returns of portfolios sorted on negativity. Several results are noteworthy. First, there is no reversal, but rather a post-conference call drift (PCCD) that is partially associated with managerial tone.[17] Moreover, this pattern is found in both graphs. Second, it takes the market three days to incorporate high negativity. This is in contrast to the immediate one-day jump in the case of the earnings surprise. In the case of negativity in answers, which is used as the sorting variable in Panel B, this slower-reaction pattern is more pronounced.[18] That it takes three or more days for a large part of the response in stock prices to take place is consistent with the idea that nuggets of information available "between the lines" of conference calls are more difficult to digest than quantitative information in earnings announcements.

FIGURE 2 ABOUT HERE

To control for the earnings surprise, in Panels C and D, firms are first sorted into 5 quintiles of the earnings surprise and then, within each earnings surprise quintile, into 5 quintiles of negativity. Q1 of negativity then is the average excess return of those firms in the lowest quintile of negativity, averaged across the five earnings surprise groups, and so on.[19] The same picture as in Panels A and B arises. Very similar graphs also appear if we sort directly on residual

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[17] Our results on characteristics-adjusted returns are consistent with the findings in the 2004-2007 sample of Price, Doran, Peterson, and Bliss (2012), who document size-adjusted excess returns to sorting on negativity in conference calls. By contrast, Huang, Teoh, and Wang (2014) find a reversal after abnormally positive tone in annual earnings announcements. In their setting, this is consistent with their finding that such positive abnormal tone actually predicts lower earnings. In our case, a reversal could also have happened because, as we saw, abnormal positivity is not significantly positively associated with future earnings. However, we also documented above an impact on uncertainty of residual tone in answers.

[18] We also note a steep decline in the highest quintile portfolio around days 47-49. In fact, a similar decline also occurs in the post-earnings announcement drift graph in Figure 1.

[19] The conditional sorting procedure ensures that we have an equal number of companies in each of the resulting 25 portfolios. An independent sorting yields very similar results.

negativity.

Table A-2 in the Supplementary Appendix shows, for these double-sorted portfolios, the value-weighted average DGTW characteristic-adjusted excess returns from the day after the conference call to day 60. As can be seen, within each earnings surprise quintile, returns are decreasing in negativity.

The differences in excess returns across the portfolios are sizable. The move from the top to the bottom quintile in negativity (which corresponds to an approximately two standard deviation move in negativity, from 0.2 negative words per positive word to 1.3 negative words per positive word), implies a return differential of roughly 1 percentage point. The same two standard deviation move in the earnings surprise itself (a move from Q1 to Q5 in Figure 1, from a negative earnings surprise of -0.4% to a positive earnings surprise of +0.6%) implies a return differential of about 2 percentage points. In other words, sorting on managerial tone adds another 50% to return differences.

Columns (5) to (7) of Table 8 study the statistical significance of the post-call drift in the days 3 to 60 after the conference call when one also controls for other factors. Interestingly, columns (5) and (6) suggest that on average the drift is approximately the same size of additional excess returns as are realized in the immediate reactions time window. This is consistent with the observation in Table 5 that analysts on average respond approximately half way in their earnings forecast changes, that is, that after controlling for updated earnings forecasts, residual negativity still provides explanatory power for future earnings. Column (7) suggests that the significance of the post-call drift is stronger for excessive negativity in presentation than for excessive positivity. While residual negativity in answers does not predict future earnings, it is strongly associated with uncertainty, and the market fails to fully adjust to this increased uncertainty in the first day after the conference call. (Figure 2 also suggests non-linear effects as one moves from one

quintile to the next; see the significant excess returns of the quintile with the most positive tone surprises compared to the other quintiles. Regression results not presented confirm these disparities.)

In sum, even controlling for the earnings surprise, firms with highly negative conference calls underperform the benchmark of firms with similar characteristics, while high-positivity firms overperform. We observe a drift after the initial reaction and no general reversal. These are important findings as a reversal would have indicated that the initial stock price reaction reflected short-term sentiment. By contrast, the present results are in line with our broader finding that the stock price reaction to managerial tone represent reasonably rational responses. However, as can be seen in the drift that follows, the market fails to immediately and fully price the information.

7   Heterogeneity among firms and the managerial-tone-response coefficient

We have documented that negative tone in the earnings conference call is associated with (a) lower future earnings and lower earnings forecasts, (b) greater uncertainty about earnings, and (c) negative stock price reactions. This evidence is fully consistent with a causal effect of managerial tone on stock price reactions. However, we sought an additional test of the hypothesis that the stock market's reaction is due to rational processing of information. This led to the following intuitive idea. The market's reaction to tone varies across firms. In firms where the market reacts strongly to managerial tone, we would expect managerial tone to be particularly strongly related to future earnings and/or uncertainty.

Specifically, we hypothesize that in firms where a large (either positive or negative) earnings surprise has just occurred, the tone surprise should be particularly informative because

there are more news to be explained. Table 9 provides evidence supporting this hypothesis: In the firms in the highest absolute earnings surprise quartile, tone surprises very strongly predict lower future earnings, higher uncertainty, and negative stock reactions. By contrast, in the lowest earnings surprise quartile, the impact of residual negativity on these quantities is much smaller.

TABLE 9 ABOUT HERE

Table 10 presents a more formal test of these ideas. Specifically, each quarter, we sort firms into 100 quantiles of the absolute earnings surprise this quarter. We then construct 100 portfolios, where the first portfolio contains all firm-quarter observations across the sample that are in the bottom percentile of the absolute earnings surprise and the 100th portfolio contains the observations in the top percentile of the absolute earnings surprise. (The reason to sort firms in portfolios is to reduce measurement error and to avoid results that are driven by outliers, as would potentially be the case in by-firm regressions in quarterly data as in the present case. Using fewer or more portfolios in results not reported did not alter the conclusions.) Then, within each portfolio we run panel regressions of earnings in the quarter t+1 on residual negativity in presentation (RNP) and residual negativity in answers (RNA), and we save the coefficient on these variables. To help interpret the results, we define *Sensitivity of future earnings to RNP* (or to RNA) as the *negative* of this saved coefficient. Thus, the larger the Sensitivity of future earnings to RNP, the stronger the negative association of the current residual negativity in presentation and future earnings.

We then run regressions of stock reactions on the two residual negativity measures and the interactions of these residuals with the corresponding sensitivity measure. If the coefficient on such an interaction is negative, this means that the stock market reacts more negatively to

excessive negativity of management precisely where this excessive negativity is a stronger indicator of poor future earnings. We note that, in this approach, we have an errors-in-variables problem, which biases the coefficients towards zero. This implies that any results we secure will be understated.

TABLE 10 ABOUT HERE

Column (1) of Table 10 shows that excessive negativity in presentations is associated with negative stock price reactions, as we had already seen earlier. Our current interest is whether this effect is more pronounced in those companies where tone surprises are more informative. The interaction term in column (1) shows just such complementarity. Interestingly, column (2) does not show a significant interaction term, consistent with the earlier findings that on average tone surprises in answers do not generally predict earnings.

The findings in columns (3) and (4) suggest that both negativity in presentations and in answers gets priced into stock prices because either one increases uncertainty. The interaction term reveals that the stock market response to tone surprises is particularly pronounced in those companies where tone surprises strongly impact analyst uncertainty.

Supplementary Appendix Table A-3 presents the results of an alternative approach. There, we reverse the investigation in the following sense: We regress future earnings and uncertainty on unusual managerial tone and the interaction of unusual tone with the sensitivity the stock market has shown, on average, to unusual tone in the respective firm. As one would expect given the results presented in this section, we find that where the market reacts more strongly to unusual tone in presentations, unusual tone predicts more strongly both future earnings and on analyst uncertainty (see the significant interaction terms with RNP in columns (3) and (6)). And

where the market reacts more strongly to unusual tone in answers, unusual tone future uncertainty reasonably strongly (see the significant interaction term with RNA in column (6), but earnings only slightly.

In sum, these results help explain why the market reacts to tone: Presentations contain information for earnings and uncertainty, while answers are mostly relevant for the uncertainty or security they convey. Overall, the findings show that the market reacts more strongly to tone for firms where tone has greater predictive impact on future earnings and on analyst uncertainty. This is as it should be if stock market participants rationally process value-relevant information from the conference call. Thus, our additional test of rational processing is passed.

8 Additional results and robustness tests

Institutional investors: With more institutional investors, managers are found to be generally somewhat more cautious. Using the classification of institutional investors developed by Bushee (2001),[20] we find that, holding performance constant, analysts tend to be more sober in companies with a lot of "dedicated," low investment turnover investors, while they are less negative, in companies with a large fraction of "transient" institutional investors. This can be explained if analysts know or anticipate that transient institutional investors are more oriented toward the short-term and would, therefore, react more strongly to negativity on the call. Thus, analysts may themselves be more cautious in firms where they are prevalent.

Simple word list. An important advantage of the more comprehensive word list used in the main part of the paper is that it circumvents the issue that it is easier for managers to avoid a small number of key negative words. However, it is conceivable that the results regarding managerial

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[20] These data are available for the years up to 2010 from http://acct3.wharton.upenn.edu/faculty/bushee/IIclass.html.

tone presented above depend on a few very unusual words. As a robustness check, we therefore repeated each analysis using a very simple classification list. To construct this list, we reported the list of the most frequently used words in conference calls, and then classified those that were 1) positive, 2) negative, and 3) those indicating uncertainty. The complete list of chosen words in these three groups, arranged by their frequency, is shown in Table A-4 in the Supplementary Appendix. Most of the words on our word list also appear on the Loughran and McDonald (2011) list; there are some exceptions, such as the word "growth." Naturally, using our own stricter classification for words, the percentages of negative and positive words is much lower for negative words, about 0.28%, and slightly lower for positive words, 1.02%, of all words used in either presentations or answers. Results not reported show that our findings do not depend on the choice of word classification list.

Earnings surprise. Rather than using the earnings surprise decile, we also used the actual earnings surprise, divided by the stock price. The results prove similar.

Distance from the earnings announcement and conference calls concerning other topics. 85% of the conference calls take place on the day of the earnings announcement; 13% take place on the following day; and almost all other calls take place in the following two weeks. Restricting the sample to firms whose conference calls and earnings announcements coincide does not change the results. Conversely, sometimes, within close vicinity of the earnings announcement, firms hold conference calls concerning topics that do not only relate to earnings but concern other corporate events. Including these roughly 1,000 calls strengthens all our results. (Results presented exclude these non-earnings calls, however.)

Other functional forms. Because some dependent variables are skewed, we have used log transformations. We have also used quadratic and higher-order terms for the relevant explanatory variables. The results do not change noticeably when alternate functional forms are

employed. Using the square root of residual negativity instead of the linear version (in results not shown) strengthens the results throughout.

Other estimation technique and two-way clustering of standard errors. Rather than estimating residual negativity on the full sample, we can also conduct this analysis with rolling estimates, starting, for example, three years into the sample period and then adding one conference call date at a time. Although this reduces the sample size, the results, which are available on request, are quite similar. Throughout the analysis, we have estimated the tone surprise including CEO fixed effects. All results hold when using industry effects only (thus not conditioning residual negativity on the typical tone of the CEO and his management team). The detailed results are available on request. When using OLS regressions with clustering on the CEO level, the results are stronger. In addition to clustering standard errors on the CEO level (as in the main analysis), we also clustered standard errors across periods. The results were sustained, suggesting that firm (or manager) effects (Petersen 2008) are not important in this analysis.

9 Conclusion

The short-term market returns after the conference calls accompanying earnings announcements depend heavily on the words the manager employs. This paper asks whether this response is consistent with a basic, rational firm-valuation framework. We first investigate the determinants of managerial tone on the earnings-announcement conference call. The most important determinant of tone is the gap between the analysts' expectations and the actual earnings. Beyond that, EPS growth since the previous year and recent stock returns downwardly as well as higher volatility affect the frequency of negative words used by the managers. We then test two broad hypotheses. Hypothesis 1 holds that deviations from expected speech patterns, *tone surprises*,

help predict a company's future performance. Consistent with this hypothesis, we document that excessive negativity not explained by past performance foreshadows lower than hitherto expected future earnings. That is, information is leaked, perhaps purposefully (through a tip) or inadvertently (through a tell). We also document that higher excessive negativity magnifies analyst uncertainty, as is reflected in the higher frequency of forecast revisions, larger variance in forecasts, and increased bid-ask spreads.

A second set of results sheds more detailed light on the information contained in conference calls. First, consistent with Hypothesis 2A, we find an intriguing pattern of analyst responses to managerial tone. Experienced analysts, whose ears are finely tuned to the subtleties of a particular firm's communication, appear to recognize that tone surprises predict future earnings, and they adjust their forecasts appropriately. Inexperienced analysts have a less accurate and nuanced response: They overreact to abnormally negative tone in presentations, but underrract to unexpected negativity of managers when they answer analysts' questions.

Consistent with Hypothesis 2B, tone surprises more strongly predict future earnings and uncertainty precisely in those firms where the market reacts the most to tone surprises, as our rational response theory would require. Interestingly, tone surprises in answers work their way into stock prices mainly through their effects on uncertainty, while tone surprises in presentations work through both the cash flow and the discount rate channels.

Finally, consistent with Hypothesis 2C, stock prices of companies where managers spoke negatively drift downwards, while those were management was upbeat drift upwards after the initial response to the conference call. Thus, the market initially moves in the right direction in response to managerial tone, but not sufficiently. In other words, more information is conveyed by tone than the market initially processes.

Overall, this coherent set of results supports the hypothesis that the market's reaction to

"between the lines" aspects of managerial communication is broadly consistent with rational processing of information contained in their tips and tells.

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Figure 1: Post-earnings announcement drift

This figure shows excess returns of five portfolios of stocks. Quintile portfolios were formed on the mean earnings surprise. The graph shows, at each event time t (in trading days), the cumulative value-weighted excess return of each portfolio from the time it was formed until time t. Excess returns are computed as characteristics-adjusted returns, using the methodology of Daniel, Grinblatt, Titman and Wermers (1997), adapted to the case of daily returns.
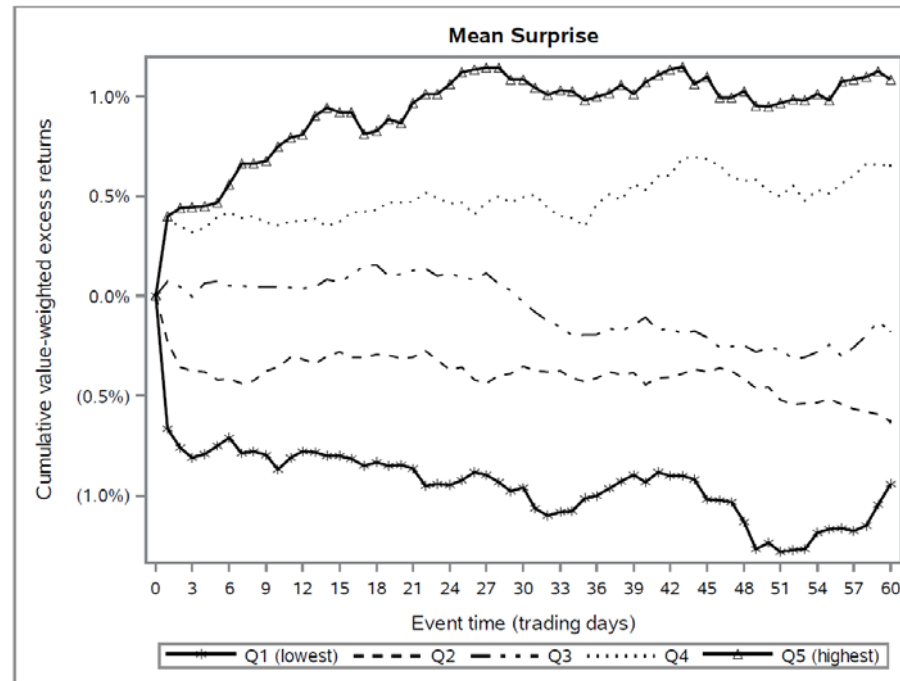
Figure 2: Post-conference call drift

Each panel in this figure shows excess returns of five portfolios of stocks. Quintile portfolios were formed based on the variables noted in the caption of each figure. The graph shows, at each event time t (trading days), the cumulative value-weighted excess return of each portfolio from the time it was formed until t. Excess returns are computed as characteristics-adjusted returns, using the methodology of Daniel, Grinblatt, Titman and Wermers (1997), adapted to the case of daily returns. In Panels C and D, to control for the earnings surprise, firms are first sorted into 5 quintiles of the earnings surprise and then, within each earnings surprise quintile, into 5 quintiles of negativity. Q1 of negativity then is the average excess return of those firms in the lowest quintile of negativity, averaged across the five earnings surprise groups, and so on.
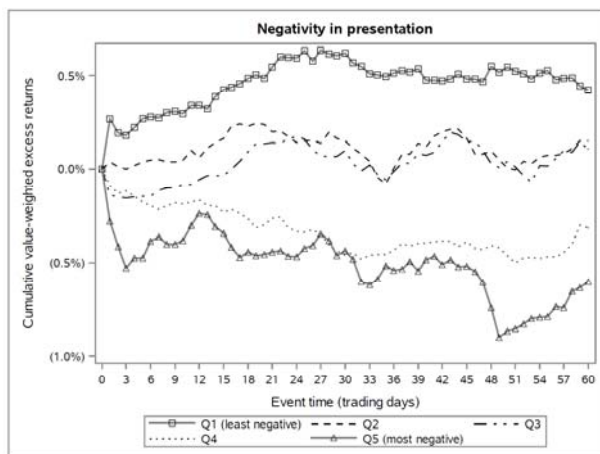
Panel A: Portfolios sorted by negativity in presentation
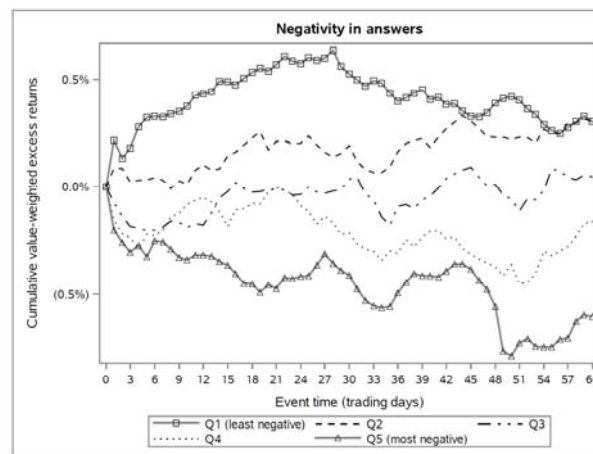
Panel B: Portfolios sorted by negativity in answers
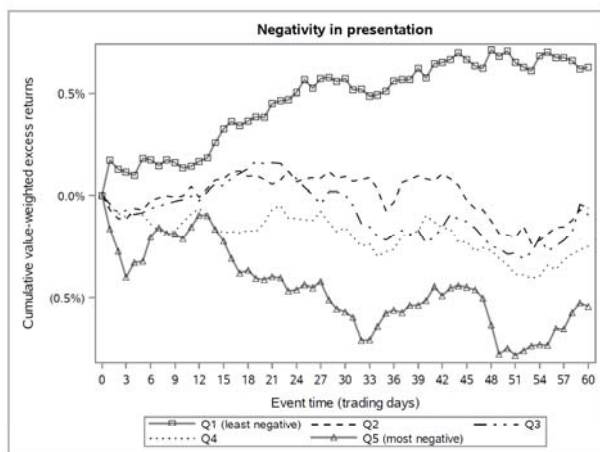
Panel C: Double-sorts: Negativity in pres. and earnings surprise
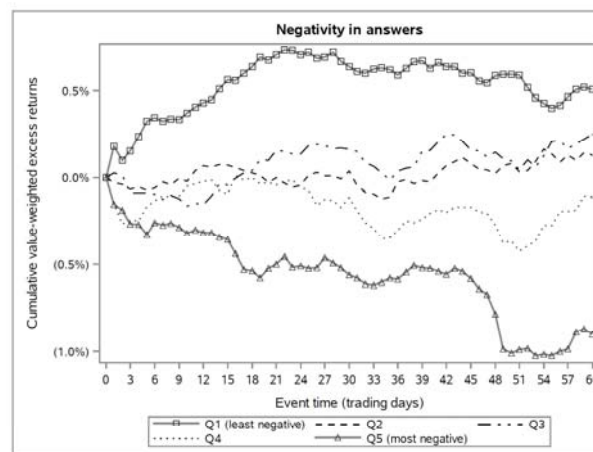
Panel D: Double-sorts: Negativity in ans. and earnings surprise

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Table 1: Descriptive statistics for company characteristics and analyst behavior

This table provides descriptive statistics. *Stock return* is the firm's capital gain in the elapsed quarter. *EPS growth since same quarter last year* is the earnings in quarter t, minus the earnings in the same quarter in the previous year, divided by the earnings in the same quarter in the previous year. *Earnings surprise* is computed as the difference between actual and consensus forecast earnings (the mean of the most recent analyst forecasts recorded in I/B/E/S during the 90 days before the quarterly earnings announcement), divided by the share price 5 days before the earnings announcement. *Market return* is the value-weighted market return in the elapsed quarter. *Ln (assets)* is the natural logarithm of total assets. *Tobin's Q* is the ratio of the market value of assets to the book value of assets. *Monthly volatility* is the monthly stock volatility computed from monthly return data over the past 48 months. *CAR01* is the two-day, [0,1] cumulative Daniel, Grinblatt, Titman and Wermers (1997) (DGTW) characteristic-adjusted stock return on or after the conference call date, in percent. DGTW characteristic-adjusted returns are defined as raw daily returns minus the returns on a portfolio of all CRSP firms in the same size, market-book, and 1-year momentum quintile. *Revision frequency* is the number of revisions after the conference call for quarter *t* until the earnings announcement of quarter *t+1*, divided by the number of analysts. *Post-call forecast std. dev.* is the standard deviation of analysts' forecasts for earnings in the next quarter (*t+1*) outstanding three days after the conference call. *Change in bid-ask spread* is the change in the average bid-ask spread (divided by the midpoint between the bid and the ask) in the [-3,-1] window prior to the conference call to the [+1,+3] window following the conference call, multiplied by 100. *Forecast change* is the change in the analyst's forecast for earnings in quarter t+1, from the day before the conference call to three days after the call, divided by the earnings in quarter *t+1*, multiplied by 100. *Forecast error* is the difference between the post-conference call forecast (the forecast for quarter *t+1* outstanding 3 days after the conference call for quarter *t*) and the actual earnings in quarter *t+1*, divided by the earnings in quarter *t+1*, multiplied by 100. *Analyst experience with the firm* is the natural logarithm of the number of years an analyst has covered the firm. We winsorize earnings surprise, change in earnings, stock return, CAR, forecast change, forecast error, and Tobin's Q at the 1 and the 99 percent levels. We winsorize revision frequency, post-call forecast standard deviation, and the change in bid-ask spread – quantities that cannot go below 0 -- at the 99 percent level.

Company characteristics and analyst behavior	Obs	Mean	Std. Dev.	Min	Max
Stock return	13678	0.02	0.14	-0.41	0.45
EPS growth since same quarter last year	13697	0.06	0.93	-4.17	4.67
Earnings surprise	13736	0.00	0.01	-0.03	0.02
Market return	13753	0.02	0.09	-0.33	0.29
Ln (assets)	13753	9.53	1.35	4.78	14.68
Tobin's Q	13750	1.85	1.03	0.83	6.38
Monthly volatility	13752	0.10	0.05	0.02	0.47
CAR (Cumulative abnormal return [0; 1])	12935	0.00	5.55	-68.41	12.89
Earnings next quarter	13753	0.71	0.63	-0.84	3.25
Revision frequency	13753	0.43	0.46	0.00	2.11
Post-call forecast std. dev.	13441	0.05	0.07	0.00	0.51
Change in bid-ask spread	13736	0.00	0.11	-1.00	1.10
Forecast change	141951	-1.69	21.96	-122.22	93.75
Forecast error	164841	-3.76	51.98	-250.00	250.00
Analyst experience with the firm	174743	1.40	0.73	0.00	3.33

Table 2: Descriptive statistics for managerial tone and other speech characteristics

We code negative, positive, uncertain, strong modal, and weak modal words following Loughran and McDonald (2011). Words include all words in the presentation, questions, and answers parts of the conference call, respectively. Let n be the number of negative words and p be the number of positive words. Our main measure of negativity is $(n - p) / (n + p + 1)$. We winsorize negativity at the 1 and 99 percent levels. We code tense use as described in Section 2.2.2. Atypical tense is the weighted average percentage of the manager's verbs not in the past tense in the presentation and the manager's verbs not in the present or future tense in the answers, weighted by the number of verbs in the two respective conference call parts.

Tone	Obs	Mean	Std. Dev.	Min	Max
Negative words in presentation	13753	34.00	23.98	0	446
Negative words in answers	13753	31.75	17.33	0	446
Negative words in analysts' questions	13753	20.82	11.34	0	363
Positive words in presentation	13753	66.61	35.90	0	349
Positive words in answers	13753	50.99	24.43	0	256
Positive words in analysts' questions	13753	15.09	8.43	0	118
% Negative words in presentations	13753	0.87	0.45	0	3.81
% Negative words in answers	13743	0.75	0.29	0	4.00
% Positive words in presentations	13753	1.69	0.59	0	5.45
% Positive words in answers	13743	1.20	0.40	0	3.52
Negative/positive words in presentation	13748	0.60	0.43	0	2.50
Negative/positive words in answers	13732	0.72	0.43	0	2.56
Negative/positive words in analysts' questions	13468	1.66	1.09	0	7.00
Negativity ((n-p)/(n+p+1)) in presentation	13753	-0.32	0.27	-0.95	0.42
Negativity ((n-p)/(n+p+1)) in answers	13753	-0.22	0.24	-0.87	0.44
Negativity ((n-p)/(n+p+1)) in analysts' questions	13753	0.15	0.24	-0.92	0.73
Residual negativity in presentation	13622	0.00	1.00	-2.21	2.03
Residual negativity in answers	13622	0.00	1.00	-2.06	2.12

Table 2: Descriptive statistics for managerial tone and other speech characteristics [continued]

Other speech patterns	Obs	Mean	Std. Dev.	Min	Max
Difference in negativity of presentation and answers	13729	-0.12	0.43	-2.35	2.40
Absolute difference in negativity of presentation and answers	13729	0.32	0.31	0.00	2.40
% Uncertain words	13753	0.70	0.21	0.15	1.92
% Strong modal words	13753	0.58	0.18	0.23	1.09
% Weak modal words	13753	0.22	0.09	0.06	0.49
Complexity (words per sentence)	13753	22.61	2.51	15.63	32.10
% Past tense verbs in presentation	13753	47.07	8.59	10.91	85.14
% Present tense verbs in presentation	13753	43.75	8.01	10.64	81.82
% Future tense verbs in presentation	13753	9.18	3.50	0.00	37.50
% Past tense verbs in answers	13743	28.29	4.76	0.00	100.00
% Present tense verbs in answers	13743	62.27	5.41	0.00	100.00
% Future tense verbs in answers	13743	9.44	3.29	0.00	50.00
% Past tense verbs in analysts' questions	13518	32.47	5.80	0.00	100.00
% Present tense verbs in analysts' questions	13518	61.72	5.96	0.00	100.00
% Future tense verbs in analysts' questions	13518	5.81	2.67	0.00	80.77
% Atypical tense	13743	40.20	5.79	19.50	67.80
Words Presentations	13753	3911.34	1566.44	80	18281
Words Answers	13753	4229.96	1514.53	0	19380
Phrases Presentations	13753	168.41	67.61	5	1071
Phrases Answers	13753	196.48	72.64	1	910

Table 3: Negativity in the tone of conference calls

This table presents panel regressions. The dependent variable is the negativity of the tone in presentations (columns 1 and 4), in answers (column 2 and 5), and in analysts' questions (columns 3 and 6). Negativity is (Negative words – Positive words) / (Negative words + Positive words + 1). The explanatory variables are defined in the notes to Tables 1 and 2 and in the text. Columns (4) to (6) include CEO fixed effects. T-statistics are shown in parentheses. The underlying standard errors are clustered on the CEO level and robust to heteroskedasticity. * p<0.1, ** p<0.05, *** p<0.01.

Dependent variable: Negativity in	(1) Presentations	(2) Answers	(3) Questions	(4) Presentations	(5) Answers	(6) Questions
Stock return in quarter t	-0.107***	-0.063***	-0.139***	-0.102***	-0.069***	-0.136***
	(-7.59)	(-5.09)	(-9.45)	(-7.16)	(-5.52)	(-9.15)
EPS growth since same quarter last year	-0.024***	-0.001	-0.005**	-0.024***	-0.002	-0.006***
	(-9.87)	(-0.49)	(-2.47)	(-9.70)	(-0.96)	(-2.62)
Earnings surprise decile	-0.013***	-0.003***	-0.008***	-0.013***	-0.003***	-0.008***
	(-19.72)	(-4.00)	(-11.50)	(-19.17)	(-4.71)	(-11.61)
Monthly volatility quarter t	0.247***	0.216***	-0.071	0.192**	0.224***	-0.227***
	(2.88)	(3.20)	(-1.15)	(2.02)	(2.83)	(-2.88)
Pre-call forecast std. dev.	0.489***	0.109***	0.113***	0.497***	0.129***	0.113***
	(10.01)	(3.40)	(3.48)	(9.60)	(3.78)	(3.03)
Negativity in presentation		0.163***	0.112***		0.151***	0.108***
		(19.00)	(18.54)		(17.95)	(16.51)
Negativity in analysts' questions		0.046***			0.044***	
		(24.64)			(22.76)	
Ln(words in the presentation)	-0.018			-0.010		
	(-1.52)			(-0.75)		
Ln(words in the answers)		-0.015***			-0.014**	
		(-2.65)			(-2.41)	
Ln(words in the analysts' questions)			0.021***			0.024***
			(15.76)			(16.43)
Market return in quarter t	-0.260***	-0.100***	-0.128***	-0.254***	-0.104***	-0.116***
	(-13.25)	(-5.18)	(-5.78)	(-12.88)	(-5.40)	(-5.19)

Table 3: Negativity in the tone of conference calls [continued]

Dependent variable: Negativity in	Presentations	Answers	Questions	Presentations	Answers	Questions
Ln(assets)	-0.021***	-0.005	-0.007**	-0.050***	-0.037***	-0.047***
	(-3.24)	(-1.33)	(-2.09)	(-3.38)	(-3.32)	(-4.79)
Tobin's Q	-0.073***	-0.013***	-0.006*	-0.087***	-0.022***	-0.021***
	(-10.10)	(-3.05)	(-1.72)	(-9.15)	(-3.78)	(-4.57)
Constant	0.093	-0.205***	-0.008	0.315*	0.167	0.380***
	(0.84)	(-3.09)	(-0.22)	(1.94)	(1.37)	(3.81)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
CEO fixed effects	No	No	No	Yes	Yes	Yes
Observations	13,318	13,034	13,313	13,318	13,034	13,313
R^2	0.22	0.34	0.16	0.15	0.19	0.09

Table 4: Overview of results: The consequences of tone surprises (residual negativity)

This table presents an overview of our main results. Residual negativity in presentation (RNP) is the residual of regression (4) in Table 3. Residual negativity in answers (RNA) is the residual of regression (5) in Table 3. Both regressions control for CEO fixed effects. RNP>0 and RNA>0 refer to RNP and RNA being positive, respectively, indicating excessive negativity. RNP<0 and RNA<0 refer to RNP and RNA being negative, respectively, indicating excessive positivity. In the cells of the table, a single + or − indicates an effect significant at the 10% level. A double ++ or -- indicates an effect significant at either the 5% or 1% level. A 0 indicates no significant effect on conventional significance levels.

	(1)	(2)	(3)	(4)	(5)	(6)
	Overall effects		Distinguishing sign of residual negativity			
			RNP>0	RNP<0	RNA>0	RNA<0
Explanatory variable:	RNP	RNA	|RNP|	|RNP|	|RNA|	|RNA|
Dependent variable:						
Earnings in quarter t+1	--	--	--	++	--	0
Change in analyst forecasts for earnings in quarter t+1	--	--	-	++	-	0
Uncertainty (Post-call forecast std. dev.)	++	++	++	--	++	0
Uncertainty (Revision frequency)	++	++	++	--	0	--
Stock price: [0;1] days abnormal return	--	--	--	++	--	++
Stock price: [3;60] days abnormal return	--	--	--	0	--	+

Table 5: Predicting earnings with textual analysis

This table presents panel regressions. The dependent variable is earnings per share in the quarter t+1. Residual negativity in presentation is the residual of regression (4) in Table 3. Residual negativity in answers is the residual of regression (5) in Table 3. All residuals are standardized to have 0 mean and a standard deviation of 1. 1{Residual>0} is an indicator variable which is equal to one if the corresponding residual is positive; it is zero if the residual is negative. The other variables are defined in the notes to Tables 1 and 2 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the CEO level and robust to heteroskedasticity. * p<0.1, ** p<0.05, *** p<0.01.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:				Earnings in quarter t+1		
Residual negativity in presentation (RNP)	-0.091***	-0.053***	-0.036***			-0.034***
	(-7.96)	(-7.45)	(-5.28)			(-5.24)
Residual negativity in answers (RNA)	-0.023***	-0.022***	-0.016***			-0.008
	(-2.78)	(-4.19)	(-2.98)			(-1.47)
Mean earnings forecast for quarter t+1, 1 day before call in t		0.685***				
		(6.96)				
Mean earnings forecast for quarter t+1, 3 days after call in t				0.730***	0.729***	0.728***
				(7.66)	(7.67)	(7.63)
Absolute RNP * 1{RNP>0}				-0.121***	-0.057***	
				(-7.04)	(-4.45)	
Absolute RNP * 1{RNP<0}				0.049***	0.007	
				(3.01)	(0.57)	
Absolute RNA * 1{RNA>0}				-0.028**	-0.019**	
				(-2.07)	(-2.52)	
Absolute RNA * 1{RNA<0}				0.016	0.013	
				(1.33)	(1.49)	
Absolute difference in negativity of presentation and answers						-0.024*
						(-1.88)
% Uncertain words						-0.076***
						(-3.01)
% Strong modal words						-0.042**
						(-2.48)
% Weak modal words						0.097**
						(2.12)
Complexity (words per sentence)						-0.000
						(-0.35)
% Atypical tense						-0.001
						(-1.39)

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
			Earnings in quarter t+1			
Ln(Words in the presentation)	-0.133***	-0.054***	-0.039**	-0.134***	-0.040**	-0.036*
	(-4.70)	(-2.88)	(-2.18)	(-4.76)	(-2.22)	(-1.80)
Ln(Words in the answers)	0.003	-0.006	-0.003	0.002	-0.004	-0.024**
	(0.25)	(-0.65)	(-0.39)	(0.14)	(-0.51)	(-2.25)
Market return in quarter t	0.218***	0.262***	0.203***	0.214***	0.201***	0.188***
	(5.67)	(6.39)	(6.01)	(5.59)	(5.85)	(5.67)
Ln(Assets)	0.305***	0.003	0.001	0.307***	0.002	0.003
	(7.12)	(0.14)	(0.06)	(7.16)	(0.11)	(0.13)
Tobin's Q	0.151***	0.051	0.041	0.150***	0.041	0.040
	(8.28)	(1.53)	(1.21)	(8.30)	(1.21)	(1.19)
Constant	-1.696***	0.625**	0.337	-1.651***	0.523**	0.590***
	(-3.35)	(2.48)	(1.62)	(-3.26)	(2.55)	(2.67)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
CEO fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,622	13,219	13,341	13,622	13,341	13,317
R^2	0.08	0.51	0.58	0.08	0.58	0.59

Table 6: Forecast changes, forecast errors, and managerial speech

This table presents panel regressions. The dependent variable in columns (1) and (2) is the forecast change in percent of earnings in quarter t+1, that is, the change in the analyst's forecast for earnings in quarter t+1, from the day before the conference call to three days after the call, divided by the earnings in quarter $t+1$, multiplied by 100. In columns (3) and (4), the dependent variable is the forecast error in percent of earnings in quarter t+1, that is, the difference between the post-conference call forecast (the forecast for quarter $t+1$ outstanding 3 days after the conference call for quarter t) and the actual earnings in quarter t+1, divided by the earnings in quarter $t+1$, multiplied by 100. Residual negativity in presentation is the residual of regression (4) in Table 3. Residual negativity in answers is the residual of regression (5) in Table 3. All residuals are standardized to have 0 mean and a standard deviation of 1. Analyst experience with the firm is the natural log of the number of years an analyst has covered the firm. The other variables are defined in the notes to Tables 1 and 2 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the CEO level and are robust to heteroskedasticity. * p<0.1, ** p<0.05, *** p<0.01.

Dependent variable:	(1)	(2)	(3)	(4)	(5)
	Forecast change		Forecast error	Forecast change	Forecast error
Residual negativity in presentation (RNP)	-2.107***		-1.287	-2.388***	-2.498*
	(-5.62)		(-1.09)	(-5.79)	(-1.76)
Residual negativity in answers (RNA)	-0.759**		1.661	-0.365	2.491**
	(-2.38)		(1.65)	(-0.94)	(2.11)
Absolute RNP * 1{RNP>0}		-1.195*			
		(-1.83)			
Absolute RNP * 1{RNP<0}		3.267***			
		(5.09)			
Absolute RNA * 1{RNA>0}		-0.688			
		(-1.52)			
Absolute RNA * 1{RNA<0}		0.884			
		(1.34)			
Analyst experience with the firm * RNP				0.188	0.919***
				(1.46)	(3.01)
Analyst experience with the firm * RNA				-0.244*	-0.657**
				(-1.94)	(-2.32)
Analyst experience with the firm				0.263***	-0.100
				(2.74)	(-0.47)

Table 6: Forecast changes, forecast errors, and managerial speech [continued]

Dependent variable:	(1) Forecast change	(2) Forecast change	(3) Forecast error	(4) Forecast change	(5) Forecast error
Ln(Assets)	-0.430	-0.461	9.569***	-0.447	9.547***
	(-0.99)	(-1.06)	(2.82)	(-1.05)	(2.75)
Tobin's Q	1.523***	1.577***	2.248	1.504***	2.147
	(4.15)	(4.31)	(1.11)	(4.10)	(1.04)
Monthly volatility in quarter t	11.476*	11.384*	-10.474	11.553*	-10.791
	(1.77)	(1.76)	(-0.42)	(1.78)	(-0.42)
Market return in quarter t	10.056***	10.100***	-9.795*	10.197***	-9.553
	(3.74)	(3.75)	(-1.65)	(3.73)	(-1.59)
Pre-announcement revision frequency for quarter t earnings			-0.502		-0.614
			(-0.28)		(-0.34)
Constant	-1.490	-2.258	-105.773***	-1.675	-103.370***
	(-0.31)	(-0.47)	(-3.70)	(-0.35)	(-3.98)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
CEO fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	126,911	126,911	148,827	121,195	138,041
R^2	0.01	0.01	0.01	0.01	0.01

Table 7: Analyst uncertainty and managerial speech

This table presents panel regressions. The dependent variable in columns (1) to (4) is the post-call forecast standard deviation of analysts' forecasts outstanding three days after the conference call. In columns (5) and (6), it is revision frequency, which is the number of revisions after the conference call for quarter *t* up to the earnings announcement of quarter *t+1*, divided by the number of analysts. In columns (7) and (8), it is change in the bid-ask spread, which is the change in the average bid-ask spread (divided by the midpoint between the bid and the ask) in the [-3,-1] day window prior to the conference call to the [+1,+3] window following the conference call, multiplied by 100. Residual negativity in presentation is the residual of regression (4) in Table 3. Residual negativity in answers is the residual of regression (5) in Table 3. All residuals are standardized to have 0 mean and a standard deviation of 1. The other explanatory variables are defined in the notes to Tables 1 and 2 and in the text. T-statistics are shown in parentheses. Standard errors are clustered on the CEO level and are robust to heteroskedasticity. * p<0.1, ** p<0.05, *** p<0.01.

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Post-call forecast std. dev.				Revision frequency		Change in bid-ask spread	
Residual negativity in presentation (RNP)	0.011***		0.011***		0.054***		0.004**	
	(8.57)		(8.26)		(7.68)		(2.38)	
Residual negativity in answers (RNA)	0.005***		0.003***		0.022***		0.002	
	(4.22)		(2.66)		(3.13)		(1.27)	
Absolute RNP * 1{RNP>0}				0.012***		0.067***		0.003
				(6.20)		(6.64)		(1.11)
Absolute RNP * 1{RNP<0}				-0.009***		-0.035***		-0.006**
				(-4.11)		(-2.99)		(-2.12)
Absolute RNA * 1{RNA>0}				0.005***		0.017		0.006**
				(2.73)		(1.58)		(2.04)
Absolute RNA * 1{RNA<0}				-0.001		-0.028***		0.001
				(-0.86)		(-2.63)		(0.44)
Absolute diff. in negativity of pres. and answers	0.009***	0.003	0.002		0.011	0.009	-0.003	-0.003
	(4.29)	(1.45)	(0.98)		(0.79)	(0.61)	(-0.65)	(-0.83)
% Uncertain words	0.025***	0.015***	0.015***		0.150***	0.150***	0.004	0.004
	(4.33)	(2.63)	(2.62)		(4.46)	(4.47)	(0.48)	(0.47)
% Strong modal words	0.010***	0.009***	0.010***		0.003	0.004	-0.000	-0.000
	(3.58)	(3.32)	(3.40)		(0.11)	(0.15)	(-0.01)	(-0.01)
% Weak modal words	-0.015	-0.011	-0.011		-0.081	-0.081	0.005	0.004
	(-1.43)	(-1.11)	(-1.11)		(-1.35)	(-1.35)	(0.30)	(0.29)
Complexity (words per sentence)	0.000	0.000	0.000		0.003	0.003	0.000	0.000
	(1.41)	(1.34)	(1.31)		(1.63)	(1.63)	(0.71)	(0.69)
% Atypical tense	-0.000	-0.000	-0.000		0.000	0.000	-0.000	-0.000
	(-0.85)	(-0.27)	(-0.27)		(0.42)	(0.40)	(-0.14)	(-0.12)

[continued on next page]

Table 7: Analyst uncertainty and managerial speech [continued]

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Post-call forecast std. dev.				Revision frequency		Change in bid-ask spread	
Ln(Words in the presentation)	0.012***	0.014***	0.012***	0.012***	0.016	0.016	-0.001	-0.001
	(4.01)	(4.46)	(3.97)	(3.97)	(0.82)	(0.85)	(-0.26)	(-0.30)
Ln(Words in the answers)	-0.000	0.001	0.001	0.001	-0.028*	-0.029*	-0.003	-0.003
	(-0.28)	(0.52)	(0.50)	(0.56)	(-1.82)	(-1.84)	(-0.82)	(-0.75)
Monthly volatility in quarter t	0.087**	0.080*	0.083**	0.083**	0.329*	0.326*	-0.066**	-0.066**
	(2.15)	(1.95)	(2.05)	(2.04)	(1.81)	(1.79)	(-1.98)	(-1.98)
Ln(Assets)	0.026***	0.026***	0.026***	0.026***	-0.055**	-0.055**	-0.003	-0.003
	(5.33)	(5.30)	(5.34)	(5.33)	(-2.21)	(-2.22)	(-0.68)	(-0.69)
Tobin's Q	-0.000	0.000	0.000	0.000	-0.017	-0.017	-0.005**	-0.005**
	(-0.03)	(0.11)	(0.06)	(0.04)	(-1.30)	(-1.25)	(-2.10)	(-2.17)
Stock return in quarter t	-0.018***	-0.015***	-0.016***	-0.016***	-0.157***	-0.156***	-0.014	-0.014*
	(-3.88)	(-3.34)	(-3.57)	(-3.57)	(-5.83)	(-5.78)	(-1.65)	(-1.67)
EPS growth since same quarter last year	-0.002**	-0.002*	-0.002*	-0.002*	-0.002	-0.002	-0.003***	-0.003***
	(-2.04)	(-1.86)	(-1.95)	(-1.94)	(-0.60)	(-0.60)	(-2.77)	(-2.77)
Earnings surprise decile	-0.001***	-0.001***	-0.001***	-0.001***	-0.003**	-0.003**	-0.001*	-0.001*
	(-4.83)	(-4.30)	(-4.51)	(-4.49)	(-2.45)	(-2.46)	(-1.93)	(-1.92)
Market return in quarter t	-0.055***	-0.051***	-0.053***	-0.053***	0.159***	0.160***	-0.005	-0.006
	(-8.99)	(-8.23)	(-8.53)	(-8.54)	(3.66)	(3.68)	(-0.45)	(-0.48)
Constant	-0.297***	-0.355***	-0.339***	-0.341***	0.829**	0.821**	0.066	0.076
	(-5.35)	(-6.07)	(-5.79)	(-5.80)	(2.46)	(2.44)	(1.14)	(1.31)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Manager fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,275	13,251	13,251	13,251	13,598	13,598	12,930	12,930
R^2	0.08	0.07	0.09	0.09	0.03	0.03	0.01	0.01

Table 8: Stock price reactions around the conference call and medium-term excess returns

This table presents panel regressions. The dependent variable in columns (1) to (4) is CAR01, the two-day, [0,1] cumulative DGTW characteristic-adjusted stock return on and after the conference call date, in percent. The dependent variable in columns (5) to (7) is CAR360, the 58 trading days [3,60] cumulative DGTW characteristic-adjusted stock return in percent from 3 days after the conference call date through 60 days. Residual negativity in presentation is the residual of regression (4) in Table 3. Residual negativity in answers is the residual of regression (5) in Table 3. The other explanatory variables are defined in greater detail in the notes to Tables 1 and 2 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the CEO level and robust to heteroskedasticity. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Dependent variable:	(1) CAR01	(2) CAR01	(3) CAR01	(4) CAR01	(5) CAR360	(6) CAR360	(7) CAR360
Residual negativity in presentation (RNP)	-0.642***			-0.638***	-0.620***	-0.678***	
	(-6.42)			(-6.32)	(-3.33)	(-3.58)	
Residual negativity in answers (RNA)	-0.503***			-0.525***	-0.522***	-0.597***	
	(-5.10)			(-4.45)	(-2.91)	(-2.76)	
Absolute RNP * 1{RNP>0}		-0.517***					-0.917***
		(-3.65)					(-3.40)
Absolute RNP * 1{RNP<0}		0.804***					0.350
		(4.51)					(1.11)
Absolute RNA * 1{RNA>0}		-0.369**					-0.691**
		(-2.39)					(-2.15)
Absolute RNA * 1{RNA<0}		0.673***					0.526*
		(4.41)					(1.72)
Absolute difference in negativity of presentation and answers			-0.558***	0.089		0.441	0.538
			(-2.95)	(0.40)		(1.04)	(1.22)
% Uncertain words			-1.366***	-0.576		-0.056	-0.058
			(-3.24)	(-1.35)		(-0.06)	(-0.06)
% Strong modal words			0.100	0.131		1.632**	1.612**
			(0.31)	(0.41)		(2.52)	(2.49)
% Weak modal words			2.303***	2.071**		0.780	0.780
			(2.73)	(2.47)		(0.46)	(0.46)
Complexity (words per sentence)			-0.041*	-0.043*		0.003	0.004
			(-1.74)	(-1.80)		(0.07)	(0.09)
% Atypical tense			-0.019	-0.024		-0.087***	-0.087***
			(-1.30)	(-1.63)		(-3.06)	(-3.05)
Ln(Words in the presentation)	0.070	0.070	0.199	0.333	-1.068***	-0.531	-0.533
	(0.36)	(0.36)	(0.92)	(1.55)	(-2.87)	(-1.32)	(-1.32)
Ln(Words in the answers)	-0.255**	-0.242**	-0.416**	-0.379**	0.189	-0.538	-0.542
	(-2.09)	(-1.97)	(-2.34)	(-2.16)	(0.69)	(-1.42)	(-1.42)

[continued on next page]

Table 8: Stock price reactions around the conference call and medium-term excess returns [continued]

Dependent variable:	(1) CAR01	(2) CAR01	(3) CAR01	(4) CAR01	(5) CAR360	(6) CAR360	(7) CAR360
Ln(Assets)	-0.622**	-0.628**	-0.613**	-0.623**	-3.644***	-3.648***	-3.636***
	(-2.44)	(-2.45)	(-2.44)	(-2.42)	(-7.64)	(-7.61)	(-7.59)
Tobin's Q	-0.748***	-0.749***	-0.767***	-0.757***	-2.412***	-2.428***	-2.433***
	(-5.55)	(-5.58)	(-6.01)	(-5.60)	(-8.66)	(-8.72)	(-8.75)
Market return in quarter t	-0.023	-0.018	-0.239	-0.029	13.031***	13.145***	13.146***
	(-0.03)	(-0.03)	(-0.35)	(-0.04)	(9.66)	(9.67)	(9.67)
Earnings surprise decile	0.625***	0.626***	0.619***	0.624***	-0.034	-0.038	-0.038
	(25.77)	(25.83)	(25.58)	(25.74)	(-0.82)	(-0.91)	(-0.91)
EPS growth since same quarter last year	0.027	0.030	0.026	0.028	0.274**	0.274**	0.273**
	(0.40)	(0.44)	(0.39)	(0.41)	(1.97)	(1.97)	(1.96)
Stock return in quarter t	-0.217	-0.208	-0.304	-0.227	-2.182**	-2.278**	-2.288**
	(-0.40)	(-0.39)	(-0.56)	(-0.42)	(-2.20)	(-2.29)	(-2.31)
Monthly volatility in quarter t	-0.332	-0.384	-0.237	-0.521	12.697***	12.300***	12.361***
	(-0.14)	(-0.17)	(-0.10)	(-0.22)	(2.79)	(2.74)	(2.74)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CEO fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	7.277***	7.029***	11.433***	9.853***	41.534***	45.408***	45.738***
	(2.99)	(2.87)	(4.21)	(3.62)	(7.59)	(7.47)	(7.51)
Observations	13,689	13,689	13,689	13,689	13,689	13,663	13,663
R^2	0.12	0.12	0.11	0.12	0.03	0.03	0.03

Table 9: Heterogeneous consequences of tone surprises

This table presents summary results of panel regressions. The sample is split in four quartiles of absolute earnings surprise. Within each quartile, we run regressions of earnings in quarter t+1, post-call forecast std. dev., and CAR01 on residual negativity in presentation (RNP) and residual negativity in answers (RNA) as well as control variables. Thus, we run regressions equivalent to those in column (3) of Table 5, column (1) of Table 7, and column (1) of Table 8, respectively. The coefficients on the control variables are not shown. Residual negativity in presentation is the residual of regression (4) in Table 3. Residual negativity in answers is the residual of regression (5) in Table 3. T-statistics are shown in parentheses. The underlying standard errors are clustered on the CEO level and robust to heteroskedasticity. * $p<0.1$, ** $p<0.05$, *** $p<0.01$

Dependent var.	Explanatory var.	Quartiles of absolute earnings surprise			
		Q1 (lowest)	Q2	Q3	Q4 (highest)
Earnings in quarter t+1	RNP	-0.011	-0.031**	-0.090***	-0.180***
		(-0.74)	(-2.19)	(-5.51)	(-7.45)
	RNA	-0.007	-0.010	0.012	-0.047**
		(-0.62)	(-0.83)	(0.85)	(-2.32)
Post-call forecast std. dev.	RNP	0.005***	0.007***	0.009***	0.016***
		(3.66)	(4.98)	(5.80)	(4.43)
	RNA	0.001	-0.000	0.003*	0.013***
		(1.00)	(-0.23)	(1.94)	(3.93)
CAR01	RNP	-0.702***	-0.561***	-0.577***	-0.905***
		(-4.20)	(-3.01)	(-3.07)	(-3.42)
	RNA	-0.389**	-0.507***	-0.540***	-0.695***
		(-2.38)	(-3.11)	(-2.93)	(-2.68)

Table 10: Managerial-tone-response-coefficients

This table presents panel regressions. The dependent variable is CAR01, the two-day, [0,1] cumulative DGTW characteristic-adjusted stock return on and after the conference call date, in percent. *Residual negativity in presentation* (RNP) is the residual of regression (4) in Table 3. *Residual negativity in answers* (RNA) is the residual of regression (5) in Table 4. To calculate *Tone-Sensitivity of future earnings*, we begin by sorting firms into 100 portfolios by the absolute earnings surprise in each quarter. Then, within each portfolio we run panel regressions of earnings in the quarter t+1 on RNP and RNA, respectively, in quarter t, and we save the coefficient on this variable. To help interpret the results, we define *Sensitivity of future earnings to RNP/RNA* as *minus* this saved coefficient. That is, the larger the *Sensitivity of future earnings*, the stronger the negative association of current residual negativity and future earnings. *Sensitivity of post-call forecast std. dev. to RNP/RNA* is calculated in a similar way, regressing, within each portfolio, post-call forecast std. dev. on the respective residual negativity measure. The regressions include the same control variables as the regressions in Table 8, but the coefficients are not shown to conserve space. T-statistics are shown in parentheses. The underlying standard errors are clustered on the level of the 100 portfolios used to calculate *Sensitivity of future earnings* and *Sensitivity of post-call forecast std. dev.* and are robust to heteroskedasticity. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:			CAR01			
Residual negativity (RN) measure:	RNP	RNA	RNP	RNA	RNP	RNA
Residual negativity (RN)	-0.708***	-0.607***	-0.465***	-0.439***	-0.561***	-0.488***
	(-7.70)	(-7.70)	(-4.53)	(-5.52)	(-4.99)	(-5.92)
Sensitivity of future earnings to RN	-0.302	-1.248			-0.316	-1.101
	(-0.34)	(-1.55)			(-0.37)	(-1.29)
RN * Sensitivity of future earnings to RN	-2.184**	-0.645			-1.960**	-0.710
	(-2.25)	(-0.95)			(-2.28)	(-1.16)
Sensitivity of post-call forecast std. to RN			5.652	5.912	6.441	5.312
			(0.92)	(0.81)	(1.07)	(0.71)
RN * Sensitivity of post-call forecast std. to RN			-13.221**	-11.836**	-11.421**	-11.446**
			(-2.41)	(-2.36)	(-2.55)	(-2.44)
Constant	2.045*	1.540	1.904*	1.522	1.893*	1.439
	(1.86)	(1.38)	(1.76)	(1.39)	(1.72)	(1.29)
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Manager fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,333	12,333	12,333	12,333	12,333	12,333
R^2	0.12	0.12	0.12	0.12	0.12	0.12

Supplementary Table A-1: Frequencies of negative and positive words in conference calls

This table presents panel regressions. The dependent variable is the frequency of negative and positive words, respectively, in presentations (columns 1-2), in answers (columns 3-4), and in analysts' questions (columns 5-6). The other variables are defined in the notes to Tables 1 and 2 and in the text. T-statistics are shown in parentheses for the main variables of interests. The underlying standard errors are clustered on the CEO level and robust to heteroskedasticity. * p<0.1, ** p<0.05, *** p<0.01.

	(1)	(2)	(3)	(4)	(5)	(6)
	Presentation negative frequency	Presentation positive frequency	Answers negative frequency	Answers positive frequency	Questions negative frequency	Questions positive frequency
Stock return in the quarter	-0.076***	0.211***	-0.113***	0.147***	-0.178***	0.173***
	(-3.28)	(7.85)	(-6.84)	(7.15)	(-6.95)	(7.88)
EPS growth since same quarter last year	-0.045***	0.018***	-0.015***	0.009***	-0.022***	0.007**
	(-10.65)	(3.98)	(-5.00)	(3.05)	(-6.04)	(2.21)
Earnings surprise decile	-0.017***	0.018***	-0.007***	0.010***	-0.009***	0.013***
	(-14.43)	(14.90)	(-8.66)	(10.48)	(-7.14)	(13.52)
Monthly volatility in the quarter	0.639***	0.429**	0.260***	-0.057	-0.427**	0.159
	(3.63)	(2.32)	(2.59)	(-0.39)	(-2.41)	(1.40)
Pre-call forecast dispersion	0.878***	-0.557***	0.419***	-0.329***	0.308***	-0.171***
	(9.05)	(-5.88)	(6.37)	(-5.96)	(3.20)	(-3.28)
Market return in previous quarter	-0.436***	0.264***	-0.212***	0.209***	-0.284***	0.131***
	(-12.39)	(6.80)	(-8.09)	(6.78)	(-7.22)	(3.88)
Ln(Words in the respective call part)	0.042*	0.027	-0.036***	-0.022	-0.133*	-0.030*
Ln(assets)	-0.086***	0.037	-0.038***	0.094***	-0.074***	0.037***
Tobin's Q	-0.168***	0.010	-0.067***	0.015	-0.070***	0.010
Constant	1.519***	1.116***	1.395***	0.597***	3.101***	0.635***
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Manager fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	13,318	13,318	13,308	13,308	13,088	13,088
R^2	0.16	0.05	0.07	0.04	0.05	0.03

Supplementary Table A-2: Excess returns of double-sorted portfolios

This table presents excess returns of portfolios sorted on the earnings surprise and negativity. Firms are first sorted into 5 quintiles of the earnings surprise and then, within each earnings surprise quintile, into 5 quintiles of negativity. Panel A uses negativity in presentation; Panel B uses negativity in answers. Within each portfolio, we then compute the value-weighted average DGTW characteristic-adjusted stock return from the day after the conference call to day 60.

| Earnings surprise | Panel A: Negativity in presentation | | | | |
	Q1 (least negative)	Q2	Q3	Q4	Q5 (most negative)
Q1 (lowest)	-0.30%	-0.79%	-0.80%	-1.03%	-1.90%
Q2	-0.39%	-0.48%	-1.02%	-0.81%	-0.96%
Q3	0.40%	-0.43%	0.34%	-1.05%	-1.07%
Q4	1.01%	0.32%	0.88%	0.63%	0.49%
Q5 (highest)	2.41%	0.91%	0.31%	1.00%	0.72%

| Earnings surprise | Panel B: Negativity in answers | | | | |
	Q1 (least negative)	Q2	Q3	Q4	Q5 (most negative)
Q1 (lowest)	-0.52%	-1.24%	-0.27%	-0.65%	-1.84%
Q2	-0.76%	0.16%	-0.73%	-1.25%	-0.99%
Q3	0.39%	0.10%	-0.03%	-0.62%	-1.33%
Q4	0.88%	0.50%	1.07%	1.09%	-0.39%
Q5 (highest)	2.55%	1.12%	1.20%	0.86%	0.05%

Supplementary Table A-3: Future earnings, analyst uncertainty, and managerial-tone-response-coefficients

This table presents a variant of the analysis in Table 9 in the paper. It presents panel regressions. The dependent variable in columns (1) to (3) is earnings in the quarter t+1. The dependent variable in columns (3) to (6) is Post-call forecast standard deviation, which is the standard deviation of analysts' forecasts outstanding three days after the conference call. Residual negativity in presentation is the residual of regression (1) in Table 4. Residual negativity in answers is the residual of regression (2) in Table 4. To calculate sensitivity of CAR01 to residual negativity (in either presentation or answers), we begin by sorting firms into 100 portfolios by the earnings surprise in each quarter. Then, within each portfolio we run panel regressions of CAR01 on the respective residual negativity in quarter t, and we save the coefficient on this variable. To help interpret the results, we define sensitivity of CAR01 to residual negativity as *minus* this saved coefficient. That is, the larger the sensitivity of CAR01 to residual negativity, the stronger the negative association of current Residual negativity and the immediate stock market reaction. The coefficient of interest in these regressions is the coefficient on the interaction term of residual negativity and sensitivity of CAR. The other explanatory variables are defined in the notes to Tables 1 and 2 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the level of the 100 portfolios used to calculate the sensitivities and are robust to heteroskedasticity. * $p<0.1$, ** $p<0.05$, *** $p<0.01$.

Supplementary Table A-3: Future earnings, analyst uncertainty, and managerial-tone-response-coefficients [continued]

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
	Earnings in quarter t+1			Post-call forecast standard deviation		
Residual negativity in presentation (RNP)	-0.087***		-0.082***	0.010***		0.009***
	(-7.62)		(-7.28)	(7.90)		(7.83)
Sensitivity of CAR01 to residual negativity in presentation (RNP)	-0.006		-0.005	0.008***		0.004***
	(-0.58)		(-0.51)	(6.30)		(3.30)
Residual negativity in presentation * Sensitivity of CAR01 to RNP	-0.031***		-0.023**	0.005***		0.003**
	(-2.73)		(-2.21)	(3.58)		(2.32)
Residual negativity in answers (RNA)		-0.041***	-0.017**		0.006***	0.003***
		(-4.72)	(-2.18)		(5.10)	(3.06)
Sensitivity of CAR01 to residual negativity in answers (RNA)		-0.007	-0.001		0.010***	0.006***
		(-0.52)	(-0.11)		(6.29)	(3.58)
Residual negativity in answers * Sensitivity of CAR01 to RNA		-0.032**	-0.019		0.006***	0.004**
		(-2.19)	(-1.38)		(3.44)	(2.54)
Ln(Assets)	0.303***	0.305***	0.303***	0.025***	0.025***	0.025***
	(7.14)	(7.23)	(7.16)	(5.04)	(4.98)	(5.07)
Tobin's Q	0.136***	0.135***	0.136***	-0.000	-0.000	-0.000
	(7.90)	(7.63)	(7.92)	(-0.27)	(-0.15)	(-0.21)
Market return in quarter t	0.186***	0.184***	0.186***	-0.057***	-0.057***	-0.057***
	(5.01)	(4.90)	(5.04)	(-8.87)	(-8.72)	(-8.90)
Monthly volatility in quarter t	-1.223***	-1.225***	-1.218***	0.080*	0.080*	0.079*
	(-4.28)	(-4.21)	(-4.30)	(1.94)	(1.94)	(1.95)
Earnings surprise decile	0.013***	0.013***	0.013***	-0.001***	-0.001***	-0.001***
	(5.98)	(5.94)	(5.99)	(-4.30)	(-4.29)	(-4.33)
Stock return in quarter t	0.127***	0.130***	0.127***	-0.012**	-0.012***	-0.012**
	(3.61)	(3.66)	(3.61)	(-2.54)	(-2.65)	(-2.56)
EPS growth since same quarter last year	0.058***	0.058***	0.058***	-0.002**	-0.002**	-0.002**
	(8.26)	(8.22)	(8.24)	(-2.03)	(-2.01)	(-1.98)
Ln(Words in the presentation)	-0.107***	-0.106***	-0.106***	0.012***	0.011***	0.011***
	(-4.10)	(-3.99)	(-4.06)	(4.39)	(4.31)	(4.33)
Ln(Words in the answers)	0.006	0.008	0.006	-0.001	-0.001	-0.001
	(0.54)	(0.69)	(0.55)	(-0.73)	(-0.82)	(-0.70)
Constant	-1.557***	-1.602***	-1.575***	-0.284***	-0.280***	-0.282***
	(-3.18)	(-3.28)	(-3.22)	(-5.41)	(-5.33)	(-5.45)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Manager fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	12,333	12,333	12,333	12,024	12,024	12,024
R^2	0.12	0.11	0.12	0.11	0.08	0.11

Supplementary Table A-4: Alternative word classification by groups

Our main analysis uses the Loughran and McDonald (2011) word list. We also use our own simplified classification, shown here, as an alternative. To compile this classification, we compute the frequencies of all words appearing in managers' and analysts' speeches during conference calls (initial earnings announcements and answers to analysts' questions). Then, from among the most frequent words we choose the words belonging to these three groups: (1) positive words, (2) negative words, (3) words indicating uncertainty. The words in the table are ordered in the frequency of their use, within their categories.

Positive		**Negative**		**Uncertain**	
growth	improvements	decline	volatility	think	reasonable
good	confident	risks	weakness	may	plans
strong	successful	risk	problem	expect	efforts
opportunities	stronger	loss	lost	anticipate	prelimiary
opportunity	comfortable	negative	challenge	believe	possible
improvement	excellent	uncertainties	slowdown	maybe	planning
positive	nice	difficult	difficulty	compared	expecting
grow	confidence	losses	problems	guess	estimates
growing	profitable	below	declining	knowledge	predict
improved	attractive	declines	negatively	expected	forecasting
improve	optimistic	pressure	worse	expectations	forecasts
grew	benefited	reduce	uncertainty	assumptions	pretty
ability	exciting	incorrect		assume	approximately
strength	wins	decrease		assuming	might
gain	safe	inaccuracies		projections	wondering
success	successfully	decreased		forecast	enough
favorable	grown	tough		fairly	hope
advantage	strength	challenging		generally	potential
outstanding	encouraging	challenges		perhaps	comparison
improving	perfect	declines		roughly	assumption