

Tips and Tells from Managers: Between the Lines Inferences from Conference Calls

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Abstract

Because managers are thought to possess important insider information, investors pay attention not only to the factual information managers announce, but also to how they convey it. The short-term market returns after earnings announcements have been shown to depend heavily on managers' choice of words. Our aim is to investigate whether this market behavior is rational and whether an analysis of a manager's choice of words can provide rewarding information about future company fundamentals. We collect data from conference calls, which are less formalized than written earnings press releases. Our analysis has three parts. First, we study how past results influence the manager's choice of words in these calls. We find that earnings surprises, stock returns and changes in earnings decrease the use of negative tone. We also investigate "paltering." For example, managers may use the "wrong" tense in their statements. Moreover, differences in the prepared and the improvised parts of managers' speech might signal uncertainty or insincerity; these differences also hint at whether negativity is a (non purposeful) "tell" or a (purposeful) "tip." We observe the increase in these evasive maneuvers in association with the necessity to present poor results. In a second step, we document that negativity and paltering are associated with higher variability of analyst forecasts, with more revisions, and with slower responses of analyst recommendations to the conference call. Third, we show that the degree of negativity of the manager's words which is unexplained by past performance helps to predict the future earnings of the company. Analyst forecasts do not take managerial tone into account sufficiently. We also document that, as early as four quarters before a company's bankruptcy, the verbal negativity of its managers becomes significantly higher than in viable companies, even after controlling for the companies' performances. The quantified word choice of a manager contains incremental information for bankruptcy prediction, when used in a classificatory model concurrently with accounting ratios.

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1 Introduction

The managers of companies commit to host quarterly-earnings-announcement conference calls independently of their company's performance and of their desire to talk to the public. A typical conference call includes a discussion of the past, a preview of the future, and answers to the analysts' questions. The goal of the managers, it is normally asserted, is to present their company's results in the way that is most beneficial to the company's value. It would be natural to expect that managers would try to persuade analysts and investors that their company had a bright future. However, they do not want to set unrealistic expectations; the market severely penalizes companies that fall short. Equally important, managers cannot significantly misrepresent the truth in a way that would risk expensive litigation and reputational damage. Their concern about the legitimacy of baseless statements causes managers to be more negative in their statements than they would like, or to add a shade of uncertainty to their positive statements.

We believe that managers' choice of words is determined by all the information they have. This includes information about the past, most of which either already has been disclosed or soon will be, as well as insider information or, more accurately, the managers' expectations for the future, which they are not obliged to disclose. Therefore, the choice of words during a conference call cannot be fully explained by the quantitative information describing the past quarter's performance: expected and unexpected earnings, firm and market stock returns, etc. Importantly, word choice is influenced also by the mood of the managers, their expectations for the future, and internal information they do or do not intend to reveal. As an analogy with the game of poker, we refer to "tips" as purposefully revealed information and "tells," which are not purposeful.

In the light of these considerations, this paper has six goals: first, to study how a company's

past performance influences the manager's speech; second, to assess in which circumstances evasive speech patterns become more common; third, to investigate the correlates of a manager's speech in terms of analyst reactions (such as revision frequency and variance of forecasts); fourth, to see whether the manager's words that are not explained by the past might help to predict future earnings; fifth, to find out whether analysts incorporate managers' "tips" and "tells" in their forecasts; and sixth, whether an analysis of the manager's words can shed light even on the probability of an extreme event such as a bankruptcy.

First, we assess whether the negative or positive aspects of a manager's speech reveal important information. As indicators, we consider not only the commonly used frequency of negative and positive words but also the ratio of the two. We document that the degree of negativity in a manager's speech relates to both the recent economic performance of a company and the economic climate more generally

Second, we determine whether managers use evasive tactics in predictable ways. For example, the tone of their presentations differs markedly from the tone of answers when the economic performance is poor, and they tend to talk about the present and future only when they have something positive to say. We interpret the latter findings as evidence of strategic paltering, that is seeking to mislead without lying.¹

Third, we investigate when managers' words are associated with greater uncertainty in analysts' forecasts. The variance of forecasts and the number of forecast revisions is higher, and the reaction of analysts is slower, when managerial tone is more negative and when managers use evasive tactics. This may be because there is just more uncertainty when companies face rocky

¹ The American Heritage Dictionary defines paltering as acting misleadingly or insincerely. Other dictionaries talk about deliberate ambiguity and withholding information. For a more detailed description of different paltering practices and discussion on existing and potential ways to control them see Schauer and Zeckhauser (2009).

times, or because analysts have more or differential difficulty interpreting negative or purposefully misleading managerial statements.

Fourth, we study whether “excessive” negativity help to predict future earnings performance. Such earnings do not depend on the managers’ speech², real earnings are, in most cases³, independent of such influences. Consistent with our hypothesis, we find that negative elements in managers’ speech, which are not justified by previous performance, are associated with significantly lower future earnings. This finding would be of only moderate interest if analysts correctly incorporated such information. That leads to:

Fifth, we want to determine whether financial analysts fully capture the “soft” information from managers’ remarks in their forecasts. We find that they make forecasts that exceed actual earnings for companies whose managers reveal such negative indicators.

Sixth, we wanted to go beyond the improved prediction of earnings. Can the words of managers provide refined estimates of salient events in a firm’s future? To address this question, in our final empirical study we use the natural experiment of the 2007-2009 financial turmoil – with its substantial toll of bankruptcies – to study how the prospect of an imminent bankruptcy influences the manager’s word choice. The goal is to learn whether there is a way to improve our ability to foresee an elevated risk of bankruptcy by noting how managers speak. We find that the threat of bankruptcy significantly impacts the managerial tone (level of optimism or pessimism). Two to four quarters before a company’s bankruptcy (depending on the measures of tone employed), a manager’s tone becomes significantly more negative than one would expect based on his company’s historical performance. We test whether we can improve classical bankruptcy

² Tversky and Kahneman (1981) have shown that framing can affect the outcome (i.e., the choices one makes) of choice problems. Investment decisions, therefore, depend on how the quantitative news are framed by the managers.

³ One can imagine cases in the durable goods industries or in financial services where the perception of company stability has a direct impact on sales.

prediction models by adding textual analysis data. We find that adding variables quantifying manager's tone and the degree of uncertainty of his speech improve classificatory ability of the model based on financial ratios only.

Our study differs from, and is complementary to, existing textual-analysis studies of management-expressed news in several ways.

First, we use conference call transcripts. Many previous textual-analysis studies focused on management-produced 10-K filings and corporate annual reports (Li 2006; Loughran and McDonald 2011), press releases accompanying earnings announcements (Demers and Vega 2010; Davis et al. 2012), and on media news content about companies (Ober et al. 1999) (Tetlock 2007; Tetlock et al. 2008; Engelberg 2009).

Conference call transcripts are similar in content to earnings press releases, but are less formalized. They also include an improvised section when managers respond to questions. Thus, we are able to examine a new question: How does the content of improvised speech differ from the content of a carefully prepared document or formal speech? To draw an analogy, we are learning what a witness in a trial might say under cross examination, as opposed to in response to the prepared questions of his lawyer. Judges and juries might use this information, often more from tone than from what is said explicitly, to assess whether a witness is telling the truth, and the whole truth. This distinction is particularly for our analysis of paltering.

Recently, several papers have considered conference calls. Mayew and Venkatachalam (2012) measure managers' affects during conference calls, applying vocal-emotion-analysis software to audio recordings. They find that managers' displays of positive and negative affect are respectively positively and negatively related to contemporaneous stock returns and to future unexpected earnings. We show that textual analysis alone can provide valuable insights.

Moreover, our analysis sheds more explicit light on the extent to which analysts incorporate (or do not incorporate) the information in managerial tone and on the relation of tone and paltering with market efficiency.

Other studies are considering the relation of conference calls to shortselling (Blau et al. 2012), how the tone shifts with the time of day (Chen et al. 2012), how companies call on bullish analysts to affect the choreography of calls (Cohen et al. 2012), and whether the use of certain words suggests deception as later revealed by fraud (Larcker and Zakolyukina 2012). On conference calls more generally, see Matsumoto et al. (2011). The focus of all these papers is quite different than the focus of our study.

Second, we consider the use of both positive and negative words. To measure the negative flavor of comments, we use the ratio of negative to positive words, instead of simple word counts or frequencies of appearance.⁴

Third, we avoid using generic dictionaries such as Diction or General Inquirer, which misrepresent the tone of financial news (Loughran and McDonald 2011). Instead we construct our own checklists, assigning the non-neutral words most frequently used in conference calls to positive or negative categories based on their use in the conference calls. For a robustness check, we use the adjusted “Fin-Neg” lists offered by Bill McDonald on his personal web-page.⁵ These lists are based on Harvard Dictionary classification, but adjusted to financial terminology.

Fourth, the major issue that has been explored by finance researchers in this area is the share

⁴ Word count is the number of appearance of a category of words in a speech. Frequency of appearance is the ratio of a category’s word count to the total number of words in a speech. Most authors prefer word counts when dealing with certainty/uncertainty (Ober *et al.* 1999; Li 2006), and frequencies when measuring “optimism” or “pessimism” — ratios of total number of positive or negative words to the number of words in the speech (Tetlock 2007; Davis *et al.* 2012). To our knowledge only one concurrent study, Demers and Vega (2010) uses positive and negative word counts and combines them into a single variable by subtracting negative words from positive words.

⁵ [www.nd.edu/~mcdonald/Word Lists.html](http://www.nd.edu/~mcdonald/Word%20Lists.html)

price reaction to the “soft information” in a company’s news (see, for example, Demers and Vega (2010), Davis et al. (2012), and Price, Doran, Peterson, and Bliss (Price et al. 2012).

Though our methods are similar, we aim to explore different problems. Instead of forecasting future stock returns (the market reaction to the managers’ words), we seek to predict the company’s real performance. We investigate whether, by their choice of words, managers disclose internal information and shed light on the earnings prospects of their company and the extreme event of bankruptcy.

The rest of this paper is organized as follows. In Section 2, we describe our data. In Section 3, we examine how quarterly performance influences a manager’s negativity and his use of obfuscating speech. In Section 4, we consider the relation between managerial speech and market efficiency. In Section 5, we investigate whether the managers’ word choice provides insight into future earnings, and whether financial analysts successfully integrate this information into their forecasts. In Section 6, we see how a manager’s word choice can help us to recognize prospects for imminent bankruptcy. Section 7 contains the robustness analysis and additional results. Section 8 summarizes and concludes.

2 Data and methods

2.1 Sample

Our analysis is based on the S&P 500 companies appearing in the index as of 01.03.2007 and the largest bankrupt companies appearing in the Chapter 11 Library© in 2007-2009. Our sample includes earnings announcements for the period from 2004 to 2009.

2.2 *Textual analysis*

Thomson Reuters has transcripts for 451 companies of the S&P 500 list; it is the source of the conference call transcripts that we use.

2.2.1 **Tone**

Wishing neither to misclassify words nor to get the result out of the black box, we avoid using generic software.⁶ We elaborate the list of positive, negative, and uncertain words, based on the most frequently used words in conference calls. First, we compute the frequencies of all words appearing in a manager's speech during these conference calls. Then, from among the most frequently used words, we choose the words belonging to these three different groups: 1) positive words, 2) negative words, and 3) words of uncertainty. We present the complete list of chosen words, arranged by their frequency in the groups in Table 1.

To test the robustness of our analysis of the choice of words, we use the alternative word lists compiled by Loughran and McDonald (2011). These lists comprise the Harvard IV GI lists, adjusted for financial terminology. This classification contains 2,337 negative, 353 positive, and 285 uncertain words. Here are some examples of words in the Loughran and McDonald classification (referred to also in this paper as the "extensive classification"): negative - abandon, bridge, caution; positive - able, beautiful, charitable; uncertain - abeyance, clarification, depend.

TABLE 1 ABOUT HERE

⁶ Loughran and McDonald (2011) show how the Harvard Dictionary, the basis for generic textual-analysis software, misclassifies words in financial contexts (for example, "liability" or "taxes"). They find that almost three-fourths of the negative-word counts according to the Harvard list are attributable to words that are often not negative in a financial context. That paper offers two solutions: a) adjusted lists, which classify words according to their usual meanings in a financial context; and b) term weighting. Loughran and McDonald apply both methods to the Management Discussion and Analysis (MD&A) part of annual 10-K filings. They find significant relationships between the words used and filing-date returns, trading volume, and subsequent return volatility. They find no evidence of return predictability. They also link the word lists successfully to earnings surprise in the first quarter, to fraud, and to material weakness.

Tetlock et al. (2008) express a concern that positive word counts do not properly reflect the attitude of the speaker because such words are frequently negated. We correct the number of positive words to account for negation. We exclude a positive word from the count when one of three negation words (no, not, none) occurs among the three words preceding the positive word.

To measure tone, we primarily employ the variable *Negativity*, equal to the ratio of the number of negative words to the number of positive words a manager or analyst of company j uses in the conference call at time t .

$$Negativity_{jt} = \frac{Negative\ words_{jt}}{Positive\ words_{jt}} \quad (1)$$

We distinguish the negativity of each prepared presentation from that of its Q&A session, as these two parts are fundamentally different. A presentation is prepared and proofread in advance, whereas answers must to some extent represent improvisations.

For robustness, we also use the frequency of negative and positive words separately. (There are very few instances of 0 positive words.)

We also consider the frequency of uncertain words.

2.2.2 Tense use

In our analysis of evasive tactics, we will also refer to the tense used by managers and analysts. For automated recognition of verb tenses we extensively used Natural Language Toolkit library⁷ in the following way: (1) for each sentence, all words in it were tagged with Part-of-Speech tags (POS tagging)⁸; (2) then each tagged sentence was chunked into Name and Verb phrases; (3) for

⁷ www.nltk.org

⁸ POS tagging and sentence chunking are implemented using standard statistical methods from NTLK library. For more details see <http://streamhacker.com/2008/11/10/part-of-speech-tagging-with-nltk-part-2/>;

each verb phrase, its tense is deduced from the POS tag of the first word with 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 a most common tense among its phrases. If a most common tense is not defined, the sentence tense is not defined.

After we have assigned the tenses to each sentence we classify them as describing past present or future with the announcement day as a reference point.⁹

2.3 Company variables

Earnings and forecasts data are from I/B/E/S. Price and returns data are from CRSP.

Let $e_{t,j}$ be the earnings announced for the company j at quarter t recorded in I/B/E/S, and let $\hat{e}_{t,j}$ be the corresponding consensus forecast (the mean analyst forecast included in the I/B/E/S detail file during the 30 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,

$$\text{Earnings surprise}_{jt} = \frac{e_{jt} - \hat{e}_{jt}}{P_{jt}} \quad (2)$$

We winsorize the earnings surprise at the 1% level. When a firm underperforms expectations and the surprise is negative, the *Surprise_decile* will take values from -5 (for the largest negative surprises) to -1 (for the smallest surprises). Positive surprises are similarly divided into quintiles, taking the values from 1 to 5 from smallest to largest.

Let $P_{jt-1,+5}$ be the stock price for the company j 5 days after an earnings announcement for quarter $t-1$, and let $P_{jt,-5}$ be the stock price for the company j 5 days before an earnings

<http://streamhacker.com/2009/02/23/chunk-extraction-with-nltk/>

and

<http://streamhacker.com/2008/12/29/how-to-train-a-nltk-chunker/>.

⁹ The difficulties here arise with the classification of present perfect tense. We classify it for our use as the past-oriented speech, according to the definition of Merriam-Webster dictionary: “present perfect is a verb tense that expresses action or state completed at the time of speaking”.

announcement for quarter t . Then the quarter-end capital gain price is

$$\text{Capital gain}_{jt} = \frac{P_{jt,-5} - P_{jt-1,+5}}{P_{jt-1,+5}} \quad (3)$$

We winsorize capital gains at the 1% level.

The quarter change in earnings is the earnings at quarter t , minus the earnings in quarter $t-1$, scaled by the stock price 5 days before the earnings announcement.

$$\text{Change in earnings}_{jt} = \frac{e_{jt} - e_{jt-1}}{P_{jt,-5}} \quad (4)$$

Market return $_{t,t-1}$ is the 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 .

Revision frequency is the number of revisions, scaled by the number of analysts. We also compute *Forecast-Variance*, the variance of analysts' forecasts outstanding at the end of the following quarter. *Immediate reactions* is the share of analysts covering the firm who react within one working day after the earnings announcement.

We define *Forecast Error (FE)* as the difference between the consensus forecast and the actual earnings, scaled by price to ensure comparability of errors for different quarters and firms. Let $f_{jt-1,t}$ be the consensus forecast, that is, the average of all forecasts for quarter t outstanding 3 days after the earnings announcement for quarter $t-1$. Then:

$$FE_{jt} = \frac{f_{jt-1,t} - e_{jt}}{P_{jt-1}} \quad (5)$$

Absolute Forecast Error (AFE) is the absolute value of FE_{jt} . We winsorize (Absolute) Forecast Errors at the top 1% level.

2.4 *Descriptive statistics*

Table 2 displays summary statistics on the variables we use.

TABLE 2 ABOUT HERE

On average about 0.45% of all words are coded as negative and 1.43% are coded as positive. Negativity (the ratio of negative to positive words) is higher in presentations than in the improvised answers, suggesting that CEOs tend to be more cautious in the prepared part of their speech. Using the Loughran and McDonald (2011) classification, the percentage of negative words is somewhat higher, about 1% of all words used. On the other hand, fewer statements are coded as uncertain with this classification.

3 **What do managers talk and not talk about?**

This section has two goals. First, Section 3.1 determines what management members regard as the most important performance measures, that is, what factors help explain variation in managerial speech. This is important in order to understand the logic of managers' actions and to evaluate to what extent their interests are aligned with the interests of shareholders. It is also an important step to undertake before using textual analysis as a forecasting tool. Before looking at the future through the managers' choice of words, we need to understand how the past performance drives that choice.

Second, Section 3.2 examines how the character of reporting is modified in relation to the changes a company's performance. Here we are interested not so much in what is *said*, but in what is *meant to be said*. What factors incline managers to omit something, deliberately

obfuscating the truth?

3.1 *Tone of speech*

Managers host a quarterly conference call to announce and comment on earnings in the prior quarter. It would be natural to assume that, as the earnings discussion is the purpose of the call, the quality of earnings should be the most important factor determining the managers' mood and consequently the word choice. It is possible, however, that the managers, and perhaps the investors, care more about some other results. We analyze which performance characteristics are most important to the managers by investigating how the changes in those characteristics influence the managers' speech.

Table 3 studies which factors most influence *the Negativity* measure. In this and the following tables, we present panel regressions with standard errors clustered on the company level. In regressions which do not include quarterly market returns, we include quarter time dummies to pick up general trends in the market in the corresponding quarter. We consider regressions with and without firm fixed effects. Regressions without firm fixed effects explore both the cross-sectional and the time-series variation in the data, whereas the regressions with firm fixed effects emphasize the time-series variation. Including fixed effects also addresses the possibility that managers may have their particular vocabularies, or that some of them have a penchant for using more positive/negative words than others, and that this unobserved characteristic may be correlated with firm performance.

TABLE 3 ABOUT HERE

Table 3 shows that the difference between actual earnings and market expectations plays an

important role in determining the managers' tone. Besides the change in earnings, managers care significantly about the change in earnings compared to the previous quarter.¹⁰ These findings confirm the importance to managers of beating the market expectations, as described by Degeorge et al. (1999).

Capital gain impacts the tone of the presentations, even after controlling for the general market performance. Market returns during the past quarter are also negatively correlated with the negativity of managers' speech. This means that when the markets are down, managers reflect it in their speech and do not try to sweeten the news with overwhelming enthusiasm and positiveness to encourage the public.¹¹

In general, the tone of the presentations prepared in advance is more strongly impacted by the performance characteristics than the tone of the improvised answers to the analysts' questions.

The negativity of the managers' answers to the analysts' questions is highly significantly correlated with the negativity of the analysts' questions, more negative questions receiving more negative answers.

Next, to disentangle the effect on negativity caused by negative words and positive words, we conduct the same kind of analysis for frequencies of each category. These results are in Table 4.

TABLE 4 ABOUT HERE

Consistent with our previous results, negative words become more frequent when the economy worsens, when the shareholders experience capital loss, or when the firm's earnings fall

¹⁰ These findings are robust whether we use as a regressor in the model the surprise's deciles or the surprise itself. The coefficient of determination is, however, higher for the models with deciles.

¹¹ The coefficient on the market return is larger than the coefficient on the stock return, but note that the market return is also significantly less variable than the individual stock returns.

below the analysts' forecasts. Indeed, earnings surprise appears to be one of the most crucial results discussed by the managers and questioned by the analysts. However, we were unable to reject the hypothesis that the use of negative words in answers is independent of the change in earnings.

We also find that the managers' use of negative words can be explained more easily than their use of positive words. Adjusted R^2 is noticeably lower for the positive words' frequencies.

3.2 Paltering

Conference calls are an important means of dissemination of a company's news. The goal of managers, it is normally asserted, is to present a company's results in the way that is most beneficial to the company's value. It would be natural to expect that managers, even when they have poor results to present, would try to persuade investors that their money is not too greatly at risk. However, at the same time, the managers' efforts to keep value up are subject to the constraint that they not significantly misrepresent the truth in a way that would risk expensive litigation and reputational damage. The other constraint is the necessity to keep market expectations regarding future earnings at a reasonable level, in a way that these expectations can be met.

In this subsection, we investigate what managers do not talk about. Thus, instead of focusing on "tips," we now investigate "tells." We ask which parameters of a past company's performance may incline a manager to omit, obfuscate, or avoid certain subjects. Of course, using only a written transcript has its limitations, but it is a tool available to all market participants.¹²

¹² There are more sophisticated ways of inferring paltering. For example, a Boston-based consulting firm, Business Intelligence Advisors (BIA), employs former CIA officers to verify the sincerity of top managers during their public presentations. Its analysis of verbal and nonverbal clues during conference calls appears to have value, as several important hedge funds employ BIA services. BIA deception detection

We identify several patterns of evasive behavior and analyze their correlations to the firm's performance.¹³

A first indication can be found in significant *differences in negativity between presentations (prepared speech) and answers (improvised speech)*. When preparing a presentation, managers, aware of the great importance of every word, carefully ponder the possible impact of each locution. When improvising answers, managers, without the luxury of time for crafting responses, instinctively avoid saying anything negative. When taken by surprise by a provocative question, managers might be inclined to sweeten the truth. Corporate lawyers are unable to intervene to prevent managers' improvised sugarcoating and to ensure that they do not cross the acceptable line of puffery. In fact, in 2/3 of our observations, more negativity is expressed in the presentations than in the answers. The average negativity in the presentations is significantly greater than in answers (see Table 2).

A second indication is the *use of a "wrong" verb tense*. Presentations should announce and explain past results. Answers should clarify missed points, explain the current situation, or give a preview of the future. If too few sentences in the presentation are in the past tense, the managers are possibly misleading the listeners by diverting their attention from actual outcomes to events that have not yet happened. If too many answers use the past tense, it means either that the managers have prepared an insufficient or unclear announcement, or that the managers are

services use the CIA intelligence techniques of analyzing gestures, words, context, voice, changes in presentation style, and many other details such as the time gap before answering a question and the trembling of the voice. Complaints, detour phrases, selective memory, and overly courteous responses may serve as warning signs for BIA, whose work is not limited to textual analysis. Without trying to compete with BIA in unveiling corporate paltering, we expand upon its ideas on searching for textual clues in order to extract more relevant news from public disclosures.

¹³ We have also coded the *use of specific "uncertain" words* or constructions. (See the classification in Table 1.) We find that the frequency of the use of these "deception words" is not explained well by the company performance variables we consider. This suggests that this measure contains too much measurement error.

avoiding talking about the present and the future. Summarizing, we would suspect paltering activity when the use of the past tense declines in the managers' presentation and increases in their answers.

A third evasive tactic is to *switch the tense* when answering an analyst's question. Switching a tense can be a way to avoid a liability, or, in other cases, it can be an effort to attract the public's attention to a more glorious period (perhaps somewhere in the future). Managers switch the time frames in both directions. Analysts get future projections when asking about achieved results. In uncertain times, questions about the current activities or the future opportunities of a company are answered with glorious stories about past successes. On average, in a conference call, 43% of questions using the past tense receive an answer oriented to the present or future. The proportion of future-tense questions receiving past-tense answers is 11%. That is, the switches from the past are almost four times more frequent in our sample than switches to the past.¹⁴

The three measures are not highly correlated; they appear to pick up different dimensions of a manager's speech.

It is natural to expect some variation in tense use and use of uncertain words in the data. For example, managers may misspeak. If the use of these speech patterns were random, these patterns would not be correlated with measures of company performance or analyst questions. Interestingly, the use of paltering techniques appears to be employed strategically, as the

¹⁴ An example of time orientation switch is an answer given by Lehman Brothers' CEO Dick Fuld on the second-quarter 2008 conference call. A Bank of America analyst asked, "Are you guys seeing any impact, some of the rumors circulating in the marketplace, driving a reduction in client activity or counter parties pulling away from Lehman?" Dick Fuld switched to present perfect from present, referring to the time preceding the announcement and answered: "We've seen nothing significant across prime broker balances, derivatives, secured lending markets, short end unsecured markets, we've seen nothing significant." Although formally both question and answer are in present tense, the answer was oriented to the time preceding the announcement.

following regression analysis shows.

First, Table 5 shows that managerial tone is more consistent when recent results were better. There are some asymmetries that can be seen in considering the difference and the absolute difference separately. As hypothesized earlier, when the last quarter was bad in terms of stock returns or when the earnings surprise was negative, managers are more likely to switch to a relatively more positive tone in the Q&A session than in the prepared remarks. Columns (1) and (2) show that when analysts' questions are more negative, managers are more positive in their answers than they were in presentations; this results in a positive coefficient in columns (3) and (4) when relating the tone of analysts to the absolute difference in tone of managers.

TABLE 5 ABOUT HERE

Next, we investigate how the choice of verb tenses shifts with the changes in the company's or the market's performance. We are also interested in whether the choices of tense and the negativity in the managers' tones are related. When managers have bad news to communicate, do they spend more time than usually explaining present corrective measures and projecting future successful undertakings? Table 6 presents the results of the tense-usage analysis.

TABLE 6 ABOUT HERE

Normally, more than half of the phrases in presentations use the past tense and more than half of the phrases in questions and answers use the present tense (see Table 2). In the prepared presentations, higher earnings surprise and a better market return is associated with greater use of the past tense. We see that the choice of tense is correlated with the managers' negativity.

However, controlling for the economic situation, the more negative the managers are, the more their talk is about the past, and the less it is about the present. The effect is stronger pronounced for the prepared speech than for the improvised answers. Apparently, managers try not to talk about the present and future unless the general tone can be positive. In managers' improvised answers, earnings surprises are positively correlated with the use of the present tense. They are negatively correlated with the use of the future tense, but a positive change in earnings from the previous quarter can outweigh this effect.

Finally, we ask whether switches in time frame are strategic. If so, they should relate to conditions of the company. Table 7 examines this question.

TABLE 7 ABOUT HERE

The primary company-level factor we find that consistently impacts managers' desire to avoid talk about the past is the negativity of the questions. The more negative the questions are, and the more negative the tone adopted in the presentations is, the less managers switch the time-frame replying to the past-oriented questions. Past company performance has a low impact on managers' inclinations to switch tenses. There is some evidence that when the share price performance of a quarter is particularly good, managers tend to switch the time frame when asked about the present or future. The recent market performance is associated positively with both types of time frame switches. The effect is stronger in Column (4), suggesting that managers like to look ahead even when not asked to do so if the market has recently performed well.

Overall, we observe the increase in these evasive maneuvers (inconsistency in tone between presentations and answers; wrong tense use; tense switches) in association with the necessity to

present poor results.

4 Relation between managerial speech and market efficiency

In this section, we investigate how the tone in a manager's speech and the use of these paltering techniques by managers impacts market efficiency. Table 8 presents the coefficients of regressions explaining the following variables: the forecast revision frequency, the variance of analysts' forecasts, and the speed of analysts' reactions to the announcement. We control for market return during the quarter as a proxy for the stability of the economy.

TABLE 8 ABOUT HERE

Negativity is positively associated with revision frequency and variance of forecasts. It is negatively correlated with the speed of analysts' reactions. This means that higher degrees of negativity coincide with higher degrees of uncertainty for analysts.

Higher concentration on discussions of the past and present in the managers' presentations allows analysts to obtain a higher degree of certainty in their forecasts. (The tense used in answers is unrelated to any of the three dependent variables.) Conversely, the less consistent the tone of managers is between presentations and answers, the higher the degree of uncertainty reflected in analyst behavior.

Overall, our measures of paltering (inconsistency in tone and the use of "wrong" tenses) are associated negatively with (these three measures of) market efficiency.

5 Predictive power of textual analysis: Forecasting earnings

Thousands of professional financial analysts constantly endeavor to provide timely and accurate

forecasts of the earnings of the companies they follow. On average, there are 13 analysts issuing a report on every S&P 500 company each quarter. With their research being available to the public, does it make sense to work on independent predictions by examining such details as excessive managers' negativity?

It would make sense under two conditions: 1) The degree of managers' negativity contains certain internal information (see Section 5.1); and 2) Analysts do not systematically capture this information in their forecasts (see Section 5.2).

5.1 The information leakage hypothesis

We first hypothesize that a manager at the moment of the earnings announcement of quarter t already has some idea of what to expect in the quarter $t+1$. He might reveal his insight unintentionally, or possibly without noticing. Alternatively, he might reveal it intentionally to avoid possible legal consequences or to bring down the market's expectations. Either way, this means that the component of the managers' negativity unexplained by past results provides information about that company's prospects. This argument yields the *INFORMATION LEAKAGE hypothesis: Managers reveal information about future earnings of the company by choosing (consciously or subconsciously) the presentation tone.* Alternatively, abnormal negativity is not correlated with the earnings in the next quarter.

To test this hypothesis, we first estimate the benchmark, the normal level of negativity justified by the company's past performance. We use our results from Table 3, including firm fixed effects, to explain the managers' choice of words by the company's and the market's past performances. This model implies a "normal" degree of negativity. We call the difference between actual negativity and the fitted value the *Negativity Residual*. Specifically, *Negativity Residual, Presentations* is the residual of regression (3) in Table 3. *Negativity Residual, Answers*

is the residual of regression (8) in Table 3. Negativity residuals measure the excessive negativity — the negativity which cannot be justified by past performance.

Under our hypothesis, positive residuals would signal managers' expectations of lower earnings in the future, while negative residuals would mean that managers feel more secure about the future than one could expect given the past results.

Cases with negative negativity residuals are almost twice more common than cases with positive residuals. That means that managers are more often overly-optimistic than overly-pessimistic.

To investigate whether this new measure adds information to forecast earnings, we compare two models, shown in columns (1) and (2) of Table 9, respectively. Column 1 explains the earnings in quarter $t+1$ by the earnings in the two preceding quarters, the earnings surprise at quarter t , and the market returns during the quarter t . Column 2 includes both *Negativity Residual, Presentations* and *Negativity Residual, Answers*. As the residuals of different signs may have different correlations with future earnings, we separate positive and negative residuals by multiplying them by dummy variables. To be able to compare adjusted R^2 for different models, all of them are tested on the same group of observations.

TABLE 9 ABOUT HERE

These regressions show that positive residuals have predictive power for future earnings. That is, when a manager is excessively negative in both presentation and answers, it signals lower earnings in the future.

5.2 *The wise forecasts hypothesis*

Section 5.1 has demonstrated that information does leak through managerial tone. It would seem quite reasonable that analysts would have discovered this. Thus, we now consider whether the analysts' forecasts can be improved if adjusted according to the degree of the managers' negativity. Specifically, we test the *WISE FORECASTS hypothesis: Analysts' forecasts capture the tone of managers' speech, and their forecast errors do not depend on the degree of the managers' negativity above or below the benchmark.* Alternatively, we might find that managerial tone is informative about earnings, even after taking into account analysts' estimates.

A first way to approach testing this hypothesis is to consider whether the knowledge of negativity residuals can add any input into the earnings prediction model after we have taken into consideration the financial analysts' forecasts. We compute the analysts' consensus following the earnings announcement for quarter t as the average of all the forecasts valid on the third day after the earnings announcement. We assume that a three-day period is sufficient for analysts to incorporate new information. According to previous research, 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.

Columns 3 and 4 as well as Columns 5 and 6 of Table 9 show that, although analysts' forecasts are among the best estimators of future earnings, we get higher adjusted R^2 when we add negativity residuals into the model. This is preliminary, but not yet sufficient (especially given the low magnitude of differences in R^2), evidence that analysts do not fully incorporate into their forecasts the information contained in the managers' negativity.

The fact that the adjusted R^2 is higher for the model which supplements the analysts' consensus with negativity residuals than for the model with consensus as the only explanatory variable does not prove the superiority of textual analysis over the use of analysts' predictions.

Investors usually do not include analysts' forecasts as a parameter in some linear model; they take the forecasts at face value.

As we are not yet able, with the help of textual analysis, to improve upon the forecasts of analysts, the next reasonable way to use our knowledge would be to help us adjust analysts' forecasts. Therefore, the next question we ask is whether analysts' forecast errors are correlated with managers' negativity. In this analysis, we use market returns and revision frequency as proxies for the sophistication of forecasting for a particular quarter and particular firm.

TABLE 10 ABOUT HERE

Table 10 shows that negativity above the level justified by the previous performance is positively correlated with both forecast error and absolute forecast error. Positive errors (expectations are above actual earnings) become larger and possibly more frequent when managers are excessively negative. This happens when analysts overestimate future earnings. Thus, analysts do not sufficiently incorporate managers' excessive negativity into their forecasts.

With a higher revision frequency and a more poorly performing market, the absolute errors go up, as do the forecast errors. Positive negativity residuals (excessive negativity) remain significant in the model with controls.

Interestingly, excessively positive managers (for whom the residual is negative) appear to induce analysts to make excessively optimistic forecasts.

For a better understanding of what happens with forecast errors at different levels of negativity, we provide Table 11.

TABLE 11 ABOUT HERE

Generally, analysts' errors are biased toward the negative — actual earnings exceed analysts' forecasts: only about a third of forecast errors are positive. Negative errors tend to be smaller than positive errors in absolute value, which is consistent with the concept of companies taking a "big bath" when not able to meet or beat analysts' expectations.¹⁵

We see from our sample that when managers are excessively negative about the future, the share of cases with positive forecast errors rises.

Negative forecast errors increase in absolute value with the increase of negativity residuals. This means that when firms are beating forecasts despite excessive negativity, they are beating them by larger amounts. Therefore, analysts may incorporate some of the information contained in the speech negativity into the analysis. However, the mean of positive errors increases at a much larger rate, and the frequency of positive errors rises with an increase in excessive negativity. Analysts' forecasts happen to be overly-optimistic, despite the managers' expressions of excessively negative attitudes.

5.3 Summary

In sum, we fail to reject the Information Leakage hypothesis, and we reject the Wise Forecasts hypothesis. Thus, we arrive at the conclusion that negativity above the benchmark contains valuable information about the next-quarter earnings and can serve to adjust analysts' forecasts.

¹⁵ Previous literature has shown that managers benefit from reporting earnings that are higher than the analysts' forecasts (Bartov, et al., 2002; Kasznik and McNichols, 2002; Brown and Caylor, 2005; Matsumoto, 2002). As a consequence, managers can manage earnings (Degeorge, et al., 1999) or incentivize analysts to issue lower forecasts (Ke and Yu, 2006; Hong and Kubik, 2003).

6 Predictive power of textual analysis: Forecasting bankruptcy

In our final empirical analysis, we consider the extreme event of bankruptcy. The use of accounting information to predict bankruptcy or financial distress was pioneered by Beaver (1966, 1968) and Altman (1968). First to add qualitative information to the bankruptcy prediction models, Tennyson, Ingram and Dugan (1990) analyzed two kinds of managers' narrative disclosures: President's Letter and Management's Discussion and Analysis of Results. They find that for the Management Analysis the quantity of words focused on the firm growth and expansion is negatively correlated with the likelihood of bankruptcy. For the Presidents' Letter the increase in use of the words focused on specific internal problems is associated with a higher likelihood of bankruptcy.

The aim of our research is to continue the investigation on how textual analysis can help in forecasting financial distress. The financial crisis of 2007-2009 has led to a large number of bankruptcy filings. We use these cases as a natural experiment to study the "language" of bankruptcy.

Section 6.1 deals with the hypothesis that managerial tone reflects approaching bankruptcy. Section 6.2 tests the hypothesis that, paying attention to managerial tone and paltering can help improve upon bankruptcy prediction models that exclusively rely on financial inputs.

6.1 The bankrupts' changing tone hypothesis

We first consider the *BANKRUPTS' CHANGING TONE hypothesis: A systematic difference exists between the negativity of the speech of firms approaching bankruptcy and firms that are not.*

To test this hypothesis, we use the list of bankrupts with assets of over 100 million dollars

from the Chapter 11 Library. Despite the length of the list of bankrupts, only a few of the companies have their conference call transcripts in the StreetEvents database. After we exclude companies for which the data are unavailable in any of our 3 data sources (StreetEvents, CRSP, I/B/E/S), 50 bankrupt companies remain in the sample. For the bankrupt companies, we define the *Distance* variable, measuring the distance from an earnings announcement to the bankruptcy in quarters. *Distance* is equal to 1 for the last earnings announcement before filing for Chapter 11. We examine up to 6 quarters prior to the bankruptcy.

We begin by plotting, in Figure 1, the changes of managers' tone in the time.

FIGURE 1 ABOUT HERE

We see that negativity, as well as the frequency of the negative words have tendency to rise with the bankruptcy approaching. This behavior is more pronounced for the prepared speeches than for improvised answers to analysts' questions. In plots not shown, the frequency of positive words in presentations increases up to three quarters before the bankruptcy, but then falls, while in answers it changes smoothly fairly smoothly and drops in the last earnings-announcement-conference-call before the bankruptcy. Apparently, managers believe that three to four quarters before the bankruptcy the eloquence of the managers still can persuade the public that the company is solvent and has some perspectives. However, subject to litigation risks, managers mostly keep the excessive positivism in the prepared speech in the well proof-read sentences. Negativity becomes alarming half a year before bankruptcy.¹⁶

¹⁶ These graphs do not account for the general mood in the economy during a specific time period. This might create a bias: most bankruptcy cases happen in times of trouble when the overall economy does poorly and the degree of negativity in anyone's speech is higher. To avoid this bias, we compute the

We test now the bankrupts' changing tone hypothesis more formally. To do so, we randomly select 100 non-bankrupt companies from the S&P 500 (2007) list and add them to the sample, matching on industry. Table 12 presents the coefficients of panel regressions, testing how the distance to the bankruptcy impacts managers' tone. Baseline observations are observations for non-bankrupt companies and observations preceding a bankruptcy by more than 6 quarters. In one model, we consider negativity, in the other excess negativity.

TABLE 12 ABOUT HERE

In both models, the coefficients are statistically significant on the dummies for distances of 1, 2, and 3 quarters before the bankruptcy. Interestingly, the coefficients on the dummies are largest two quarters before the bankruptcy. When using frequencies, the dummies for distances of 3 and, in some specifications 4 quarters before bankruptcy also become significant (not shown).

6.2 *The bankruptcy predictability hypothesis*

Our second hypothesis in this context is the *BANKRUPTCY PREDICTABILITY hypothesis: Managerial word choice contains information useful for classifying firms ex-ante into bankrupt and non-bankrupt groups when considered in addition to accounting ratios.*

To test this hypothesis we develop a classificatory model using a logistic regression. The dependent variable is a *Bankruptcy* dummy equal to 1 if the firm is going to file for Chapter 11. The baseline is provided by a model which utilizes as explanatory variables the same financial ratios used by Altman (1968) in his seminal work:

abnormal negativity as the difference between the managers' negativity and the average negativity for all firms in the sample in the same quarter. The picture looks similar.

- Liquidity ratio (LR) = working capital divided by total assets;
- Cumulative profitability ratio (CPR)= retained earnings divided by total assets;
- Return on assets (ROA) = earnings before interest and taxes divided by total assets;
- Solvency ratio (SR) = market value of equity divided by the book value of total debt;
- Capital-turnover ratio (CTR) = sales divided by total assets.

We expand upon this baseline model using measures of tone and evasiveness concurrently with accounting ratios. Table 13 describes the classification success for both models. (In this table, the textual analysis explanatory variables are negativity residuals and quantity of uncertain words, but similar results hold with other elements of tone and paltering). The percentages of correct classifications and pseudo-R2 presented are the average values of ten independent trials with randomly selected non-bankrupt observations.

TABLE 13 ABOUT HERE

We find that incorporating tone and evasiveness of speech substantially improves the quality of the predictions. The full model's classification accuracy is higher by about 15% than the model based on accounting ratios only. Untabulated results also show that the combined model also has a classification accuracy higher than or at least as high as the financial ratio model alone for any of 6 quarters preceding the bankruptcy. We observe the largest superiority of the combined model in the period around of one year or three quarters before the bankruptcy.

In sum, we find that textual analysis appears to contain useful information in addition to financial data for bankruptcy forecasting.

7 Additional results and robustness tests

7.1 Loughran and McDonald (2011) – the FinList

We have repeated each analysis using the extensive classification lists suggested by Loughran and McDonald (2011) – the *FinList*. This analysis checks whether our results are robust and also investigates if they are driven by the most frequently used words or by the words rarely used. Untabulated results show that the results do not depend on the choice of word classification list.

7.2 Earnings surprise

Rather than using the earnings surprise decile, we can also use the actual earnings surprise, scaled by the stock price. We obtain very similar results.

7.3 Length of speech

When recent performance has been good, managers tend to talk less. Controlling for the length of presentations or answers does not affect any of the results in the paper.

7.4 Out-of-sample predictability of earnings

We have estimated expected negativity separately for each firm using the firm's past information only. In this case, we predict earnings for 2006 going forward (because we need a sufficiently large number of quarters to estimate normal negativity). The results we obtain are economically and statistically similar to those in Tables 9 and 10.

7.5 Other functional forms

Because some dependent variables are skewed, we have used log transformations; similarly, we have used higher-order terms for the relevant explanatory variables. No additional insights could be gleaned from this expanded analysis.

7.6 Two-way clustering in standard errors

In addition to clustering standard errors on the firm level (as in the main analysis), we have also

clustered standard errors on time. The results remain unchanged. This suggests that “firm effects” (Petersen 2009) are not important in this analysis.

8 Conclusion

We apply textual analysis techniques to the earnings announcements transcripts with the aim of investigating whether internal information about a company’s future may leak through the managers’ choice of words.

Our first significant finding is that the most important factor determining managers’ tone on the earnings-announcement conference call is the difference between the analysts’ expectations and the actual earnings. The change in earnings during the quarter and the stock returns influence the frequency of negative words used by the managers.

Second, we find that *Negativity Residuals* — excessive negativity, which cannot be explained by past performance — are negatively correlated with future earnings. This finding suggests that, by using a proportion of positive and negative wordings, managers shed light on their company’s prospects. Analysts fail to incorporate the managers’ tone into their forecasts: Excessive negativity is associated with a wider gap between actual results and analysts’ expectations, which would not be the case of analyst forecasts reflected the information in abnormal managerial tone.

We also document that higher negativity is associated with larger uncertainty, as reflected in the higher frequency of forecast revisions, larger variance in forecasts, and slower analysts’ reactions to the earnings announcements. Though textual analysis does not provide better forecasts than those of financial analysts, it helps to form more justified expectations by adjusting the analysts’ forecasts.

We analyze several measures of evasive activities which can be undertaken by managers. We find that the intensity of evasive behavior is positively correlated with the negativity of the managers' speech and with poor economic results. When answering analysts' questions, managers change the time references more often when they have to report poor results and when the analysts' questions become more aggressive.

Finally, we study how the managers' speech changes as a bankruptcy approaches. We find that significant changes in negativity occur up to 4 quarters before the bankruptcy. When the tone of managers becomes significantly more negative than that of their peers and is not justified by their company's recent performance, bankruptcy can be expected. Adding textual analysis measures of tone and evasive behavior to classical bankruptcy prediction model of Altman (1968) we significantly improve our classification abilities.

Summarizing, our results suggest that textual analysis can contribute to the ability to predict not only market returns, but also physical company performance.

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Table 1: Word classification by groups

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 of uncertainty. The words in the table appear in the frequency of their use, within their categories.

<u>Positive</u>		<u>Negative</u>		<u>Uncertain</u>	
Growth	improvements	Decline	volatility	Think	reasonable
good	confident	risks	weakness	may	plans
strong	successful	risk	problem	expect	efforts
opportunities	stronger	loss	lost	anticipate	preliminary
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

Table 2: Descriptive Statistics

This table shows descriptive statistics. *Stock return* is the capital gain obtained in the elapsed quarter. *Change in earnings* is the earnings at quarter t , minus the earnings in quarter $t-1$, scaled by the stock price 5 days before the earnings announcement. *Earnings surprise* is the difference between actual and consensus forecast earnings. For the main analysis, we scale the earnings surprise by the share price 5 days before the earnings announcement and sort companies into *earnings surprise deciles*. *Forecast Error* is the difference between the consensus forecast (the average of all forecasts for quarter t outstanding 3 days after the earnings announcement) and the actual earnings, scaled by the share price to ensure comparability of errors for different quarters and firms. *Revision frequency* is the number of revisions, scaled by the number of analysts. *Forecast variance* is the variance of analysts' forecasts outstanding at the end of the following quarter. *Immediate reactions* is the share of analysts covering the firm who react within one working day after the earnings announcement. *Words* are all words in the presentation, questions, and answers parts of the conference call, respectively. We code negative, positive, and uncertain words according to the procedure described in Section 2.2.1. *Negativity Residual, Presentations* is the residual of regression (3) in Table 3. *Negativity Residual, Answers* is the residual of regression (8) in Table 3. We code tense use as described in Section 2.2.2.

Company performance and other characteristics

	Obs	Mean	Std. Dev.	Min	Max
Stock return in previous quarter	8347	0.04	0.39	-0.48	2.97
Change in earnings from previous quarter, scaled by share price 5 days ago	8629	-0.01	0.37	-27.20	2.32
Positive earnings surprise, unscaled	6082	0.06	0.13	0.00	2.82
Negative earnings surprise, unscaled	2518	-0.29	5.62	-274.34	0.00
Earnings surprise, scaled by share price 5 days ago	8674	-0.01	0.41	-27.45	0.32
Forecast error in % of share price one quarter ago	7690	0.05	0.94	-6.29	6.29
Revision frequency	7802	0.42	0.42	0.00	3.38
Forecast variance	7668	0.04	1.06	0.00	73.94
Immediate reactions	7802	0.49	0.28	0.00	1.00

Speech length

	Obs	Mean	Std. Dev.	Min	Max
Words Presentations	8737	3952.05	1671.20	5	18094
Words Answers	8737	3985.91	1558.41	22	21371
Phrases Presentations	8737	170.19	73.61	1	819
Phrases Answers	8737	179.48	71.83	2	958

[continued on next page]

Table 2: Descriptive Statistics [continued]

<u>Tone</u>	Obs	Mean	Std. Dev.	Min	Max
Negative Words in Presentations	8737	17.62	14.10	0	170
Negative Words in Answers	8737	9.01	7.05	0	150
Negative Words in Analysts' Questions	8737	4.08	3.93	0	101
Positive Words in Presentations	8737	56.95	34.39	0	296
Positive Words in Answers	8737	36.38	20.02	0	191
Positive Words in Analysts' Questions	8737	11.54	8.08	0	213
% Negative Words in Presentations	8737	0.45	0.30	0	5.00
% Negative Words in Answers	8737	0.23	0.15	0	2.05
% Positive Words in Presentations	8737	1.43	0.63	0	4.63
% Positive Words in Answers	8737	0.91	0.38	0	2.85
Negativity (Negative/Positive Words) in Presentations	8702	0.41	0.44	0	8.00
Negativity (Negative/Positive Words) in Answers	8691	0.31	0.37	0	12.50
Negativity (Negative/Positive Words) in Analysts' Questions	8121	0.47	0.61	0	9.00
Negativity Residual, Presentations	7962	0.00	0.44	-0.93	7.46
Absolute Negativity Residual, Presentations	7962	0.28	0.34	0.00	7.46
Negativity Residual, Answers	7949	0.00	0.36	-0.64	11.85
Absolute Negativity Residual, Answers	7949	0.19	0.31	0.00	11.85

[continued on next page]

Table 2: Descriptive Statistics [continued]

<u>Paltering</u>	Obs	Mean	Std. Dev.	Min	Max
% Uncertain Words in Presentations	8737	0.98	0.34	0.00	3.70
% Uncertain Words in Answers	8737	1.53	0.44	0.00	6.23
Difference in negativity of presentation and answers	8681	0.09	0.46	-10.96	8.00
Absolute difference in negativity of presentation and answers	8681	0.25	0.39	0.00	10.96
% Past Tense Verbs in Presentations	8736	54.41	9.57	0.00	100.00
% Present Tense Verbs in Presentations	8736	10.69	4.08	0.00	57.14
% Future Tense Verbs in Presentations	8736	34.90	7.59	0.00	81.82
% Past Tense Verbs in Answers	8737	29.96	6.53	0.00	100.00
% Present Tense Verbs in Answers	8737	14.19	4.57	0.00	66.67
% Future Tense Verbs in Answers	8737	55.85	6.55	0.00	100.00
% Past Tense Verbs in Questions	8219	35.95	8.39	0.00	100.00
% Present Tense Verbs in Questions	8219	10.91	4.95	0.00	50.00
% Future Tense Verbs in Questions	8219	53.14	8.21	0.00	100.00
Share of past-oriented questions that get answers oriented toward present or future	8204	0.43	0.20	0.00	1.00
Share of present- or future-oriented questions that get answers oriented toward past	8211	0.11	0.07	0.00	1.00

Table 3: Negativity in the tone of conference calls

This table presents panel regressions. The dependent variable is *Negativity* in presentations (columns 1-3), in answers (columns 5-9), and in analysts' questions (columns 10-12). Negativity is the ratio of negative to positive words. The other variables are defined in the notes to Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Negativity in presentations			Negativity in answers					Negativity in questions		
Stock return in previous quarter	-0.034*** (-5.27)	-0.044*** (-6.30)	-0.037*** (-5.14)	0.024*** (3.47)	-0.029*** (-4.20)	-0.020*** (-2.86)	-0.011 (-1.59)	-0.012* (-1.80)	-0.055*** (-3.97)	-0.039*** (-2.92)	-0.030** (-2.22)
Change in earnings from previous quarter scaled by share price 5 days ago	-0.045 (-1.55)	-0.455*** (-3.45)	-0.438*** (-3.48)	-0.014 (-0.81)	-0.267*** (-4.37)	-0.191*** (-3.43)	-0.100 (-1.64)	-0.107* (-1.74)	-0.461*** (-2.80)	-0.293* (-1.92)	-0.274* (-1.87)
Earnings surprise decile	-0.026*** (-11.22)	-0.030*** (-12.34)	-0.029*** (-11.89)	0.013*** (7.79)	-0.015*** (-8.14)	-0.010*** (-5.88)	-0.004*** (-2.99)	-0.005*** (-3.16)	0.032*** (10.78)	-0.021*** (-7.48)	-0.022*** (-7.22)
Market return in previous quarter		-0.550*** (-9.20)	-0.495*** (-8.51)		-0.342*** (-7.94)	-0.250*** (-5.87)	-0.136*** (-3.41)	-0.153*** (-3.91)	-0.625*** (-7.65)	-0.393*** (-5.21)	-0.395*** (-5.26)
Negativity (Negative/Positive words) in Analysts' Questions						0.181*** (12.32)	0.152*** (10.91)	0.138*** (9.91)			
Negativity (Negative/Positive words) in Presentations							0.222*** (8.46)	0.197*** (7.40)		0.371*** (9.27)	0.333*** (8.02)
Ln(firm value)	-0.021 (-1.36)	-0.034** (-2.45)	-0.165*** (-6.43)	0.023*** (2.63)	0.016* (1.84)	0.012* (1.84)	0.013** (2.31)	-0.003 (-0.20)	0.045*** (3.33)	0.046*** (4.30)	-0.004 (-0.14)
Constant	1.042*** (6.65)	0.787*** (5.74)	2.086*** (8.11)	0.313*** (3.40)	0.181** (2.24)	0.118* (1.82)	0.028 (0.50)	0.201 (1.31)	0.064 (0.48)	-0.106 (-0.99)	0.409 (1.32)
Observations	8,118	7,956	7,956	8,105	7,943	7,494	7,491	7,491	7,512	7,496	7,496
R-squared	0.13	0.07	0.12	0.07	0.04	0.16	0.22	0.22	0.06	0.13	0.12
Quarter fixed effects	Yes	No	No	Yes	No	No	No	No	No	No	No
Firm fixed effects			Yes					Yes			Yes

Table 4: 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 Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)
	Presentation	Presentation	Answers	Answers	Questions	Questions
	negative	positive	negative	positive	negative	positive
	frequency	frequency	frequency	frequency	frequency	frequency
Stock return in previous quarter	-0.028*** (-5.49)	0.030*** (3.10)	-0.012*** (-3.62)	0.016** (2.16)	-0.014*** (-2.91)	0.016* (1.67)
Change in earnings from previous quarter	-0.132* (-1.83)	0.137* (1.89)	-0.017 (-0.74)	0.097** (2.54)	-0.043* (-1.80)	0.049 (1.64)
Earnings surprise decile this quarter	-0.017*** (-13.52)	0.024*** (14.02)	-0.004*** (-7.45)	0.013*** (10.26)	-0.008*** (-10.53)	0.014*** (11.39)
Market return in previous quarter	-0.397*** (-11.20)	0.134** (2.08)	-0.152*** (-8.51)	0.134*** (3.30)	-0.219*** (-8.91)	0.157*** (3.69)
Ln(firm value)	-0.116*** (-6.52)	0.222*** (7.59)	-0.021*** (-2.67)	0.097*** (5.03)	-0.011 (-1.03)	0.078*** (4.48)
Constant	1.630*** (9.11)	-0.811*** (-2.76)	0.437*** (5.65)	-0.071 (-0.37)	0.364*** (3.47)	-0.078 (-0.45)
Observations	7,975	7,975	7,975	7,975	7,596	7,596
R-squared	0.17	0.05	0.04	0.03	0.08	0.02
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: Paltering in conference calls, part 1: Consistency in tone

This table presents panel regressions. The dependent variable is the difference in managerial tone between presentations and answers. Columns 1-2 use the difference, Columns 3-4 use the absolute difference. The other variables are defined in the notes to Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)
	Difference in tone between presentations and answers		Absolute difference in tone	
Stock return in previous quarter	-0.019** (-2.00)	-0.011 (-1.18)	-0.021*** (-2.88)	-0.016** (-2.12)
Change in earnings from previous quarter, scaled by share price 5 days ago	-0.208 (-1.47)	-0.192 (-1.41)	-0.281** (-2.15)	-0.275** (-2.18)
Earnings surprise decile this quarter	-0.016*** (-6.74)	-0.016*** (-6.43)	-0.015*** (-6.75)	-0.015*** (-6.41)
Market return in previous quarter	-0.256*** (-4.03)	-0.230*** (-3.67)	-0.213*** (-3.85)	-0.199*** (-3.64)
Negativity in Analysts' Questions	-0.041*** (-2.60)	-0.046*** (-2.95)	0.084*** (6.67)	0.070*** (5.47)
Ln(firm value)	-0.021** (-2.03)	-0.122*** (-4.91)	-0.005 (-0.55)	-0.101*** (-4.39)
Constant	0.337*** (3.24)	1.351*** (5.39)	0.264*** (3.21)	1.236*** (5.33)
Observations	7,491	7,491	7,491	7,491
R-squared	0.02	0.03	0.06	0.05
Firm fixed effects		Yes		Yes

Table 6: Paltering in conference calls, part 2: Tense use

This table presents panel regressions. The dependent variable is the percentage of verbs in the stated tense in presentations and answers, respectively. The other variables are defined in the notes to Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)
	Presentations: Percentage of verbs in...			Answers: Percentage of verbs in...		
	Past tense	Present tense	Future tense	Past tense	Present tense	Future tense
Stock return in previous quarter	0.014 (0.06)	-0.135 (-0.77)	0.121 (1.17)	0.131 (0.84)	-0.051 (-0.34)	-0.079 (-0.66)
Change in earnings from previous quarter, scaled by share price 5 days ago	2.120** (2.34)	-1.753** (-1.99)	-0.367 (-1.12)	-1.756 (-1.28)	0.845 (0.68)	0.911* (1.70)
Earnings surprise decile this quarter	0.098*** (3.39)	-0.042* (-1.80)	-0.056*** (-4.27)	-0.020 (-0.87)	0.071*** (3.12)	-0.050*** (-2.83)
Market return in previous quarter	2.063** (2.22)	-2.159*** (-2.91)	0.096 (0.20)	1.030 (1.31)	0.041 (0.06)	-1.072* (-1.87)
Negativity in Presentations	1.221*** (3.18)	-1.324*** (-4.30)	0.103 (0.77)	0.349 (1.33)	-0.385* (-1.67)	0.036 (0.21)
Negativity in Analysts' Questions				0.595*** (4.36)	-0.619*** (-5.32)	0.024 (0.27)
Ln(firm value)	1.508*** (2.84)	-1.130*** (-2.71)	-0.379 (-1.63)	-0.170 (-0.50)	-0.298 (-0.94)	0.469* (1.80)
Constant	38.875*** (7.26)	46.674*** (11.10)	14.451*** (6.20)	31.316*** (9.04)	59.096*** (18.43)	9.588*** (3.65)
Observations	7,958	7,958	7,958	7,958	7,958	7,958
R-squared	0.05	0.06	0.02	0.01	0.02	0.02
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 7: Paltering in conference calls, part 3: Tense switches

This table presents panel regressions. The dependent variable in columns (1) and (2) is the share of present- or future-oriented questions of analysts that get answers oriented toward the past. The dependent variable in columns (3) and (4) is the share of past-oriented questions of analysts that get answers oriented toward the present or future. The other variables are defined in the notes to Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)
	From present/future to past		From past to present/future	
Stock return in previous quarter	0.415** (2.27)	0.281 (1.52)	0.386 (0.78)	-0.017 (-0.03)
Change in earnings from previous quarter, scaled by share price 5 days ago	0.600 (0.78)	0.750 (1.35)	-0.142 (-0.09)	-0.126 (-0.08)
Earnings surprise decile this quarter	-0.021 (-0.78)	-0.028 (-1.03)	0.075 (0.99)	0.051 (0.66)
Market return in previous quarter		2.521*** (2.99)		8.510*** (3.55)
Negativity in Presentations	-0.027 (-0.19)	0.011 (0.07)	-2.012*** (-5.45)	-1.882*** (-5.01)
Negativity in Analysts' Questions	-0.397*** (-2.92)	-0.414*** (-3.05)	-1.280*** (-3.40)	-1.416*** (-3.74)
Ln(firm value)	0.080 (0.25)	0.033 (0.10)	-0.060 (-0.07)	-0.651 (-0.71)
Constant	10.463*** (3.21)	10.929*** (3.34)	45.009*** (4.94)	50.896*** (5.51)
Observations	7,652	7,492	7,653	7,493
R-squared	0.01	0.01	0.02	0.03
Firm fixed effects	Yes	Yes	Yes	Yes

Table 8: Tone, paltering, and market efficiency

This table presents panel regressions. The dependent variables are as follows: Revision frequency is the number of revisions, scaled by the number of analysts. Forecast variance is the variance of analysts' forecasts outstanding at the end of the following quarter. Immediate reactions is the share of analysts covering the firm who react within one working day after the earnings announcement. The dependent variable in columns (3) and (4) is the share of past-oriented questions of analysts that get answers oriented toward the present or future. The other variables are defined in the notes to Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Revision frequency		Forecast variance		Immediate reactions				
Negativity (Negative/Positive words) in Presentations	0.038**		0.062***	0.059*		0.065	-0.024**		-0.034***
	(2.15)		(3.03)	(1.83)		(0.76)	(-2.44)		(-2.68)
Negativity (Negative/Positive words) in Answers	0.069***		0.085***	0.009		0.014	-0.035***		-0.042***
	(3.43)		(4.71)	(0.19)		(0.17)	(-3.65)		(-4.09)
Absolute difference in negativity of presentation and answer		0.032*	-0.047**		0.029**	-0.020		-0.022**	0.019
		(1.96)	(-2.19)		(2.23)	(-0.23)		(-2.53)	(1.51)
% Past Tense Words Presentation		-0.004***	-0.004***		-0.004	-0.004		0.002***	0.002**
		(-3.38)	(-3.20)		(-1.14)	(-1.02)		(2.68)	(2.55)
% Present Tense Words Presentation		-0.006***	-0.006***		-0.007	-0.007		0.003***	0.003**
		(-4.11)	(-3.94)		(-1.16)	(-1.05)		(2.64)	(2.49)
% Present Tense Words Answers		0.000	0.000		-0.002	-0.002		0.000	-0.000
		(0.00)	(0.47)		(-1.28)	(-0.91)		(0.12)	(-0.18)
% Future Tense Words Answers		-0.000	0.000		-0.003	-0.002		0.000	-0.000
		(-0.45)	(0.09)		(-1.37)	(-1.02)		(0.25)	(-0.12)
Market return in previous quarter	-0.544***	-0.567***	-0.552***	0.042	0.022	0.030	0.197***	0.208***	0.200***
	(-10.87)	(-11.10)	(-10.99)	(0.34)	(0.18)	(0.28)	(6.36)	(6.66)	(6.43)
Ln(firm value)	0.038**	0.030	0.038**	0.029**	0.021*	0.029*	0.025**	0.029**	0.025**
	(2.02)	(1.62)	(2.02)	(2.09)	(1.67)	(1.94)	(2.00)	(2.32)	(1.98)
Constant	0.007	0.574**	0.413*	-0.286*	0.436	0.343	0.259**	-0.037	0.048
	(0.04)	(2.51)	(1.79)	(-1.86)	(0.90)	(0.51)	(2.02)	(-0.23)	(0.30)
Observations	7,401	7,401	7,401	7,276	7,276	7,276	7,401	7,401	7,401
R-squared	0.054	0.0578	0.057	0.00183	0.00150	0.00199	0.019	0.00839	0.020
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 9: Predicting earnings with textual analysis

This table presents panel regressions. The dependent variable is earnings in the next quarter. *Negativity Residual, Presentations* is the residual of regression (3) in Table 3. *Negativity Residual, Answers* is the residual of regression (8) in Table 3. $1_{\{Residual>0\}}$ 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 Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)	(5)	(6)
Current earnings	0.456*** (3.93)	0.433*** (3.79)			0.169 (1.47)	0.149 (1.37)
Earnings previous quarter	0.177 (1.59)	0.173 (1.56)			0.145 (1.34)	0.142 (1.31)
Earnings surprise decile	0.011** (2.41)	0.012** (2.59)			0.016*** (4.01)	0.017*** (4.02)
Market return in previous quarter	0.366*** (3.31)	0.363*** (3.37)			0.533*** (4.93)	0.518*** (4.95)
Absolute Negativity Residual * $1_{\{Residual>0\}}$, Presentations		-0.152*** (-3.28)		-0.204*** (-3.48)		-0.145*** (-3.31)
Absolute Negativity Residual * $1_{\{Residual<0\}}$, Presentations		-0.102 (-1.60)		0.129** (2.00)		-0.023 (-0.40)
Absolute Negativity Residual * $1_{\{Residual>0\}}$, Answers		-0.121* (-1.82)		-0.181** (-2.23)		-0.132* (-1.95)
Absolute Negativity Residual * $1_{\{Residual<0\}}$, Answers		-0.043 (-0.58)		0.102 (1.30)		-0.062 (-0.89)
Average forecast			0.847*** (7.11)	0.829*** (7.00)	0.673*** (6.06)	0.671*** (6.09)
Ln(firm value)	0.117*** (2.61)	0.125*** (2.84)	0.050 (0.94)	0.036 (0.69)	-0.049 (-0.95)	-0.045 (-0.88)
Constant	-0.988** (-2.41)	-1.039** (-2.57)	-0.431 (-0.89)	-0.210 (-0.44)	0.461 (0.99)	0.449 (0.99)
Observations	7,126	7,126	7,126	7,126	7,126	7,126
R-squared	0.365	0.372	0.415	0.427	0.453	0.460
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 10: Forecast errors and excessive negativity

This table presents panel regressions. The dependent variable in columns (1) and (2) is the forecast error; columns (3) and (4) use the absolute forecast error. *Negativity Residual, Presentations* is the residual of regression (3) in Table 3. *Negativity Residual, Answers* is the residual of regression (8) in Table 3. $1_{\{Residual>0\}}$ 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 Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)	(3)	(4)
	Absolute Forecast Error		Forecast Error	
Absolute Negativity Residual * $1_{\{Residual>0\}}$, Presentations	0.206*** (2.88)	0.243*** (2.98)	0.252*** (3.01)	0.232*** (2.80)
Absolute Negativity Residual * $1_{\{Residual<0\}}$, Presentations	0.019 (0.20)	0.051 (0.63)	0.163 (1.56)	0.205** (2.26)
Absolute Negativity Residual * $1_{\{Residual>0\}}$, Answers	0.181** (2.48)	0.203*** (2.75)	0.306*** (3.69)	0.301*** (3.40)
Absolute Negativity Residual * $1_{\{Residual<0\}}$, Answers	0.040 (0.38)	0.134 (1.49)	0.178 (1.44)	0.254** (2.43)
Market return in previous quarter		-0.437*** (-4.02)		-0.560*** (-4.09)
Number of forecast revisions in the quarter		0.353*** (6.60)		0.391*** (6.89)
Ln(firm value)	-0.122* (-1.73)	-0.125** (-2.52)	0.020 (0.25)	-0.047 (-0.90)
Constant	1.495** (2.14)	1.318*** (2.62)	-0.235 (-0.31)	0.197 (0.37)
Observations	7,126	6,603	7,126	6,603
R-squared	0.058	0.0912	0.0465	0.0481
Firm fixed effects	Yes	Yes	Yes	Yes

Table 11: Mean forecast errors classified by the size of negativity residuals

This table presents mean analyst forecast errors for six groups of companies. We create three groups for positive negativity residuals and three groups for negative negativity residuals. We use residuals from the presentations regressions.

		Negativity residuals		FE	Abs. (FE)	Pos. FE	Neg. FE	% pos. FE	Revision frequency	N
		Min	Max	Mean	Mean	Mean	Mean		Mean	
Negative	1	-0.916	-0.282	0.078	0.307	0.590	-0.216	32.2%	0.343	1496
	2	-0.282	-0.146	0.045	0.294	0.531	-0.207	31.7%	0.392	1515
	3	-0.146	0.000	-0.011	0.304	0.459	-0.271	32.6%	0.426	1440
Positive	4	0.000	0.127	-0.077	0.288	0.402	-0.287	27.8%	0.424	932
	5	0.127	0.346	0.130	0.396	0.801	-0.275	33.4%	0.463	903
	6	0.346	7.457	0.878	0.740	2.757	-0.595	36.7%	0.589	851
All		-0.916	7.457	0.134	0.364	0.873	-0.283	32.3%	0.427	7137

Table 12: Approaching bankruptcy and managerial tone

This table presents panel regressions. The dependent variable in column (1) is negativity in presentations. In column (2) it is the negativity residual, presentations, which is the residual of regression (3) in Table 3. The distance variables are binary indicators equal to 1 when the company is the stated number of quarters away from bankruptcy. The other variables are defined in the notes to Table 1 and in the text. T-statistics are shown in parentheses. The underlying standard errors are clustered on the company level and are robust to heteroskedasticity. *** p<0.01, ** p<0.05, * p<0.1.

	(1) Negativity	(2) Negativity Residuals
Stock return in previous quarter	-0.009 (-0.70)	
Change in earnings from previous quarter, scaled by share price 5 days ago	-1.436*** (-6.70)	
Earnings surprise decile	-0.036*** (-13.97)	
Market return in previous quarter	-0.827*** (-9.97)	
Distance = 1 quarter	0.591*** (4.41)	0.538*** (4.10)
Distance = 2 quarters	0.659*** (4.98)	0.653*** (4.94)
Distance = 3 quarters	0.310** (2.20)	0.050 (0.35)
Distance = 4 quarters	-0.042 (-0.26)	-0.021 (-0.13)
Distance = 5 quarters	-0.227 (-1.51)	-0.233 (-1.55)
Distance = 6 quarters	0.013 (0.08)	0.015 (0.10)
Constant	0.445*** (19.93)	-0.028 (-1.26)
Observations	2,552	2,552
R-squared	0.14	0.19

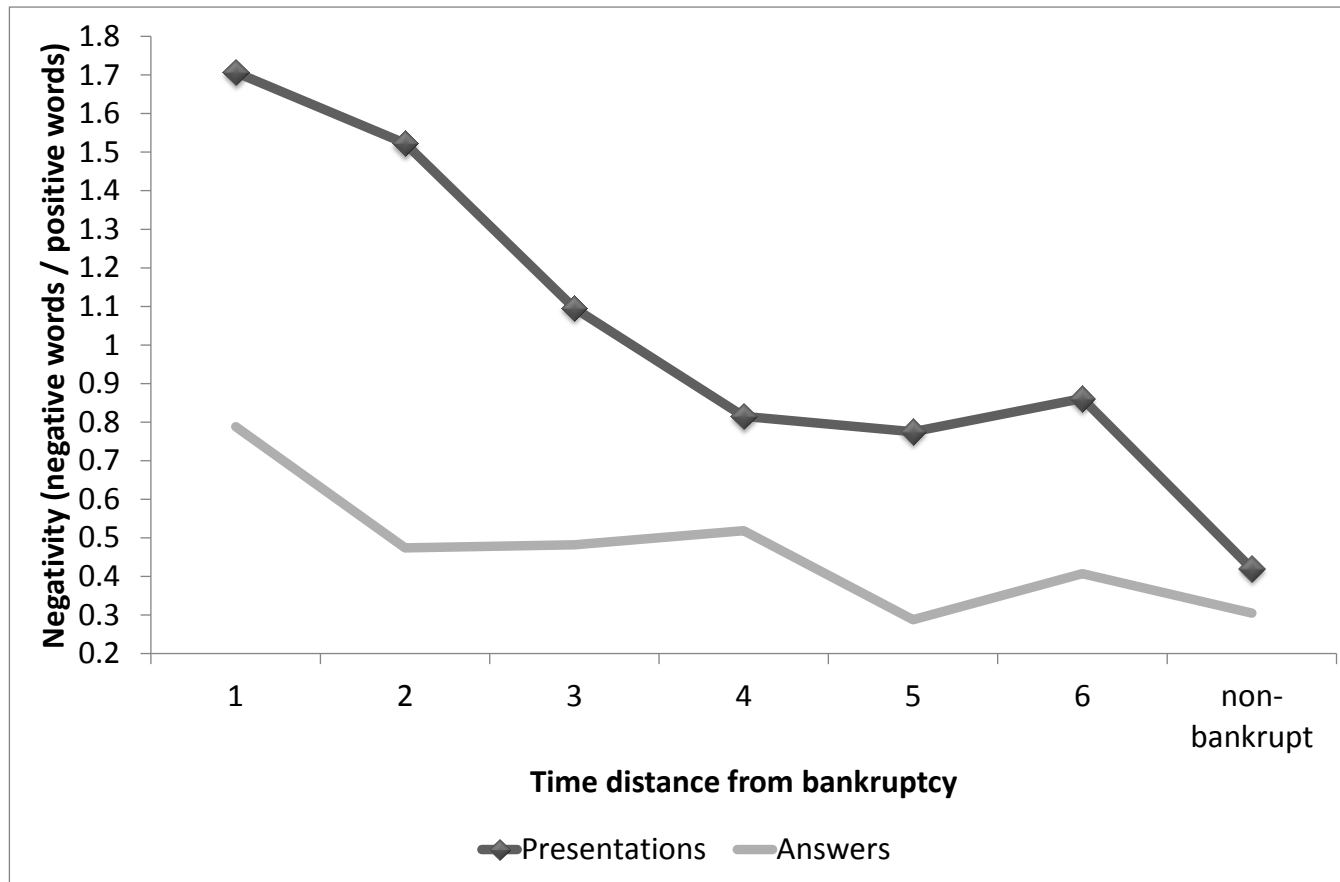
Table 13: Predicting bankruptcy with logistic regressions

This table compares the classification accuracies achieved with three bankruptcy prediction models. Model (1) uses accounting ratios only. Model (2) adds negativity residuals in presentations. Model (3) adds the number of uncertain words in the presentations. We report the respective percentages of correctly specified observations in two categories: bankrupts and non-bankrupts. We also compute a pseudo-R2 to assess the quality of the models.

Classification accuracy (cut point = 0.5)			
Model	(1)	(2)	(3)
	Accounting ratios	Accounting ratios	Accounting ratios
		Negativity	Negativity
			Paltering
Bankrupts	53.3%	57.4%	61.8%
Non-bankrupts	97.9%	96.7%	96.1%
Pseudo R2	0.42	0.46	0.49

Figure 1: Evolution of the managers' tone before a bankruptcy

This graph plots negativity (the ratio of negative to positive words) in the managers' presentations in conference calls. Distance is the time in quarters away from bankruptcy. The bankruptcy sample includes the 50 largest bankruptcies in 2007 to 2009 for which conference call transcripts and other data are available. The non-bankrupt companies is a random sample of 100 S&P 500 firms matched on industry.



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