In no (un)certain terms: Managerial style in communicating earnings news*

Michał Dzieliński[1], Alexander F. Wagner[2], and Richard J. Zeckhauser[3]

[1]Stockholm University and Swedish House of Finance
[2]University of Zurich, Swiss Finance Institute, CEPR, and ECGI
[3]Harvard University and NBER

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Abstract

Managers display distinctive word choice styles when they conduct earnings conference calls. Some CEOs and CFOs are *straight talkers*. Others, by contrast, are *vague talkers*. Vague talkers routinely use words such as "approximately", "probably", or "maybe". Analysts and the stock market attend to the style of managerial talk. They find earnings news less informative when managers are vague and respond less and more slowly as a result. Overall, quantitative information and straightforward contextual information are complements. Large firms with vague managers receive lower valuations relative to their book value.

Keywords: Communication style, earnings conference calls, straight talk, vagueness, textual analysis, stock analysts, valuation
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*Dzieliński: Stockholm Business School, Stockholm University, Kräftriket 15, 106 97 Stockholm, Sweden. Email: michal.dzielinski@sbs.su.se. Wagner: Swiss Finance Institute – University of Zurich, Department of Banking and Finance, Plattenstrasse 14, CH-8032 Zurich, Switzerland. Email: alexander.wagner@bf.uzh.ch. Zeckhauser: Harvard University - Harvard Kennedy School, 79 JFK Street, Cambridge, MA 02139, USA. Email: richard_zeckhauser@harvard.edu. We thank Snehal Banerjee, Joey Engelberg, Thomas Hellmann, Samuli Knüpfer, Tim Loughran, Marina Niessner, Chris Parsons, Marta Serra-Garcia, Joel Sobel, Jared Stanfield, and Christian Wilk and seminar participants at Aarhus University, Copenhagen Business School, Stockholm School of Economics, Stockholm University, UC San Diego, and the University of Hamburg as well as conference participants at the European Financial Management Association Meetings, the Financial Management Association Asia Meetings, the SFI Gerzensee Research Days, the SFS Cavalcade, the Textual Analysis in Economics and Finance workshop, and the Young Scholars Nordic Finance Workshop for valuable comments. We thank the Swiss Finance Institute and the NCCR FINRISK and the UZH Research Priority Program Finance and Financial Markets for support. We thank Maxim Litvak and Denis Petrov for excellent programming. Ivan Petzev has provided outstanding research assistance. The authors declare that they have no relevant or material financial interests that relate to the research described in this paper.

1 Introduction

Graham and Dodd (1934), pioneers of value investing, introduced the idea that when analyzing the value of a company, investors should pay attention to the hard facts. The hardest of hard in their analysis was the price/earnings ratio. As has been known for at least half a century, investors indeed do pay great attention to earnings announcements (Beaver, 1968). Moreover, CFOs consider earnings to be the most important numbers they communicate externally (Graham, Harvey, and Rajgopal, 2005). Although the disclosure of corporate financials has become fairly standardized, the human factor still plays an important role in interpreting earnings news, as many practitioners emphasize. Survey evidence shows that analysts regard private phone calls with management and the Q&A session of conference calls as particularly important for generating earnings forecasts (Brown, Call, Clement, and Sharp, 2015). Fund managers, interviewed by Barker, Hendry, Roberts, and Sanderson (2012) state that *"building up an understanding of the company"* is one of the main motives for systematic personal interactions with top company executives.

Importantly, different managers employ very different phraseology when communicating with market participants. This paper sheds light on one important aspect of this variation: to what extent managers are vague or straight when discussing earnings information. We hypothesize that clearer, i.e., less vague, communication from managers should facilitate a better understanding of the company by analysts and investors. This in turn should enhance the ability of these participants to interpret newly revealed information, such as earnings, and to incorporate it into forecasts and stock prices. Therefore, we study the use of qualifying and uncertain terms and ask: How, if at all, does the vagueness in managerial communication affect analyst and investor responses to earnings news? Do managers systematically differ in the way in which they employ "vague" vs. "straight-talking" communication patterns, and does the market care?

To answer these questions, we employ information available from earnings conference calls of public US companies from 2003 to 2015. Every quarter managers conduct such calls to discuss recent financial results and the outlook for their company. They begin with a prepared presentation. This is then is followed by a question and answer (Q&A) session with the security analysts attending the call. These calls are routinely led by the company's top executives. CFOs participate actively alongside the CEOs, as CFOs also play an important role transmitting value-relevant information from companies to markets. In particular, markets use the information discussed on the conference call to complement and interpret the hard earnings numbers.

We focus on the use of uncertain words such as "approximately", "probably" or "maybe" (as compiled in the Loughran and McDonald (2011) uncertainty wordlist). Such words introduce vagueness and cloud communication. Hence, the frequency of such words in total words spoken by a manager on a call is our measure of vagueness. The clarity of communication is a potentially important dimension, because it affects the precision of the information conveyed. For each call,

we compute, separately for CEOs and CFOs, the percentage of uncertain words they used in the presentation and the Q&A part of the call. As discussed in Section 2, prior work on disclosure has focused on written communication, highlighting, for example, the important role of readability. Very little evidence is available on the use and role of vagueness, uncertain or qualifying statements, in spoken communication.

Our first basic result is that managers talk more vaguely on an earnings conference call, stock prices react less to an earnings surprise (a deviation of the earnings from the analyst consensus). Interestingly, uncertainty in answers drives this result more than uncertainty in presentations. These results hold controlling for other important determinants of stock price reactions to conference calls, such as linguistic tone, the use of numbers in the call, length of sentences, and whether a firm provides guidance.

The logical next question is why this dampening of market response occurs. Any of three factors could be at play. Vaguer language may reflect: 1. persistent firm characteristics related to its communication culture or indeed its business model, 2. a manager's consistent style, or 3. current conditions. We argue that our analysis offers an important new angle on the market's response to corporate communication, as the conference call setting allows us to separate out company-specific and manager-specific elements of communication. In particular, the presentation part of each call is carefully prepared, often under the auspices of the investor relations department, arguably to be consistent with the communication culture of the firm. The Q&A part of the conference call, while also prepared and rehearsed to the extent possible, features managers speaking comparatively extemporaneously, and at times responding to questions that they did not anticipate.

We can thus simultaneously observe the same person delivering a fully scripted (presentation) and a necessarily somewhat more improvised (Q&A session) message about the same firm, under the same business conditions. We argue that this setting provides a powerful control for both firm culture and time- varying uncertainty in the company's operations. Thus, comparing presentations and answers enables us to extract the personal communication styles of the CEOs and CFOs. We note that for this method to yield insight, we do not need to find that answers are completely ad hoc and freely chosen by the manager. We only need to demonstrate that company culture influences presentations more than answers. We can also benchmark linguistic patterns in the conference call to the earnings press releases (EPR), which are not communicated by specific people and hence are even more likely to reflect firm characteristics.

Thus, we compare the language of the EPR, of the conference call presentation, and the answers on the call, respectively, before and after a change in management. Two findings are noteworthy: First, the language of answers changes much more strongly when the specific person speaking changes than does the language of the presentation, while the language in the earnings press release is hardly affected. Second, tracking the same manager switching from one firm to another, we find the language of answers to be much more consistent between the manager's old

and new firm than the language of the presentation of the EPR. Hence, as long as the person delivering information does not change, linguistic patterns regarding the use of uncertain words are quite stable in the answers, even if this person switches to a different firm. These results clearly point to the existence of personal *style*.

We next decompose the vagueness of each manager when answering analyst questions explicitly into several parts. Specifically, we regress our measure of vagueness on (1) the manager's fixed effect (which thus represents her vagueness style), (2) her own vagueness in the presentation (to control unobservable firm-level factors that influence uncertainty at the time of the call), and (3) other features of manager and analyst speech as well as firm characteristics. Finally, (4) there is also an unexplained residual vagueness in managers answers during each call. Crucially, we find substantial heterogeneity across managers in their style of vagueness.

Since building up an understanding of a company and its managers is a process that requires repeated interactions, we expect the persistent vagueness style to matter most. And that is what we find. By contrast, residual vagueness explains little of the ERC. Interestingly, the effect of the CEO vagueness is substantially stronger in the S&P500 companies than in smaller firms. When CEO vagueness is one standard deviation above the mean, the ERC in a large firm is lower by around one tenth of a standard deviation, a sizable difference. The firm size is even more relevant when it comes to CFOs: CFO vagueness only significantly affects ERCs of S&P500 companies. These results hold also in the sample of firms that experience managerial turnover (which allows us to control for firm fixed effects). For CFOs, we also have enough cases of "movers", that is, managers who switch from being CFO at one firm to being CFO at another firm. Even when restricting attention to this sample of movers, we find that CFO vagueness dampens the earnings response.

Next, we explore the channels through which the ERC effects of vagueness come about, as well as further consequences of vagueness. Three sets of results emerge. First, the market finds earnings announcements of companies run by vague managers to be less informative. This is illustrated, for example, by trading volume during the two days surrounding conference calls. It increases by 55% for calls hosted by highly vague CEOs (in the top decile of the vagueness distribution), compared to an average increase of 64% and 72% for particularly straight-talking CEOs (those in the bottom decile of vagueness). The difference between particularly vague and straight CFOs is also substantial, around 10%.

Second, analysts take longer to adjust to earnings news where managers are vague. Moreover, fewer analysts react within three days of the call. Furthermore, analyst uncertainty, as indicated by the revision frequency of their forecasts after the call until the next call, tends to be exacerbated by managerial vagueness.

Third, large companies with vaguer CEOs and CFOs receive lower valuations relative to their book value. By contrast, in smaller firms, managerial vagueness is not related to valuations after controlling for size and industry. This suggest that as companies grow, clear communication

becomes more important.

Overall, these results show that earnings ("hard information") and straightforward managerial explanations surrounding this information ("soft information") are complements, not substitutes. Specifically, if earnings and contextual language were substitutes, investors would pay more, not less, attention to the quantitative information (such as earnings surprises) when faced with vague managers. We find the opposite: vagueness in the "soft" explanatory component leads to greater discounting of the earnings surprise itself.

The paper proceeds as follows. Section 2 reviews the related literature and highlights where our contributions fit. Section 3 discusses the conference call and other data. Section 4 presents evidence on the economic importance of vagueness for the earnings response and also assesses how to parse the roles of firm characteristics and managerial style in explaining word choice in presentation and Q&A parts of the call. Section 5 explores the relation of managerial vagueness style and analyst and market responses further. Section 6 concludes.

2 Background and literature

Our study lies at the intersection of three literatures. We briefly review each of these literatures below,and highlight the contributions of this paper.

2.1 Research on disclosure and opaqueness

A substantial body of research discusses the effects of disclosure for firm value (see, e.g., Fields, Lys, and Vincent (2001), Healy and Palepu (2001), Botosan (2006), Beyer, Cohen, Lys, and Walther (2010) for reviews). Several papers, most closely related to the present study, have studied the ease with which *written text* in corporate disclosure documents can be processed. For example, Loughran and McDonald (2014) show that firms with less easily readable 10-K documents experience higher stock return volatility, greater analyst dispersion, and larger absolute earnings surprises, and Hwang and Kim (2016) show that closed-end funds whose reports are less readable suffer higher discounts. Other examples linking opaqueness in language to investor reactions and/or firm outcomes include Li (2008), Miller (2010), Lehavy, Li, and Merkeley (2011), Rennekamp (2012), and You and Zhang (2009); see Loughran and McDonald (2016) for a survey. Moreover, in one of the few studies to include uncertainty, Demers and Vega (2011) find that higher linguistic certainty in written earnings announcements implies a stronger immediate response to earnings news and less drift.

Our work differs on three important dimensions from all these studies: 1. Our focus is on spoken words, not on written reports. 2. We study how the vagueness of individual managers matters, rather than overall company documents. 3. We examine to what extent any effects found are due to consistent style vs. time-varying residual vagueness. We highlight the result that the relatively more improvised answers section of the conference call, rather than the

prepared remarks, that helps to explain the market response. Because we can control the vagueness of the presentation, while assessing the impact of the managers answers, we are controlling for other, potentially unobserved and hard-(or impossible)-to-measure factors that are correlated with the firms reporting style on a call.

2.2 Research on earnings conference calls

Early studies of conference calls, such as Frankel, Johnson, and Skinner (1999), focus on market activity around the time of the call to infer that relevant information is in fact being transmitted. Surveyed sell-side analysts report that conference calls provide an important information input Brown, Call, Clement, and Sharp (2015). Textual analysis has spurred attempts to directly analyze the information content of conference calls. The vast majority of papers focus on the linguistic tone of managers' language. (See, for example, Price, Doran, Peterson, and Bliss (2012), Blau, DeLisle, and Price (2015), Brockman, Li, and Price (2015), Druz, Petzev, Wagner, and Zeckhauser (2016), among others). Mayew and Venkatachalam (2012) demonstrate that not only words but also vocal cues, indicating managers' affective states during the call, are informative about future firm performance. Green, Jame, and Lock (2015) use a variety of speech markers to infer managers' extraversion from their answers to analyst questions and subsequently show that extraversion improves career outcomes. Both of the latter studies focus on answers, because less scripted language is likely to be used there.

A number of papers have analyzed managerial tactics on conference calls. For example, Mayew (2008) and Cohen, Lou, and Malloy (2013) demonstrate that managers strategically call on analysts to prevent bad news from being revealed on conference calls. Hollander, Pronk, and Roelofsen (2010) study managerial attempts to dodge questions. Larcker and Zakolyukina (2012) find that the presence of words related to deception predicts future accounting problems. Zhou (2014) documents managers' attempts to shift blame to external factors. Allee and DeAngelis (2015) document that managers structure linguistic tone as part of their overall narrative on the call. Lee (2016) measures the stylistic similarity between the presentation and answers, based on the use of so-called function words, to detect managers' use of scripted language in the latter part. He finds that markets react negatively to scripted answers. Bushee, Gow, and Taylor (2016) show that linguistic complexity (as measured by the Gunning fog index) is associated with decreased information uncertainty when it is driven by the need to convey complex information, but with increased information asymmetry when it indicates possible obfuscatory tactics of managers.

Our study builds on and expands on this literature by explicitly contrasting the (relatively) scripted presentation and the (relatively) extemporaneous answers part of the call to measure the same linguistic feature. A somewhat similar approach is used by Brochet, Naranjo, and Yu (2016) to study the effect of language barriers on calls organized by non-U.S. firms. To

our knowledge, the usage of uncertain words – albeit a simple and intuitive measure of vague communication – has not been explored systematically.[1]

2.3 Research on manager style

Economic theory offers two competing images of the role of individual manager characteristics for corporate policy. The neoclassical image is that managers are perfect substitutes; they simply rationally respond to business conditions. The upper echelons theory of Hambrick and Mason (1984), by contrast, has a satisficing flavor. Many managerial decisions are so complex and involve such hard-to-compare conflicting goals that a single rational solution cannot be identified. Rather, there are rationality bounds;, within them, the choices made by managers will be influenced by their idiosyncratic experiences and values. Such idiosyncratic characteristics are commonly referred to as manager *style*.

In empirical studies, style is made evident by the importance of a manager fixed effect in variables related to firm policy. The main challenge in such analyses lies in separating manager style from the effects of firm organization or culture, since both the manager and the firm are observed simultaneously.

The identification strategy spearheaded by Bertrand and Schoar (2003) relies on managers who transition from one firm to another during the sample period. In such cases, firm fixed effects can be included when regressing the variables for which style is expected to be predictive of some component of manager fixed effects. The significance of manager fixed effects indicates that the outcome variable includes a component unique to a given manager that s/he carries over when moving across firms. It shows that style matters. Their seminal findings that such a component can be identified for various measures of investment and financial policy, firm performance, and M&A activity have spurred broad further inquiries using the same methodology. These inquiries include studies into the role of manager style for accounting practices (Ge, Matsumoto, and Zhang (2011)), tax avoidance (Dyreng, Hanlon, and Maydew (2010)) as well as the provision, intensity and accuracy of earnings guidance (Bamber, Jiang, and Wang (2010), Brochet, Faurel, and McVay (2011), Yang (2012)). In a recent study, most closely related to this work, Davis, Ge, Matsumoto, and Zhang (2015) find a significant manager-specific fixed effect in the tone of earnings conference calls.

However, this approach to the style issue has been criticized by Fee, Hadlock, and Pierce (2013), who argue that a manager transition is likely to coincide with a shift in company policies for endogenous reasons. In support of their argument, they find no evidence of significant changes in asset growth, capital expenditure or leverage in cases of exogenous turnover, due

[1] In their analysis of the predictive power of managerial tone Druz, Petzev, Wagner, and Zeckhauser (2016) control for the percentage of uncertain words and other evasive tactics (such as the use of "atypical" tenses), but they do not explore the potential of vagueness to slow down the incorporation of news in prices. Moreover, they control for CEO fixed effects and thus focus on the time-varying components of tone, uncertainty, and other speech variables, rather than the stable communication style of managers.

to death, health issues or retirement. On the other hand, they find that these policies do change if the previous CEO was forced out, suggesting that boards are selecting managers, perhaps equipped with a certain "style", to execute a turnaround. This discussion highlights the difficulties of measuring manager style from observables, which are also affected by other important stakeholders.

We offer a methodological and a substantive contribution to this literature. We introduce a proxy for firm culture by observing the same manager in both a well-prepared setting, the formal presentation, and an at least partially improvised setting, answers to questions, on a conference call. This approach enables us to avoid the (limited) occurrence of manager transitions, though we confirm our results also in a sample of firms that did experience managerial turnover.[2]

Our analysis focuses on a readily identified element of style, the vagueness of a managers speech pattern. Thus, we compare the effects of vagueness in prepared remarks and in answers to questions. The merit of this two-step analysis, as compared to the usual approach of estimating manager fixed effects directly in corporate outcomes, is that it enables us to test directional predictions about the economic effects of vagueness, and we can make statements about the quantitative importance of style.

3 Data

Table 1 presents summary statistics of our data. Table A.1 in the Supplementary Appendix contains an overview of variable definitions.

3.1 Conference call transcripts and textual analysis

3.1.1 Conference call transcripts

We obtain transcripts of quarterly earnings conference calls for publicly listed US companies from 2003 through 2015 from Thomson Reuters Street Events. We begin with the full sample, which consists of 122,160 calls for 5,095 distinct firms. For the average firm, we have about 24 conference calls, corresponding to an observation period of 6 years.

The transcript of each call contains, at the top, a list of conference call participants, divided into corporate participants and analysts. We use a Python script to capture the words spoken by each company participant, and thus create our textual variables of interest (see below) for both the overall call and for each manager separately. The transcript lists both the names and the titles of the participants. We extract these two pieces of information separately. We then search

[2]In this sense, our approach is related to Dikolli, Keusch, Mayew, and Steffen (2016), who capture a proxy for CEO integrity from language in CEO shareholder letters, controlling for 10-K disclosures. In our setting, we observe the same person speaking at the same time, once in a more prepared and well-rehearsed, once in a more improvized form.

in the "title" field for keywords such as "CEO", "Chief Executive", "CFO", "Chief Financ" to identify the two respective executives. We complement and verify our identification of job titles by matching executives' names to Execucomp. Based on this procedure, we find that the CEO and CFO are present in more than 93% and 92% of the calls respectively, confirming that it is standard procedure to have the two top executives involved. We identify 9,859 CEOs and 11,098 CFOs.

[Table 1 about here]

The estimation of manager vagueness style, performed later in this analysis separately for CEOs and CFOs, requires a certain minimum number of observations for each manager. Hence, for the CEO sample we only retain transcripts of conference calls featuring CEOs who over their combined tenure (possibly at more than one firm) have participated in at least 5 such calls. This eliminates 8,664 calls in which a CEO was at all present and 3,802 distinct CEOs, most of whom participated in at most 2 calls. This leaves 6,057 CEOs, for whom we can estimate style. As Table 1 shows, the CEO sample is similar to the full sample, in particular with regard to firm characteristics and outcomes.[3]

Applying the same filter of at least 5 calls to CFOs removes 10,396 calls (of those in which the CFO was at all present) for 4,727 distinct managers. Here too, the restricted sample of 6,371 CFOs appears much the same as the full sample with respect to all relevant variables. This gives us confidence that the technical restrictions we impose in order to more reliably estimate manager style are not likely to affect our results.

3.1.2 Words spoken on the calls

The average call consists of almost 6,000 words, roughly equally split between the presentation and answers. This provides ample material for the linguistic analysis of each part.

The average CEO participates in 17 calls and speaks 1,363 words during the presentation and 1,886 words answering analyst questions.[4] The CFOs speak slightly less in the presentation (1,153 words) and are also less involved in answering questions on average (819 words). Relating these numbers to the total length of conference calls reveals that on average CEOs are responsible for 46% of the words in the presentation and 61% in the answers part. The respective shares for the CFOs are 39% and 26.5%. Hence, between them the CEO and CFO are on average responsible for the vast majority of the content in both parts.

[3]The average number of calls per CEO is, by construction, higher in the CEO sample than in the full sample.

[4]The numbers we quote for CEOs refer to the CEO sample and those for CFOs to the CFO sample. All of those numbers are also provided for the full sample in Table 1. They are similar, except the average number of calls per manager.

3.1.3 Vagueness

Our main variable of interest is manager vagueness on the call. We proxy vagueness by the use of "uncertain" words like "approximately", "probably", or "maybe". The full list, based on Loughran and McDonald (2011), contains 297 such words.[5] A subset of this list are 27 "weak modal" words, and similar earnings response results obtain with this list of "weasel" words.

An important step suggested by Loughran and McDonald (2016) when applying word counts in a new context is to investigate which are the most frequently occurring words, because according to Zipf's law, they will have an outsized influence on any measure constructed from those counts. In Figure 1 we plot the frequencies of the 25 most popular uncertain words, based on conference call presentations and answers for the overall management team. The obtained list is intuitive and suggests that no "patently misclassified" (Loughran and McDonald, 2016) words are driving the results. Loughran and McDonald (2016) find that 1% of the negative words account for about 44% of the negative word count in 10-K/Q-type SEC filings. For uncertain words in conference calls we find a similar ratio. Across all presentation sections, the top 3 of the 297 uncertain words - "approximately", "believe" and "may" - account for 38% of the uncertain word count. Across all answers, the top 3 words are "probably", "could" and "believe" and together account for 35% of the uncertain word count. Overall, the top 25 uncertain words (about 8.4% of 297) make up 80% of the total uncertain words count. On the other hand, 18 (12) of the 297 words (for example, "nonassessable" or "inexactness") are never spoken in any of the conference call presentations (answers) in our sample.

[Figure 1 about here]

We calculate the percentage of uncertain words in all words spoken by the management team (T), CEO or CFO, respectively, separately during the presentation part and when answering questions from analysts:

$$\%Unct_{T/CEO/CFO}Pres = \frac{Uncertain\_words_{T/CEO/CFO}(Pres)}{Total\_words_{T/CEO/CFO}(Pres)} \tag{1}$$

$$\%Unct_{T/CEO/CFO}Answ = \frac{Uncertain\_words_{T/CEO/CFO}(Answ)}{Total\_words_{T/CEO/CFO}(Answ)} \tag{2}$$

The typical conference call contains 0.84% uncertain words, roughly equal between the presentation and answers part (0.86% vs. 0.82%). Overall, CEOs appear less vague - their presentations typically contain 0.67% uncertain words and the average for answers is 0.80%. For CFO the respective numbers are 0.86% and 0.88%. Importantly, there is considerable variation in $\%Unct_{CEO/CFO}Answ$, as evidenced by standard deviation, which is high relative to the mean value for both CEOs and CFOs.

[5] We use the August 2014 version from `http://www3.nd.edu/~mcdonald/Word_Lists.html`

Figure 2 plots the time series of CEO and CFO vagueness in presentations and answers. Intuitively, vagueness increased in the financial crisis. There is a minor downward trend in vagueness in answers since the crisis. We include year fixed effects in all regressions to control for common time trends. Throughout the sample period, CEOs speak more vaguely in answers than in presentations. CFOs use similar language in both parts of the call.

[Figure 2 about here]

Proceeding on the descriptive level, it is of interest to explore the data a bit further as regards similarities and differences of presentations and answers. In Figure 3, we plot $\%Unct_{MGR}Answ$ (Y-axis) versus $\%Unct_{MGR}Pres$ (X-axis) for all CEOs and CFOs of S&P500 firms who have attended at least 5 calls (and so MGR is either CEO or CFO).

[Figure 3 about here]

There is considerable variation along both dimensions but certain clusters are discernible. Focusing on CEOs in Panel (a), the triangles, corresponding to Van Honeycutt of Computer Sciences Corp (CSC), line up almost completely above the stars, which we identify as Gary Butler of Automatic Data Processing (AUD), both technology companies. By contrast, the stars and triangles appear quite well aligned along the X-axis. Taken together, this means that Van Honeycutt consistently uses *more* uncertain words when answering analyst questions than Gary Butler, even though the presentation part of CSC and AUD conference calls (also delivered by Messrs. Honeycutt and Butler respectively) typically contain a similar fraction of such words, as one might expect in the case of two companies from the same industry. Applying a Wilcoxon rank sum test, we can confirm that Van Honeycutt's $\%UnctAnsw$ is significantly higher than Gary Butler's, while there is no significant difference in $\%UnctPres$.

Similar insights emerge from Panel (b), where we highlight CFOs of two healthcare companies. Again, $\%UnctPres$ lies in a similar range for both but one CFO (Edward Stiften of Express Scripts Holdings) delivers consistently more vague answers than the other (David Elkins of Becton Dickinson). Here too, the difference in $\%UnctAnsw$ is statistically significant, while $\%UnctPres$ are indistinguishable.

Finally, it is interesting to observe that the points we highlight in Panel (a) are more dispersed along the X-axis and located almost completely to the right of those in Panel (b). To the extent that technology companies typically face a more uncertain environment and greater fluctuations than companies in the healthcare sector, this suggests that %UnctPres is quite efficient at capturing both systematic differences *across* firms as well as time-variation in business conditions *within* firms.

These examples illustrate that the language of answers is not necessarily a mere reflection of the presentation part. They suggest that treating the two differently may provide additional

insights. Moreover, they suggest that presentations are more associated with firm characteristics than are answers. Clearly, a more systematic and careful approach is required to determine if this is true in general. We develop such an approach in Section 4.2.

3.1.4 Negativity

We also calculate negativity based on the Loughran and McDonald (2011) list of negative words. As in Allee and DeAngelis (2015), we eliminate the word "question" from the list of negative words. (On conference calls, "question" is the most frequently used word from the negative word list, but it is, in this context, mostly used when managers refer to analyst questions.) Moreover, we follow Allee and DeAngelis (2015) in not counting the (otherwise negative) word "closing" if it is followed by "remark" or "remarks".[6] We define $\%Neg$ as the ratio of negative words to total words, separately for CEOs and CFOs and for both presentations and answers. We also calculate $\%Neg$ for analyst questions and find that it is on average higher (1.23%) than in manager answers (0.76% for the CEO and 0.77% for the CFO). This indicates that managers answers are typically more upbeat than the questions that solicited them.

3.1.5 Other speech characteristics

We count the frequency of numbers in presentations and answers of management. Numbers include dollar amounts, percentages, etc. (Numbers are recorded in numeric form in the transcripts.) We pay special attention to numbers reported with decimals and to numbers containing commas denoting thousands, to avoid that such cases are counted as two numbers. Thus, "60 basis points", "35.3%", "$8 million", "22,200" each are counted as one number.[7]

$\%Numbers$ is the number of numbers per 100 words. Overall, on average for 100 words spoken, 1.9 numbers appear on a conference call. This is broadly in line with what Zhou (2016) reports for his sample. As can be seen in Table 1, and intuitively, CFOs use many more numbers in the presentation: For each 100 words, 7 numbers are stated by the average CFO, whereas the CEO highlights 2.8 numbers per 100 words. Both managers state far fewer numbers in the Q&A part, consistent with the idea that in this part both the CEO and the CFO convey important qualitative information.

[6] Loughran and McDonald (2016) caution against the use of positive tone or net tone because positive words too often are used to frame a negative statement. On the other hand, an advantage of a measure such as (negative-positive)/(negative+positive) can help adjust for a manager's tendency to just use more positive and negative words overall. In the main results, we use negative word frequencies, but the results are robust when using a net tone measure. When using positive words, we again follow Allee and DeAngelis (2015). Thus, we adjust for negation and do not count the word "good" if it is followed by "morning," "afternoon," "evening," or day, plus other adjustments listed in that paper.

[7] Careful review of a number of transcripts suggests that our algorithm works well. It is not perfect. For example, a reference to "the Boeing 737 and the A 320" would be counted as two numbers. We believe the imprecision due to such cases is likely to be small, and any systematic variation in the usage of product numbering would presumably be picked up by industry fixed effects and other company characteristics.

Moreover, we compute the average sentence length as a simple measure of *Complexity*.[8] The average sentence is somewhat longer in presentations than in answers.

3.2 Other data

This section covers other control variables. (Outcome variables are discussed in Sections 4 and 5 in conjunction with the development of the hypotheses.) To have a complete picture of earnings communication we also collect earnings press releases (EPRs) from the SEC's EDGAR system and, similarly to what we do for the conference calls, measure the frequency of uncertain words contained in them (%*UnctEPR*). The average EPR contains 1.11% of uncertain words.

Price and returns data are taken from CRSP. The stock return (*StockRet*) in quarter t is the firms share-price appreciation in the elapsed quarter, that is, the difference between the share price 5 days before the earnings announcement for quarter t and the share price 5 days after the earnings announcement for quarter $t-1$, expressed as the percentage of the stock price 5 days after the earnings announcement for quarter $t-1$. Market return (*MarketRet*) 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. Daily volatility (*DailyVola*) of each stock is the standard deviation of daily returns over the previous quarter.

We also employ analyst data from IBES and accounting data from Compustat to measure a range of earnings and firm characteristics. We calculate earnings surprise as a percentage of the share price. It is the difference between actual and consensus forecast earnings, divided by the share price 5 trading days before the announcement in quarter t, multiplied by 100. Firms performing above (below) expectations experience a positive (negative) surprise. Subsequently, firms are grouped by earnings surprise decile (*SurpDec*), from 5 to 1 from largest positive to smallest positive surprise, then 0 for zero surprises, and then from -1 (for the smallest negative surprises) through -5 (for the largest negative surprises). This approach generates equally sized surprise quintiles on either side of zero but, because there are more positive than negative surprises overall, causes the unconditional means of *SurpDec* to be positive (around 0.85 in our sample). *EPS growth* is the fraction by which earnings in a quarter exceed earnings in the same quarter in the prior year. Finally, we include the natural logarithm of total assets *ln(Assets)* and *Tobin's Q*, which is the ratio of the market value of assets to their book value. *Guidance* is an indicator variable equal to unity for a quarter for which a company has provided earnings

[8] Loughran and McDonald (2016) highlight that the parsing of business documents into sentences is error prone. This is a somewhat smaller challenge in the context of conference calls, which, for example, do not contain tables. We pay special attention to not count decimal dots as sentence end periods. In robustness checks, we also compute the Gunning fog index, and our results are robust to controlling for this index instead. The fog index also uses the average sentence length, but also includes complex words. Such words – words with more than two syllables – appear very frequently in a business context, making the measure hard to interpret. See Loughran and McDonald (2014) for a critique.

guidance (either as a point estimate or as a range).

4 The economic effects of vagueness: Earnings responses

Our over-arching hypothesis is that earnings news communicated by vague managers is harder to interpret in terms of implications for firm value and hence, less informative. In Section 4.1 we first test this hypothesis by looking at the role of overall vagueness of management's communication on the earnings conference call. Then, in Section 4.2 we decompose CEO and CFO vagueness into manager-specific "vagueness style" and residual vagueness. In Section 4.3 we show that it really is consistent vagueness style that matters most.

4.1 Earnings response coefficients and conference call vagueness

The key driver of investor reactions to earnings is the difference between the actually announced number and prior expectations, i.e., the earnings surprise. Given the unexpected nature of surprises, it is likely that investors will be particularly sensitive to how the managers explain them. We expect earnings surprises accompanied by vague explanations to be less informative. Difficulties in interpreting earnings information are likely to make investors less willing to act on it. Hence, our first hypothesis states:

Hypothesis 1: Vagueness reduces the short-run stock price reaction to earnings, that is, the earnings response coefficient.

Testing this hypothesis is important because an alternative story for how vagueness matters for earnings response coefficients is also plausible ex ante: Suppose that earnings ("hard information") and managerial explanations ("soft information") were substitutes, not complements. Then, in the presence of vague managerial communication, rational investores would pay *more* not less attention to earnings numbers.

To test Hypothesis 1, we estimate variations of the following panel regression, which includes Fama-French 48 industry and year fixed effects:

$$\begin{aligned} CAR01_{i,t} &= \alpha_i + \beta_1 \cdot SurpDec_{i,t} + \beta_2 \cdot \%Unct_{i,t} + \beta_3 \cdot \%Unct_{i,t} \cdot SurpDec_{i,t} \\ &+ \beta_k \cdot Controls^k_{i,t} + FF48_i + Year_t + \epsilon_{i,t} \end{aligned} \tag{3}$$

The sample for these regressions consists of all calls, in which at least one question was asked by an analyst and for firms with enough accounting information to calculate daily abnormal stock returns following Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW). We apply their methodology to daily returns to compute DGTW characteristic-adjusted stock returns

and express such returns in percent.[9] Our dependent variable cumulates returns over day 0 (the call date) and the following trading day, because do not know the exact timing of each call, in particular whether it happens before or after the market close. The main variables of interest are the interaction terms between vagueness and the earnings surprise. Hypothesis 1 predicts $\beta_3 < 0$. We consider $\%Unct$ for either management Team (T) or CEO or CFO. We run separate regressions for CEOs and CFOs to determine whose vagueness, if at all, has a bigger effect. In addition to firm characteristics and the market return, the matrix $Controls^k$ also includes $\%UnctAnaly_{i,t}$, $\%Neg_{MGR}Answ_{i,t}$ and $\%NegAnaly_{i,t}$. Moreover, the main specifications also include a binary indicator for whether the firm provides *Guidance*, $\%Numbers$, and *Complexity*. This allows us to control for other important information contained in the linguistic features of the call that in turn proxy for differences among companies' (and perhaps managers') communication. Also, in the full specification, we interact all speech variables with the earnings surprise. In all regressions, to account for the interdependence between observations, we cluster standard errors by firm or by manager, respectively.

[Table 2 about here]

Table 2 presents the results. Column (1) shows that more uncertainty in the management's communication on the conference call overall dampens the earnings response. Column (2) highlights that it is in particular vagueness in answers that reduces the earnings response. Columns (3) and (4) show that this result is robust to including a broader set of speech characteristics, as well as their interactions with the earnings surprise.

The other variables in Table 2 obtain the expected signs. Negativity, both in analyst questions and manager answers, significantly reduces short-term CARs. Although not the focus of our analysis, it is interesting that while firms that had provided guidance have on average lower returns to conference calls (because more information is already available), ERCs are stronger for guiding firms that do show an earnings surprise. Conversely, more numbers in the presentation are associated with a higher immediate stock price reaction, while more numbers in the Q&A part have a negative effect. Indeed, these effects are even more pronounced when there is an earnings surprise.[10] The earnings number is less important when the Q&A part of the call contains a lot of other quantitative information. Conference calls with longer (and, presumably, harder-to-understand) presentations and answers receive unconditionally lower returns. High past returns, at the stock and the market level, have a similar effect. Finally, larger companies

[9] From each stock return we subtract the return on a portfolio of all CRSP firms matched on quintiles of market equity, book-to-market, and prior 1-year return (thus 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 Frenchs website. The portfolios are value-weighted.

[10] Zhou (2016) also finds a positive response to quantitative information in the presentation part, though he does not consider an interaction with the earnings surprise.

tend to experience lower earnings returns, though this is mainly due to the fact that they provide guidance, as can been seen in column (4). In robustness checks available on request, we find that the results continue to hold when other firm characteristics (such as the number of analysts that cover the company) are included.

Next, columns (5) to (7) study the role of uncertain communication by the CEO and the CFO separately. In the full sample, the interaction term of $\%UnctAnsw$ and the earnings surprise is negative and significant only for the CEO. However, column (7) shows that CFO vagueness in S&P500 firms reduces the earnings response, consistent with CFOs playing a more important role for large firms.

In sum, the baseline findings in Table 2 provide substantial support for Hypothesis 1 that vagueness in managerial communication dampens earnings responses.

4.2 Extracting manager vagueness style

The findings so far also leave open some important questions. Our basic conception is that the way a manager speaks during a specific call is driven by (1) the "style" of the manager (if it exists), (2) the company's "culture" and business model, and (3) the manager's incidental use of uncertain words. The incidental usage can depend on many factors. One relevant factor is current business conditions. In turbulent times it might simply be harder to make any definite statements about the future. So far, our regressions address differences among firms by including a large set of control variables. In what follows, we aim to tease apart the three listed factors more explicitly.

Specifically, we generally hypothesize that overall managerial style will be the most important determinant of market and analyst responses. Stock market reactions to current earnings require interpretation from the broader context. For example, private conversations of analysts and management just after the call are frequent (Green, Jame, Markov, and Subasi, 2014; Soltes, 2014). To the extent that we in fact can identify a stable manner of managerial communication, this vagueness style may also govern their communication in these additional settings, making it difficult for analysts and, consequently, other market participants to obtain precise information. If, by contrast, information is only provided through these calls, we will find that residual vagueness is the centrally important factor. Our next task, therefore, is to provide a method for extracting manager vagueness style.

Section 4.2.1 develops an intuitive argument for the existence of managerial vagueness style. Section 4.2.2 gives details of how we extract systematic manager vagueness from the answers.

4.2.1 Conference call vagueness around managerial turnover events

In this section we make the case for using $\%UnctAnsw$ to extract each manager's personal style of vagueness, while controlling for vagueness related to the specificities of the firm's business

model, or communication "culture", with $\%UnctPres$. We do so by examining the effect of manager turnover on those two parts of earnings conference calls. We exploit two types of turnover events.

The first type is associated with *firms that replace the CEO or CFO*, so we can compare the vagueness of the call under the old manager and the new one. The second type of turnover is based on *managers who switch between firms* in our sample ("switcher" CEOs or CFOs), so we can compare the vagueness of the same person on conference calls at two different firms.

Two different managers at the same firm: We begin by comparing the vagueness of calls under the old manager and the new one. If the vagueness of answers to analyst questions is specific to the person, we would expect the $\%UnctAnsw$ before and after the turnover to differ, because even if the firm searches for a CEO with similar style, the replacement will be imperfect. By contrast, if the language of the presentation part is a firm-characteristic rather than a manager-characteristic, we would expect the $\%UnctPres$ to remain rather stable despite the turnover. This test is valid, because although we observe CEO words both before and after, the actual speaker changes in both parts of the call. Two additional measures fine-tune the analysis. First, given that managers may use more similar language in scripted than non-scripted communication, greater similarity in $\%UnctPres$ before and after a turnover is to be expected, independent of corporate culture. To address this possibility, we compare turnover firms to similar control firms without turnover. For these "without" control firms, if we find both $\%UnctPres$ and $\%UnctAnsw$ to be stable over time, that would reassure us that the effect on $\%UnctAnsw$ observed among turnover firms is indeed due to CEO replacement and not merely the general lower persistence of unscripted communication.[11] Thus, for each turnover firm we select one control firm from the same Fama-French 17 industry group that is the best match in the observation period. The matching factors, all measured in averages, are total assets, $\%\text{Unct}_{CEO}\text{Pres}$ and average $\%\text{Unct}_{CEO}\text{Answ}$ over the "before" period corresponding to the tenure of the outgoing CEO of the turnover firm. Generally, we are able to obtain close matches in the majority of cases.

Second, firms that change their CEOs may disproportionately lack a stable culture. Therefore, we also look at the language of the earnings press release, $\%UnctEPR$, as the piece of earnings communication arguably most removed from the specific person in charge. If we can find high similarities in the wording of EPRs before and after a CEO turnover, that would speak to the existence of persistent communication culture for a turnover firm.

In other words, we expect the correlation between average $\%Unct_{BEF}EPR$ and average $\%Unct_{AFT}EPR$ to be high in the cross-section of turnover firms. Continuing in this vein, we expect the before-after correlation in average $\%UnctPres$ to also be rather high and finally to

[11] As an alternative benchmark we also use the other executive of the same company, who was not replaced. For instance, in case of a CEO turnover, we construct before-after correlations for the CFO. We obtain similarly strong results with this specification.

be low for $\%UnctAnsw$, consistent with our previous argument that the language of answers most reflects the style of the particular CEO.

We focus on turnovers with at least 5 quarters of data before and after, so that for each turnover firm we have sufficient observations to calculate average $\%Unct_{BEF}$ and $\%Unct_{AFT}$ for the EPR as well as the presentation and answers part of conference call. $\overline{\%Unct}_{BEF}$ corresponds to the outgoing CEO and $\overline{\%Unct}_{AFT}$ to the incoming one, at the same turnover firm.

For "without" control firms, the before and after period is artificially constructed using the CEO replacement date from the corresponding turnover firm. This ensures that calculations for control firms are based on similar numbers of observations and calendar periods as for turnover firms.

In the last step, we calculate the correlation between $\overline{\%Unct}_{BEF}EPR$ and $\overline{\%Unct}_{AFT}EPR$, $\overline{\%Unct}_{BEF}Pres$ and $\overline{\%Unct}_{AFT}Pres$, as well as between $\overline{\%Unct}_{BEF}Answ$ and $\overline{\%Unct}_{AFT}Answ$, across all CEO turnover and control firms.

[Table 3 about here]

The results in Panel (a) in Table 3 support out conjectures. Among control firms, we observe high $\rho_{BEF/AFT}$ for all three pieces of earnings communication (0.74, 0.65, and 0.70, respectively). In particular, high $\rho_{BEF/AFT}\overline{\%Unct}Answ$ provides evidence that patterns in oral unscripted communication can be equally stable as in the scripted or written counterpart and as long as the person answering the questions is kept constant, the language remains stable too.

Among the 1578 CEO turnover firms, the before-after correlation in $\overline{\%Unct}Answ$ is low ($\rho_{BEF/AFT}\overline{\%Unct}Answ$=0.26) and much lower than among control firms (diff=-0.44). By contrast, for the presentation part, the before-after correlation among turnover firms is medium-high ($\rho_{BEF/AFT}\overline{\%Unct}Pres$=0.39). Finally, $\rho_{BEF/AFT}\overline{\%Unct}EPR$ among turnover firms is high (=0.66) and only weakly different from control firms (diff=-0.08). Given the large sample, all these differences are significantly different from zero in the statistical sense but their economic significance varies greatly. Similar results obtain for the 1,665 CFO turnovers ($\rho_{BEF/AFT}\overline{\%Unct}Answ$=0.22, $\rho_{BEF/AFT}\overline{\%Unct}Pres$=0.51, $\rho_{BEF/AFT}\overline{\%Unct}EPR$=0.69).

These results confirm three things. First, that turnover firms still appear to have a stable culture. Secondly, the language of the scripted part of the call is less sensitive to a CEO/CFO turnover and hence more specific to the firm, than a particular person in charge. Most importantly, answers seem to reflect the language of individual CEOs/CFOs.

Same manager at two different firms: Panel (b) of Table 3 provides a complementary analysis by following the same manager (a "switcher") from one firm to another.[12] Here, we would expect $\%UnctAnsw$ to be similar at the old firm and the new (since it is the same person speaking), while $\%UnctPres$ might well differ. The results provide support for this idea. The

[12]The control sample for this test consists of those firms without manager turnover, which are most similar to the firm at which the "switcher" worked in the "after" period.

correlation for the EPR, $\rho_{BEF/AFT}\overline{\%Unct}EPR$, is only 0.15 in the case of moving CEOs, meaning that these CEOs do not bring the EPR style of their prior firm with them. By contrast, $\rho_{BEF/AFT}\overline{\%Unct}Answ$=0.43), suggesting that answers style travels with the CEO. In the case of the CFO, similar results obtain.

Overall, the analysis in this section supports our strategy of extracting manager style from $\%UnctAnsw$ using $\%UnctPres$ and other factors to control for firm effects. The next section develops the estimation procedure in more detail.

4.2.2 Estimating manager style of vagueness

We identify manager style of vagueness with the systematic component of the frequency of uncertain words in answers, which we estimate as a fixed effect from the following regression, separately for CEOs and CFOs (and so MGR can be either CEO or CFO):

$$\begin{aligned}\%Unct_{MGR}Answ_{i,t} = \sum_{i=1}^{N_{MGR}} \gamma_i \cdot MGR_{i,t} + [\beta_1, \beta_2 \cdot] \cdot \begin{bmatrix} \%Unct_{MGR}Pres_{i,t} \\ \%UnctAnaly_{i,t} \end{bmatrix} + \\ + [\beta_3, \beta_4 \cdot] \cdot \begin{bmatrix} Neg_{MGR}Answ_{i,t} \\ NegAnaly_{i,t} \end{bmatrix} + \beta_k \cdot Controls^k_{j,t} + \alpha + \epsilon_{i,t}\end{aligned} \tag{4}$$

Manager-specific vagueness (her style) is captured by the $\gamma_{1,...,N_{MGR}}$ coefficients on the fixed effects and denoted $Vague_{MGR}Style$. The residuals, $\epsilon_{i,t}$, which we later denote Vague$_{MGR}$Resids, can be interpreted as deviations from style, not explained by any of control variables included in the regression.

We control for both linguistic markers in the call itself and a range of firm characteristics. The matrix $Controls^k$ is composed of the following variables: total assets, EPS growth from same quarter the previous year, stock return over the previous quarter, daily volatility as well as the earnings surprise and also includes the market return in each quarter. In terms of language-related controls, we include the negativity of answers, since vagueness can be related to the nature of news, whether it is positive or negative. To account for the fact that the language of an answer might also depend on the wording of the question, we include the frequency of uncertain and negative words used by analyst participating in the call.

Importantly, based on insights from the previous section, we control for %Unct$_{MGR}$Pres, the frequency of uncertain words in presentation. This variable combines both the systematic ("culture") and the time-varying (momentary business conditions) component of firm-related vagueness.[13] As such, we would expect it to correlate with certain observable firm characteristics,

[13]In unreported results, we experiment with separating the two components by regressing %UnctPres on firm fixed effects and recording both the coefficients on each fixed effect (the vagueness "culture" of each firm) as well as the residuals (time-varying factors). The conclusions under this alternative approach are fundamentally unchanged from those reported below.

which themselves indicate uncertainty. Results available on request show that $\%Unct_{MGR}Pres$, both for CEOs and CFOs, increases markedly with volatility and decreases with stock- and market-level returns. Furthermore, $\%Unct_{CEO}Pres$ additionally decreases with earnings surprise and earnings growth, suggesting that presentations are written in more straightforward language when earnings were (unexpectedly) good. However, we note the rather low explanatory power of these observables, which we take as evidence that $\%Unct_{MGR}Pres$ also captures *un*observable firm-specific factors affecting vagueness of communication. This makes it a useful control when extracting manager style.

While the main specification shown in Table 4 captures many key determinants of vagueness (and, by including uncertainty in presentations also captures common determinants, even time-varying ones, that are unobservable to the researcher), it is of interest also to examine some other specifications. These are shown in Supplementary Appendix Table A.2 and are discussed further below.

[Table 4 about here]

We first estimate Equation 4 without manager fixed effects to gauge how much of the heterogeneity in $\%UnctAnsw$ can be explained with observable characteristics alone. The results are reported in column (1) for CEOs and column (3) for CFOs. Answers at larger firms exhibit less uncertainty. Overall, none of the firm characteristics matter strongly, which we treat as another indication that the language of this part of conference calls is more driven by personal than corporate features.

Linguistic markers of the call are significant and have the expected effects on the frequency of uncertain words in answers. Uncertainty of managers in the presentation as well as of analysts, and negative linguistic tone of managers in the answers are each highly significantly associated with uncertainty of managers in answers. Analyst negativity enters with a negative sign (significantly only for the CEO), but the magnitude of the coefficient is very small compared to that on negativity in answers.

Columns (2) and (4) add manager fixed effects. It is informative to compare coefficients on these variables across specifications with and without manager fixed effects to get an idea how much of their impact comes from the fact that managers work at firms, which differ in culture (the *between* effect), and how much is due to time-varying factors that occur during each manager's tenure at a given firm (the *within* effect). For example, the coefficient on $\%\text{Unct}_{CEO}\text{Pres}$ drops from 0.207 in column (1) to 0.095 in column (2) - after CEO fixed effects are included - suggesting that the between / within effects are roughly equally important. This suggests some assortative matching between vague firms and vague CEOs. By contrast, the coefficient on $\%\text{Unct}_{CFO}\text{Pres}$ changes less, suggesting that the relationship between vagueness in CFO answers and presentation is mostly due to within-fluctuations. Interestingly, the negativity

of questions from analyst appears to have a large systematic component as well, suggesting that some managers are repeatedly more aggressively questioned by analysts than others.

The R^2 of 6.9% / 1.0% in column (1) / (3) indicates overall small explanatory power of the control vairables. After fixed effects are included, the R^2 increases to 33.6% / 22.3%. Thus, the key message is that fixed effects dominate, even though we include a large set of control variables tightly related to our variable of interest.

Supplementary Appendix Table A.2 shows several alternative specifications for estimating CEO style. For example, in our main specification, reported for convenience again in column (3) of that table, when examining $\%\text{Unct}_{CEO}\text{Answ}$, we only consider %UnctPres based on the words the CEOs themselves spoke in the presentation. In specification (4), we also allow for uncertainty "spillovers" between the CEO and CFO, whenever both are present in a call. In specification (5), we additionally control for uncertainty in the earnings press release. Specification (6) adds analyst forecast dispersion before the call. Finally, specification (7) also examines the *change* in CEO presentation uncertainty and the *change* in tone of CEO answers from one call to the next. While some of these additional variables have some explanatory power for $\%\text{Unct}_{CEO}\text{Answ}$, the main conclusion is that the fixed effects under these various specifications are very highly correlated with the ones estimated under Equation 4; see Supplementary Appendix Table A.2. A disadvantage of the larger specifications is that the number of observations is reduced. Given the similar findings our decision to proceed with the more parsimonious Equation 4 is motivated by the desire to retain the highest possible number of observations for further analysis.

To get a sense of the heterogeneity in manager style, we construct histograms of the coefficients on individual manager fixed effects estimated from Equation 4. As can be seen in Figure 5, the heterogeneity is substantial for both CEOs and CFOs but somewhat more pronounced for the latter (the 10th-90th percentile range is 0.57 for CEOs and 0.91 for CFOs).

[Figure 5 about here]

Moreover, the CFO distribution is also slightly shifted to the right relative to the CEO distribution, meaning CFOs are somewhat more vague overall. We note that no clear outliers are visible in the distributions and in both cases vague style appears to progress along a continuum, as opposed to being concentrated in a few discrete clusters. There is an asymmetry in the distributions however, with both exhibiting a fatter right tail, which means that particularly vague-talking managers are more frequent than particularly straight-talking ones. In what follows, we use a centered version of vagueness, so that the mean of CEO and CFO vagueness is zero.

Is vagueness concentrated in some industries? Figure 5 suggests some tendency for more risky industries, like finance and oil, to feature more vaguely speaking CEOs and CFOs. However, all the lower-quartile to upper-quartile ranges of CEO and CFO vagueness across industries are overlapping. These results suggest that heterogeneity in managerial style of vagueness is only to

a limited extent explained by matching to specific industries. Interestingly, Table 5 additionally suggests that different cohorts of managers speak quite similarly. There is some tendency for older CEOs and CFOs to speak more vaguely, but the differences across cohorts are dwarfed by the differences within cohorts.

In sum, this section shows that managers differ substantially from each other with respect to vagueness and that these differences cannot easily be explained by either systematic or time-varying characteristics of the firms for which they work. Managerial style of vagueness exists. We now turn to examine how it influences information flow from the corporations managers lead to the investment community.

4.3 Earnings response coefficients with style

Style could matter most directly by influencing stock price reactions to information. We are now in a position to refine the test of Hypothesis 1. Specifically, we now estimate:

$$CAR01_{i,t} = \alpha_i + \beta_1 \cdot SurpDec_{i,t} + [\beta_2, \beta_3] \cdot \begin{bmatrix} Vague_{MGR}Style_i \\ Vague_{MGR}Resids_{i,t} \end{bmatrix} + \\ + [\beta_4, \beta_5] \cdot \begin{bmatrix} Vague_{MGR}Style_i \\ Vague_{MGR}Resids_{i,t} \end{bmatrix} \cdot SurpDec_{i,t} + \beta_k \cdot Controls^k_{i,t} + FF48_i + Year_t + \epsilon_{i,t} \tag{5}$$

Vague$_{MGR}$Style, is the manager's style of vagueness estimated from the language of her answers to analyst questions during earnings calls, according to Equation 4, and *Vague$_{MGR}$Resids* represents the residuals from that equation, i.e. deviations from style. The main variables of interest are the two interaction terms between vague style / residual vagueness and the earnings surprise.

Table 6 reports the results. As can be seen in the significantly negative coefficient on the interaction term of Vague$_{MGR}$Style with the earnings surprise in column (1), we find substantial support in favor of the hypothesis that a more vague style is associated with a weaker response to earnings. Columns (3) and (5) show the results separately for S&P500 and non-S&P500 companies. Clearly, CEO vagueness matters more in large firms. A possible interpretation is that a single earnings number is less representative of the entire performance of a large firm, which increases the importance of additional information communicated by the managers.

How big are these effects? To answer that question, note that we center the Vague$_{MGR}$Style to 0 before calculating the interactions terms (Vague$_{MGR}$Resids, itself a residual from a regression, is centered by construction). Therefore, the interpretation of the coefficient on SurpDec is that moving to the next higher decile of earnings surprise increases short-term CAR by 1.11 percentage points, provided the CEO has average style of vagueness. If the CEO is particu-

larly straight-talking, at the 10th percentile of the style distribution ($VagueStyle$=-0.29), CAR increases by a further 5 basis points (-0.29×-0.176) for each surprise decile increment. When focusing on S&P500 firms, the effect of a particularly straight-talking CEO is more pronounced: 11 basis points for each surprise decile increment, that is a roughly 13% higher earnings response coefficient (-0.29×-0.394/0.758). Overall, these results confirm our conjecture that managerial vagueness style (which may also govern managerial communication in other settings), rather than occasional, call-specific vagueness, is the key determinant of stock market responses.

[Table 6 about here]

At first glance, it might seem puzzling that Vague$_{CEO}$Style has a positive *unconditional* effect on short-term CAR. To understand why this occurs, note that "just-meeting" earnings (SurpDec = 0) appear to be, in fact, disappointing to the market on average: The short-term CAR is minus 1.08 percent on average for these firms. The actual mean surprise in the sample is positive. Thus, the coefficient on Vague$_{CEO}$Style does not give the effect of vagueness at the mean surprise, but at somewhat below the mean surprise. Vague CEO style cushions the otherwise negative impact of zero-surprises, consistent with how vagueness otherwise reduces earnings response.

Columns (2), (4) and (6) show the results for CFOs. Consistent with the results in Table 2, in the full sample we do not find an effect of CFO vagueness on the earnings response. However, among S&P500 companies, where the CFO arguably has a more powerful role to play in overall company strategy and management than in smaller firms, CFO vagueness also induces smaller earnings responses.

To zoom in on the personal aspect of style, we estimate Eq. 5 in two subsamples:

1. firms with CEO/CFO turnover during the sample period, including firms linked by a manager switching jobs (*turnover sample*)

2. only firms linked by a manager switching jobs (*switcher sample*)

The *switcher sample* is equivalent to the approach used in Bertrand and Schoar (2003), thus we need to observe a manager at Firm A in the sample, who later moves on to Firm B, also part of the sample. The *turnover sample* is substantially broader, because we can also consider outgoing managers, who leave the sample and new hires who join it. Bertrand and Schoar (2003) refrain from using this broader pool of turnovers, because they worry it might capture a firm-period effect rather than a manager effect. We believe this is less of a concern in our setting, where we define style with respect to words that a manager speaks individually during earnings conference calls. The key feature of both samples is that they allow firm fixed effects to be included alongside style of vagueness (thus making industry fixed effects redundant). The interpretation of the coefficient on Vague$_{MGR}$Style is now the impact of the *difference* in style

between a given CEO (CFO) and the average style of all CEOs (CFOs) that have worked for that firm during the sample period. In other words, the focus is on within-firm variation in style, while effectively controlling for any unobserved between-firm heterogeneity.

Table 7 shows that the results for the full sample continue to hold in the turnover sample: CEO style of vagueness continues to be an important determinant of short-term earnings responses in all firms, though especially in the largest firms. CFO style matters only in the largest firms.

Finally, Table 8 considers the Bertrand and Schoar (2003) approach. This leaves us with substantially less observations available for estimation. Therefore, we can only conduct this analysis meaningfully for the CFOs, of whom 279 qualify as "switchers." Here, we obtain significance for the interaction term between Vague_{CFO}Style and earnings surprise even in the overall sample, meaning the ERC drops when a straighttalking CFO is replaced by a more vague one. Again the effect is much more pronounced in the S&P500 sample.

In sum, Section 4 documents that vagueness of managers reduces the short-run reaction to earnings. It is in particular the consistent style of vagueness that plays the key role. The results provide strong evidence that the effects of vague style are not driven by unobserved firm heterogeneity but are indeed tied to specific persons in charge.

5 The economic effects of vagueness: Drilling deeper

Having established that a vague speech style by managers significantly reduces the immediate market reaction to earnings announcements, this section tests several hypotheses that emerge from that finding. Those hypotheses address the informativeness of earnings news, analyst responses, and valuation.

5.1 Hypotheses and methods

First, we investigate the informativeness of earnings news, captured by the absolute responses to earnings news.

Hypothesis 2: Vagueness makes earnings news less informative.

Again, the alternative hypothesis holds that earnings and managerial communication are, in fact, substitutes. If that is the case, earnings would be particularly informative for firms where managers otherwise communicate vaguely.

We use two standard measures of the informativeness: We first use the *absolute* cumulative abnormal return (ACAR01) on the conference call date plus one day. Second, we calculate abnormal trading volume by dividing the cumulative trading volume of a firm on the call date

and the subsequent trading day[14] by two times its daily pre-call average, calculated over a window starting 45 days and ending 6 days before each call date. To reduce skewness, we take the logarithm of the resulting ratio:

$$AbnVol = log\left(\frac{TrdVol_{j,t:t+1}}{2 \times avg(TrdVol_{i,t-45} : TrdVol_{i,t-5})}\right)$$

We test the second hypothesis by estimating the following panel regression:

$$\begin{bmatrix} ACAR01_{i,t} \\ AbnVol_{i,t} \end{bmatrix} = \alpha_i + \beta_1 \cdot |SurpDec_{i,t}| + [\beta_2, \beta_3] \cdot \begin{bmatrix} Vague_{MGR}Style_i \\ Vague_{MGR}Resids_{i,t} \end{bmatrix} + \\ + \beta_k \cdot Controls^k_{i,t} + FF48_i + Year_t + \epsilon_{i,t} \tag{6}$$

Hypothesis 2 predicts $\beta_2 < 0$ and $\beta_3 < 0$.

The direct consumers of earnings conference calls are security analysts. We study whether they also find vaguely communicated earnings less informative. We expect analysts covering firms with vague managers to be more uncertain about the value of the company as well as the correctness of their own previous forecasts. Significant findings in this regard would be quite telling, since analysts are paid for processing information provided by companies and issuing forecasts and recommendations based on it. We construct three measures of analyst reactions, two related to the timeframe and one to confidence in their forecasts.

The first measure, *AnalyDelay*, is based on the *delay* measure used by Kross and Suk (2012). Specifically, we calculate the average number of trading days between the call date and subsequent revisions by individual analysts following the firm and divide that by the number of days until the next earnings announcement. That is, if one analyst revised after 3 days, the second analyst after 12 days and the third after 21 days, the numerator of *AnalyDelay* would be equal to $\frac{3+12+21}{3} = 12$ and if the next earnings announcement was 60 days away, the final *AnalyDelay* value would be 0.2, which is indeed the average delay in our data. The second measure is *ShareAnalyPost* defined as the fraction of all analysts following a firm, who update their forecasts within 3 days of the earnings conference call. In our data, roughly half of all analysts who revise following the call do so in the first 3 days. Post-announcement revision frequency is the number of revisions after the conference call of quarter t up to the earnings announcement of quarter t+1, divided by the number of analysts following the firm.

With respect to these three measures, our third hypothesis states that:

Hypothesis 3: Vague style increases the delay in analyst reactions to earnings news and reduces the share of analysts who respond within the first 3 days. Forecast revision frequency

[14]We cumulate call-date and next day volume, since we do not know the exact timing of the call, in particular whether it occurred before or after market close.

is higher following calls hosted by vague managers.

We relate delay and uncertainty variables to vagueness in a regression analogous to Equation 6. In line with Hypothesis 3, expect $\beta_2, \beta_3 < 0$ for $ShareAnalPost$ but $\beta_2, \beta_3 > 0$ for $AnalyDelay$ and $RevFreqPost$.

5.2 Results

5.2.1 Informativeness of earnings: Volatility and trading volume

Hypothesis 2 posits a negative link between manager vagueness and the total amount of information entering the market around the conference call. Table 9 tests this prediction by considering *absolute* short-term CARs as well as abnormal trading volume around the call as the dependent variables.

Columns (1) and (2) in Table 9 show a consistently negative effect of $\text{Vague}_{MGR}\text{Style}$ on the price response to earnings conference calls, which is in line with our expectations. The effect is sizable economically - going from the 10th to the 90th percentile of the distribution of CEO (CFO) VagueStyle, i.e., from straight-talking to vague, cuts roughly 26 (23) basis points from the ACAR. The fact that the effect is almost equal for CEOs and CFOs suggests both managers are of similar importance as far as communicating earnings information is concerned.

[Table 9 about here]

To further illustrate the effect of vagueness on the short-term informativeness of earnings, we plot abnormal trading volume over the 11-day period surrounding the call. For this illustration, we summarize the unconditional effect of vagueness by averaging abnormal trading volume across all calls in the sample, irrespective of the magnitude of the earnings surprise.

[Figure 6 about here]

As can be seen in Figure 6, abnormal trading volume generally spikes on days 0 and 1 relative to the call. However, the increase in trading volume is markedly smaller around calls involving vague managers (those in the top decile of the distribution of vagueness), represented by the solid line in both panels of Figure 6, than straight-talking ones (those in the bottom decile, dotted line). For vague CEOs, trading volume increases by 55%, compared to 72% straight-talking ones. The resulting difference of 17% (percentage points) is highly statistically significant ($t = 20.9$). For CFOs, the difference between straight-talking and vague is 10% and also significant ($t = 10.2$). Importantly, there is no systematic difference in abnormal trading volume further out in the event window, which suggests the impact is indeed coming from vague

communication during the earnings conference calls. We confirm the significance of vague style for trading volume in a multivariate setting in columns (3) and (4) of Table 9.

In sum, these results show that investors are less willing to trade on earnings news when the communication needed to interpret this news is vague.

5.2.2 Analyst reactions to vaguely communicated earnings

Analysts incorporate information form earnings conference calls into their forecasts and we examine whether managerial vagueness plays a role in this process. First, we examine the delay that vagueness may induce. Columns (1)-(2) of Table 10 show that CEO and CFO style of vagueness increases the time it takes for analyst forecasts to adjust to the newly released earnings information. Consistent with the effect on delay, the share of analysts revising their forecasts in the first 3 days following the call is lower for calls attended by vague CEOs and CFOs, as shown in columns (3) and (4). This also helps alleviate the concern that the effect of vagueness on delay could be driven by a few particularly "slow" analysts.

[Table 10 about here]

Finally, we would also expect vagueness to make it more difficult for analysts to maintain confidence in their estimates of future earnings. Columns (5) and (6) show that CEO style of vagueness increases the frequency with which they revise their forecasts in the following quarter. For the CFO, style of vagueness also has the predicted positive effect but it is not quite significant. The absolute earnings surprise itself is not significantly associated with future revision frequency, so the result is not driven by vague style coinciding with extreme surprises.

In sum, these results provide support for Hypothesis 3. They suggest that the negative effect of managerial vagueness on the informativeness of the earnings surprise for stock market participants goes hand-in-hand with higher confusion among analysts, too.

5.2.3 Managerial vagueness and firm value

Finally, we consider the relation between vagueness and firm value. If vagueness makes it more difficult for stock market participants to assess the situation of a company, this higher uncertainty would likely be reflected in lower valuations, too. Because Tobin's Q is highly persistent, we employ a purely cross-sectional approach, averaging Tobin's Q and the explanatory variables over time for each manager.

[Table 11 about here]

We find that in large firms, CEO and CFO vagueness is strongly negatively associated with Tobin's Q. In small firms, after controlling for industry fixed effects and other controls, there is

no significant association. This suggest that as companies grow, clear communication becomes more important.

6 Conclusions

Earnings statements need to be interpreted by market participants. It has long been known that earnings do not get immediately impounded into stock prices. This paper highlights the role of managerial communication surrounding the release of earnings news. In particular, there is substantial variation in the extent to which managers use uncertain words (like "approximately", "probably", or "maybe") when communicating with analysts and the stock market on earnings conference calls. The structure of these calls – a scripted presentation and an at least somewhat more improvized questions and answers part – allows us to separate out, without relying on manager transitions among firms, manager-fixed effects on the one hand and variation due to the culture of the company and the current situation of the company on the other hand. Style exists: Some CEOs and CFOs are consistently "straight-talking" while others exhibit a "vague" communication style. Moreover, style matters: The variation in how fast the stock market and analysts incorporate earnings news into stock prices and earnings forecasts, respectively, depends on managerial vagueness.

A related question is whether managers adopt a vague style when they have greater incentives to do so and when it is easier for them to get away with it. For instance, if a manager's compensation heavily depends on the stock price, she might be particularly inclined to cushion the impact of bad earnings news and hence communicate vaguely overall. Also, vague words provide the managers protection if outcomes are different than suggested. On the other hand, if there are many sophisticated investors involved in the firm, it might be more difficult to avoid providing detailed information. These natural and exciting extensions are the subject of ongoing research.

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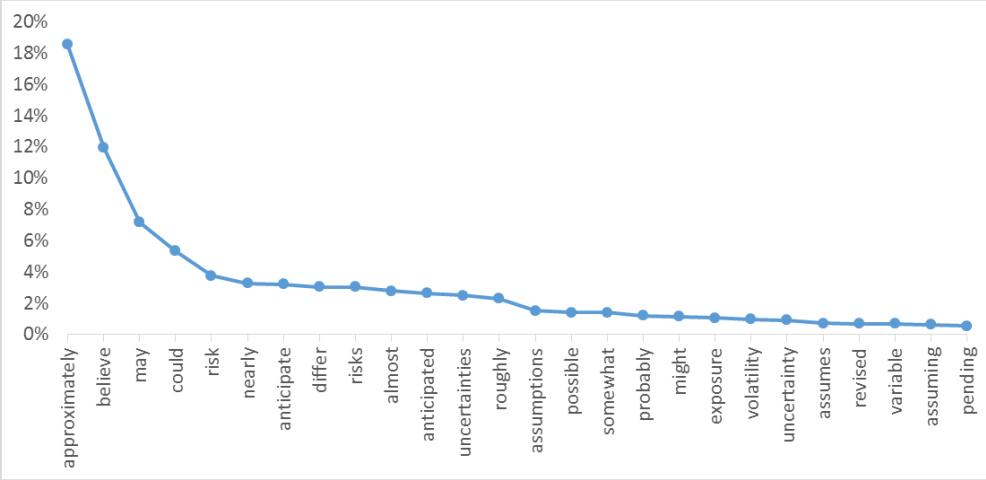
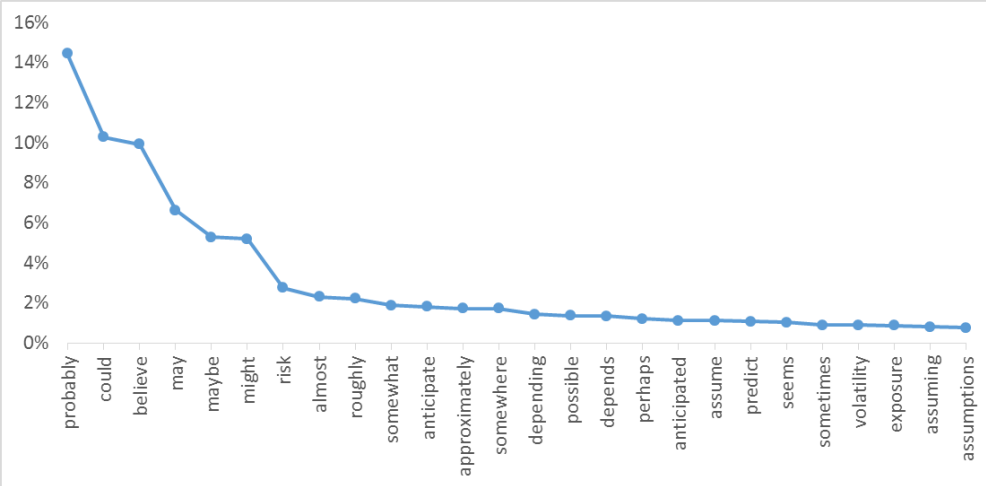
Figure 1: Top 25 most frequently occurring uncertain words in presentations and answers

(a) Presentations



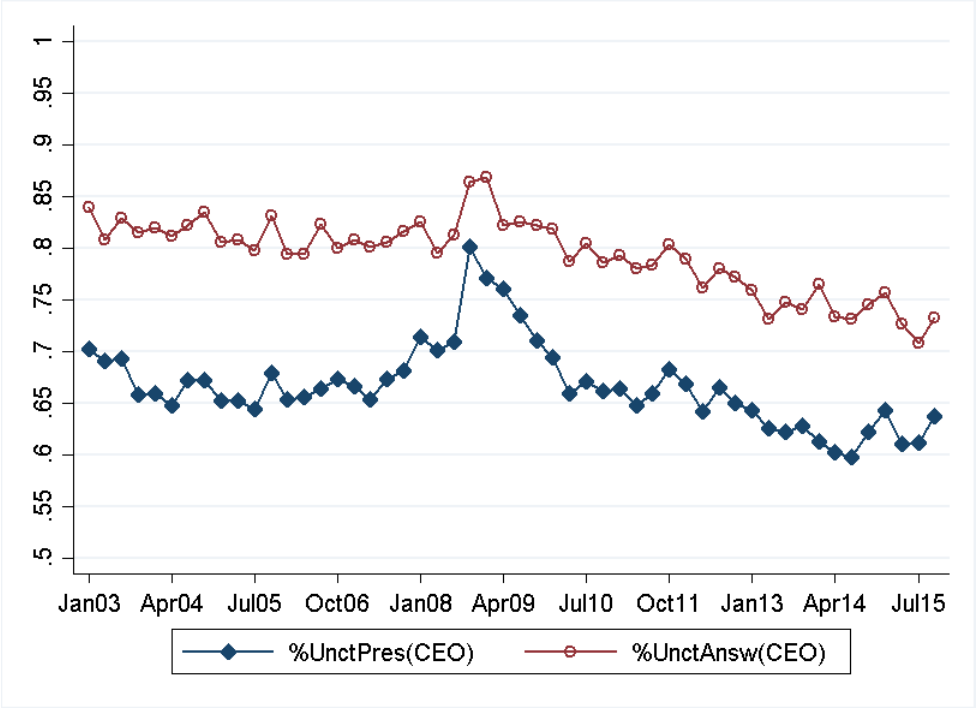
(b) Answers



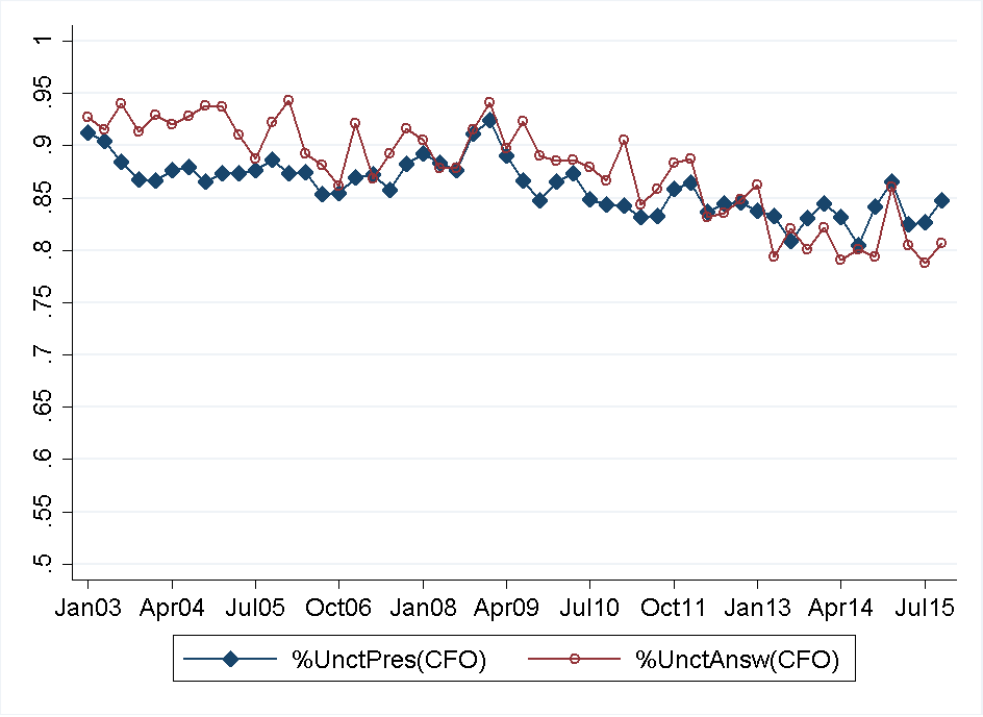
This figure plots the frequencies of the 25 most popular uncertain words occurring in conference calls in our sample. Words used in presentations are shown in Panel (a) and words used in answers are shown in Panel (b). The denominator is the sum of all uncertain word counts across all conference call presentations or answers, respectively.

Figure 2: Frequency of uncertain words in presentations and answers over time

(a) CEOs



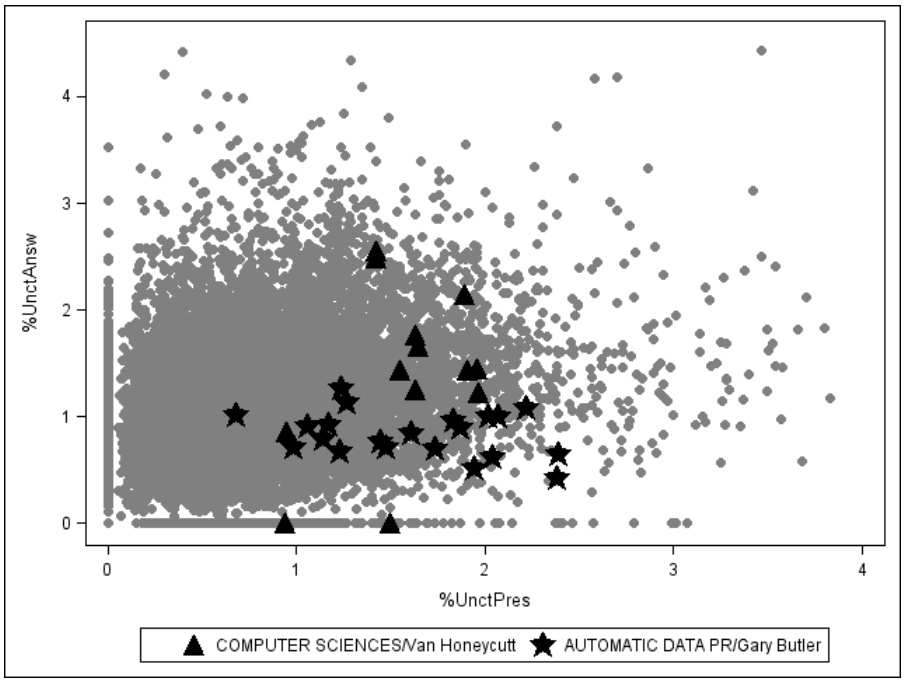
(b) CFOs



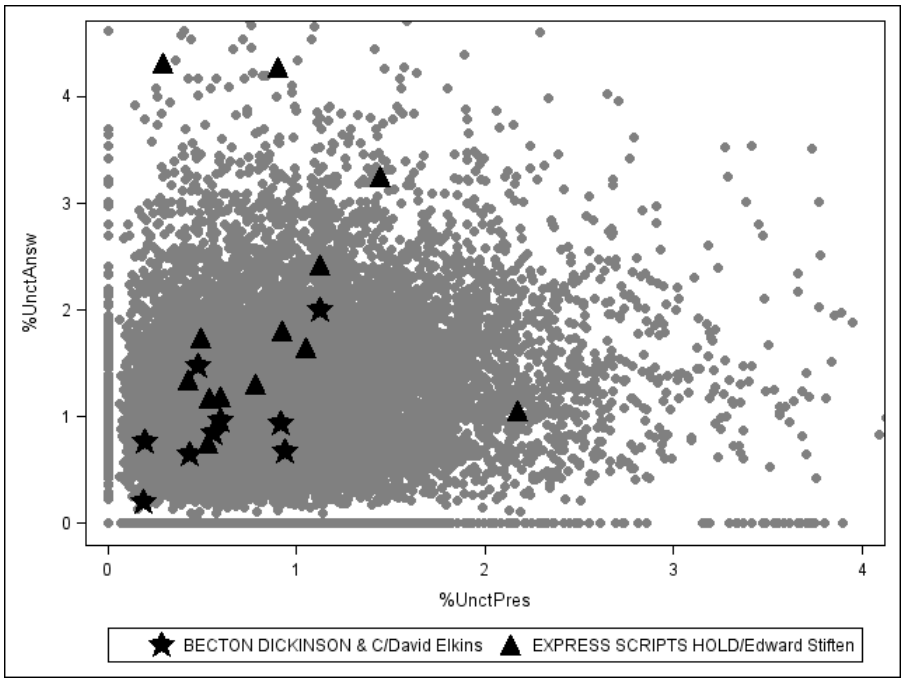
This figure plots *%Unct*, the frequency of uncertain in total words in conference calls spoken over time. It shows results separately for presentations and answers. Panels (a) and (b) focus on CEOs and CFOs, respectively.

Figure 3: Distribution of the frequency of uncertain words in manager presentations and answers in S&P500 firms

(a) CEOs (N=1,087; NCalls=24,518)



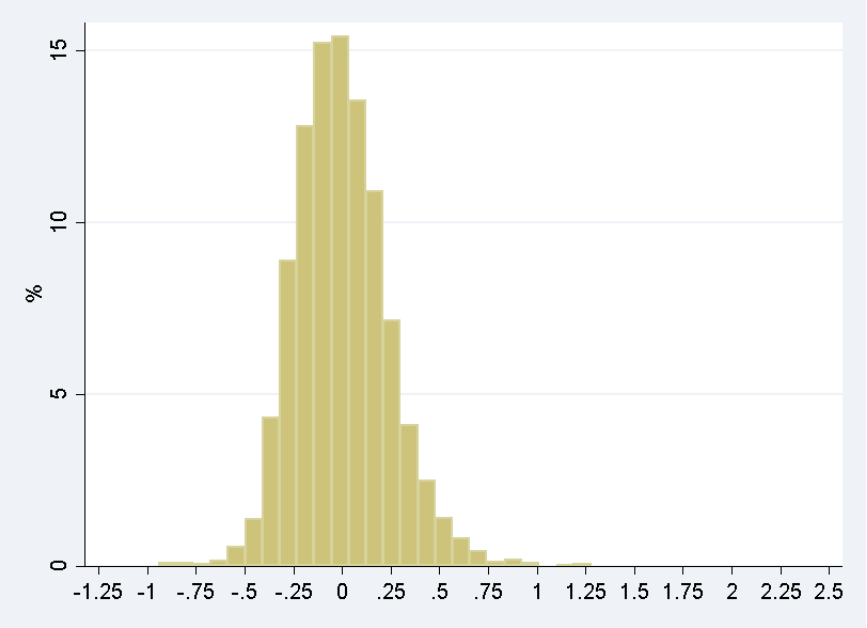
(b) CFOs (N=1,215; NCalls=26,308)



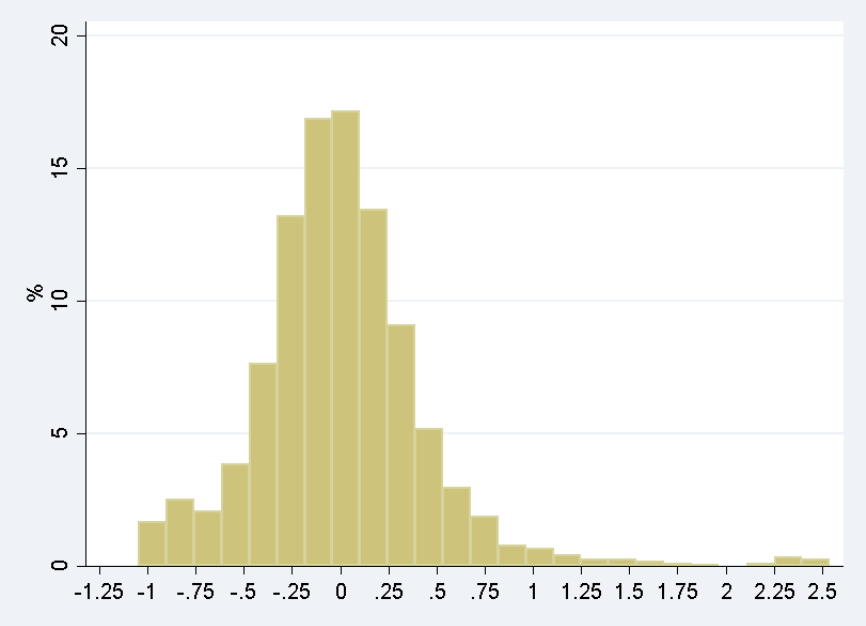
This figure plots %Unct$_{MGR}$Answ versus %Unct$_{MGR}$Pres for all CEOs, in Panel (a), and CFOs, in Panel (b), of S&P500 firms, who have attended at least 5 calls between 2003 and 2015. In total, 24,518 calls involving 1,087 distinct CEOs and 26,308 calls involving 1,215 distinct CFOs are depicted.

Figure 4: Distribution of manager style

(a) CEOs (N=5,982)



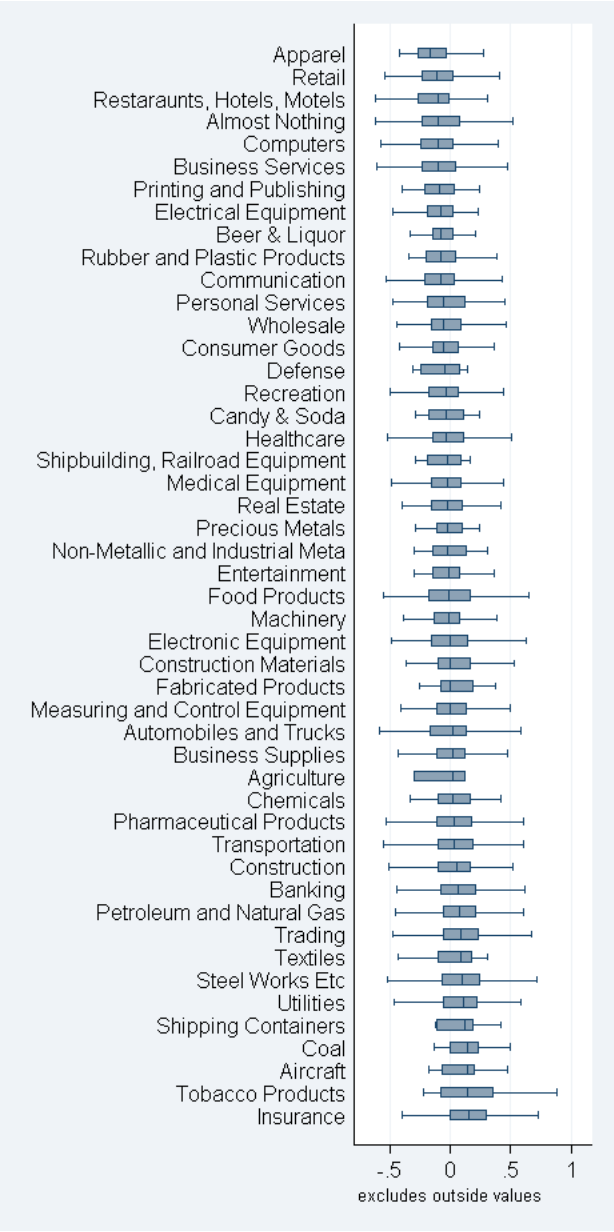
(b) CFOs (N=6,177)



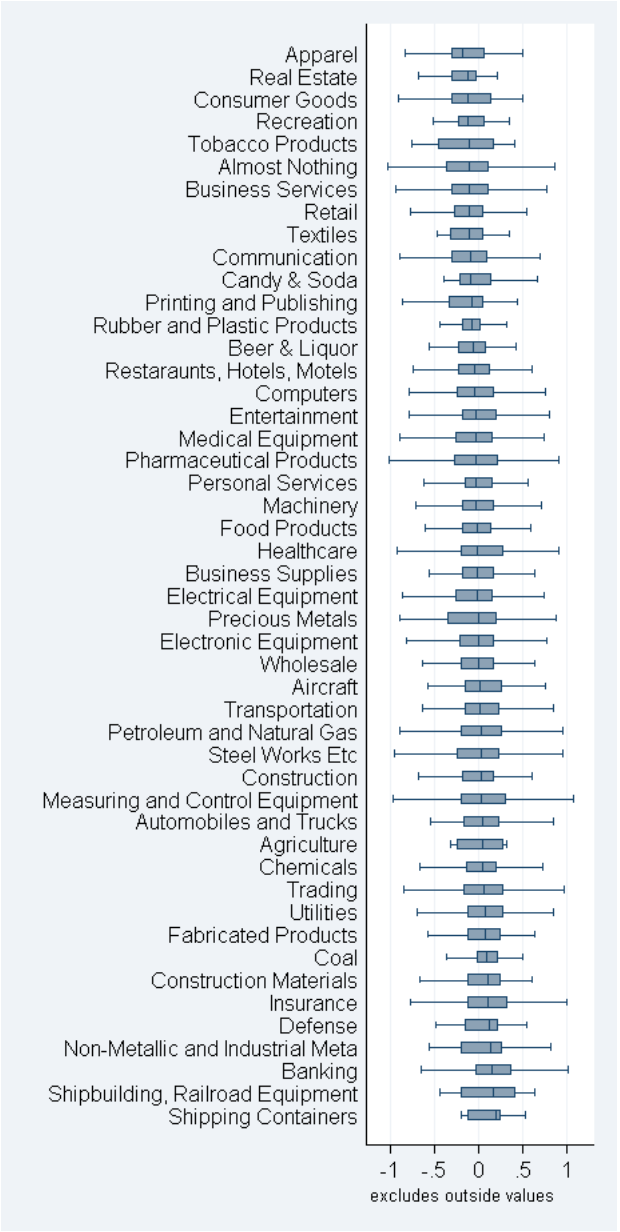
This figure shows the distribution of individual manager fixed effects estimated according to Equation 4, Section 4.2.2, which represent the different styles of vagueness among managers. In total, 5,982 CEOs (upper panel) and 6,177 CFOs (lower panel) are included. The range of the X-axis is aligned in Panels (a) and (b) for ease of interpretation.

Figure 5: Manager style across industries

(a) CEOs (N=5,982)



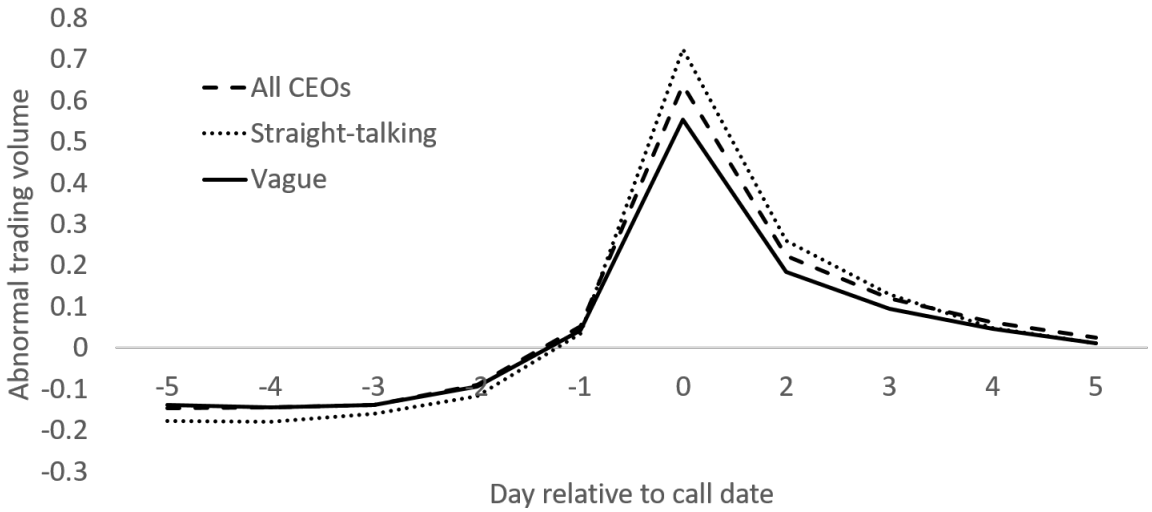
(b) CFOs (N=6,177)



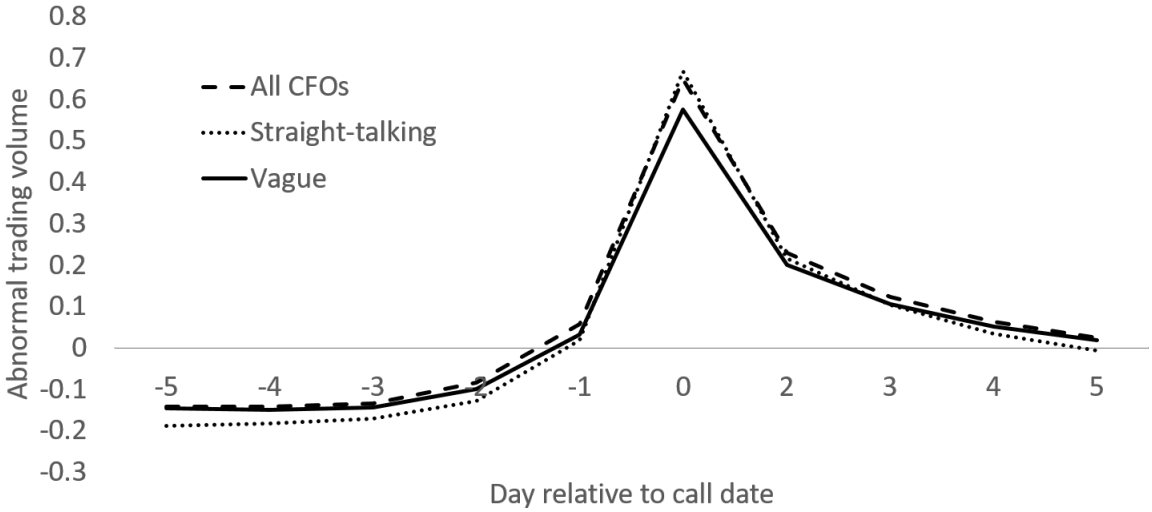
This figure shows horizontal box plots of the distribution of manager style of vagueness (estimated according to Equation 4, Section 4.2.2), within each of the Fama-French 48 industries. The box shows interquartile range (25-75) with median highlighted, while the tips of the whiskers are set at 1.5 times the interquartile range (values outside these bounds are excluded). Industries are sorted according to the median style, with the least vague shown on top. In total, 5,982 CEOs (left panel) and 6,177 CFOs (right panel) are included.

Figure 6: Manager vagueness and trading around the call date

(a) CEOs



(b) CFOs



This figure illustrates the daily abnormal trading volume, taken to indicate the amount of information entering the market, around earnings calls attended by managers (CEOs and CFOs) with different levels of vague style, estimated according to Equation 4. Abnormal trading volume is defined as the natural logarithm of the ratio of daily trading volume (in shares) to its daily pre-event average, calculated over a window starting 45 days and ending 6 days before each call. Since we do not know the exact timing of the call, in particular whether it occurred before or after market close, we report the average of event days 0 and 1, rather than each of them separately. The x-axis shows the corresponding average on day 0 (and, therefore, then shows day 2 next). The dashes line is the average for all managers. The solid (dotted) line is the average for managers in the top (bottom) decile of vague style.

Table 1: Conference-call sample summary

	Full sample			CEO sample			CFO sample		
	N (1)	mean (2)	stdev (3)	N (4)	mean (5)	stdev (6)	N (7)	mean (8)	stdev (9)
N calls	122,160			105,626			102,675		
N firms / Calls per firm	5,095 /	23.98	17.99	4,095 /	28.86	16.48	4,044 /	29.05	16.54
WordsCall		5,931	2,156		6,013	2,086		6,044	2,094
%UnctCall		0.844	0.263		0.846	0.258		0.843	0.257
WordsPres		2,888	1,335		2,941	1,297		2,961	1,302
%UnctPres		0.863	0.336		0.867	0.335		0.864	0.333
WordsAnsw		3,043	1,611		3,072	1,540		3,083	1,542
%UnctAnsw		0.823	0.319		0.825	0.316		0.824	0.315
N calls (CEO present)	114,290			105,626					
N CEOs / Calls per CEO	9,859 /	11.59	11.78	6,057 /	17.56	11.52			
Words_{CEO}Pres		1,354	833.3		1,363	833.4			
$\%\text{Unct}_{CEO}$Pres		0.666	0.391		0.668	0.392			
$\%\text{Neg}_{CEO}$Pres		0.863	0.555		0.865	0.556			
$\%\text{Numb}_{CEO}$Pres		2.819	1.608		2.840	1.609			
Complex_{CEO}Pres		20.61	5.469		20.64	5.403			
Words_{CEO}Answ		1,852	1,258		1,886	1,261			
$\%\text{Unct}_{CEO}$Answ		0.790	0.405		0.793	0.402			
$\%\text{Neg}_{CEO}$Answ		0.758	0.412		0.758	0.407			
$\%\text{Numb}_{CEO}$Answ		1.073	0.744		1.077	0.739			
Complex_{CEO}Answ		19.07	4.741		19.12	4.668			
N calls (CFO present)	113,071						102,675		
N CFOs / Calls per CFO	11,098 /	10.19	10.83				6,371 /	16.24	10.84
Words_{CFO}Pres		1,134	732.1					1,153	735.9
$\%\text{Unct}_{CFO}$Pres		0.860	0.557					0.862	0.554
$\%\text{Neg}_{CFO}$Pres		0.913	0.584					0.910	0.583
$\%\text{Numb}_{CFO}$Pres		6.922	6.253					6.997	6.289
Complex_{CFO}Pres		20.24	6.776					20.31	6.688
Words_{CFO}Answ		796.5	794.2					818.9	801.3
$\%\text{Unct}_{CFO}$Answ		0.874	0.635					0.877	0.628
$\%\text{Neg}_{CFO}$Answ		0.720	0.568					0.720	0.561
$\%\text{Numb}_{CFO}$Answ		1.563	3.066					1.585	3.072
Complex_{CFO}Answ		17.40	6.382					17.58	6.205
Other language variables									
%UnctAnaly	118,848	1.282	0.454	103,300	1.288	0.449	100,354	1.290	0.447
%NegAnaly		1.255	0.467		1.251	0.461		1.252	0.458
%UnctEPR		1.228	0.554		1.231	0.548		1.229	0.547
Firm characteristics									
ln(Assets)		7.343	1.874		7.336	1.806		7.412	1.834
DailyVola		0.405	0.271		0.399	0.262		0.395	0.259
EPS growth (yoy)		-0.0274	1.784		-0.0245	1.772		-0.0176	1.759
Guidance		0.175	0.380		0.180	0.384		0.183	0.387
StockRet		2.191	20.19		2.540	19.84		2.556	19.58
SurpDec		0.852	3.162		0.881	3.123		0.906	3.101
Tobin's Q		1.947	1.339		1.947	1.334		1.942	1.327
MarketRet		0.0192	0.0838		0.0213	0.0838		0.0213	0.0839
Outcomes									
AbnVol	121,877	0.622	0.631	105,517	0.635	0.620	102,574	0.639	0.613
CAR01(%)	98,770	0.0608	7.041	86,174	0.113	7.065	84,427	0.115	7.018
ACAR01 (%)	98,770	5.217	4.730	86,174	5.251	4.728	84,427	5.205	4.708
AnalyDelay	113,960	0.211	0.177	100,059	0.209	0.175	97,549	0.210	0.175
RevFreq	118,683	0.287	0.372	103,219	0.285	0.368	100,420	0.287	0.367
ShareAnalyPost	122,160	0.499	0.317	105,626	0.505	0.313	102,675	0.506	0.311

Summary statistics are presented for three samples relevant to our analysis. The full sample contains all conference calls for US public firms from 2003 to 2015, obtained from Thomson Reuters Street Events. The CEO/CFO samples reflect the data we later use to estimate CEO/CFO style. To qualify for the CEO/CFO sample, the manager must have participated (either as CEO or as CFO) in at least 5 calls during her combined tenure (possibly at more than one firm). Firm-level call characteristics are calculated for all participating company representatives combined. At the CEO/CFO level, the same statistics refer to the specific manager speaking. $\%Unct_{MGR}Pres$ ($Answ$) the fraction of uncertain words a given manager used in the presentation (answers) part of a call. Detailed definitions of all variables are provided in Table A.1 of the Supplementary Appendix.

Table 2: Manager vagueness and immediate earnings response: Testing Hypothesis 1

	Team vagueness				CEO	CFO	
	all	all	all	all	all	all	SP500
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
SurpDec	0.873***	0.841***	0.844***	1.159***	1.119***	1.148***	0.856***
	(27.34)	(26.26)	(26.34)	(11.65)	(14.11)	(13.54)	(4.56)
%UnctCall	-0.211*						
	(-1.93)						
%UnctCall × SurpDec	-0.128***						
	(-3.60)						
%UnctPres		-0.233***	-0.213**	-0.229***	-0.158**	-0.119**	0.031
		(-2.73)	(-2.50)	(-2.71)	(-2.18)	(-2.14)	(0.26)
%UnctPres × SurpDec		-0.015	-0.016	0.006	-0.017	-0.022	0.018
		(-0.54)	(-0.58)	(0.22)	(-0.70)	(-1.21)	(0.32)
%UnctAnsw		0.030	0.027	0.007	0.030	0.108**	0.093
		(0.36)	(0.33)	(0.08)	(0.46)	(2.49)	(1.03)
%UnctAnsw × SurpDec		-0.079***	-0.081***	-0.046*	-0.050**	0.001	-0.093***
		(-2.98)	(-3.07)	(-1.75)	(-2.46)	(0.08)	(-2.64)
%NegCall	-1.746***						
	(-18.93)						
%NegPres		-0.967***	-0.953***	-0.854***	-0.601***	-0.505***	-0.410***
		(-14.44)	(-14.21)	(-12.44)	(-11.13)	(-9.23)	(-4.26)
%NegPres × SurpDec				-0.146***	-0.036**	-0.185***	-0.044
				(-7.23)	(-2.18)	(-11.20)	(-1.20)
%NegAnsw		-0.712***	-0.730***	-0.768***	-0.497***	-0.192***	-0.095
		(-8.70)	(-8.91)	(-9.04)	(-7.44)	(-3.85)	(-0.95)
%NegAnsw × SurpDec				0.043	0.026	0.011	-0.033
				(1.57)	(1.25)	(0.68)	(-0.85)
%UnctAnaly	0.053	0.050	0.055	0.078	0.059	0.058	0.090
	(1.04)	(0.98)	(1.08)	(1.46)	(1.04)	(0.92)	(0.68)
%UnctAnaly × SurpDec				-0.023	-0.029	-0.036*	-0.094*
				(-1.34)	(-1.59)	(-1.76)	(-1.79)
%NegAnaly	-0.725***	-0.728***	-0.724***	-0.689***	-0.801***	-0.935***	-0.853***
	(-13.16)	(-13.13)	(-13.07)	(-12.00)	(-13.49)	(-14.15)	(-6.41)
%NegAnaly × SurpDec				-0.046**	-0.065***	-0.027	-0.030
				(-2.53)	(-3.54)	(-1.29)	(-0.59)
Guidance			-0.476***	-0.811***	-0.762***	-0.754***	-0.344**
			(-6.19)	(-9.50)	(-8.51)	(-8.06)	(-2.32)
Guidance × SurpDec				0.236***	0.238***	0.220***	0.229***
				(7.65)	(7.68)	(6.83)	(3.32)
%NumbersPres			0.120***	0.105***	0.144***	0.010**	0.008
			(6.56)	(5.51)	(7.96)	(1.99)	(1.12)
%NumbersPres × SurpDec				0.014**	-0.008	0.004**	-0.002
				(2.16)	(-1.31)	(2.21)	(-0.60)
%NumbersAnsw			-0.080**	-0.028	-0.126***	0.012	0.007
			(-2.11)	(-0.70)	(-3.26)	(1.25)	(0.48)
%NumbersAnsw × SurpDec				-0.057***	-0.017	-0.012***	-0.025***
				(-4.29)	(-1.34)	(-4.00)	(-4.18)

Table 2 – continued

	Team vagueness				CEO	CFO	
	all	all	all	all	all	all	SP500
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ComplexityPres			-0.019*	-0.012	-0.012	-0.007	-0.005
			(-1.74)	(-1.07)	(-1.31)	(-0.79)	(-0.28)
ComplexityPres × SurpDec				-0.008**	-0.007**	-0.006*	0.002
				(-2.02)	(-2.33)	(-1.76)	(0.32)
ComplexityAnsw			-0.015**	-0.015*	-0.009	-0.013**	-0.000
			(-2.07)	(-1.87)	(-1.38)	(-2.30)	(-0.02)
ComplexityAnsw × SurpDec				-0.001	0.000	0.002	0.006
				(-0.22)	(0.13)	(0.91)	(1.36)
StockRet	-0.010***	-0.010***	-0.010***	-0.010***	-0.011***	-0.010***	-0.007
	(-6.64)	(-6.58)	(-6.73)	(-6.86)	(-6.73)	(-5.73)	(-1.52)
EPS growth (yoy)	0.036**	0.035**	0.032**	0.030*	0.040**	0.041**	0.075*
	(2.30)	(2.26)	(2.08)	(1.96)	(2.44)	(2.33)	(1.77)
DailyVola	0.179	0.158	0.160	0.082	0.027	0.055	0.937**
	(1.13)	(1.00)	(1.01)	(0.52)	(0.16)	(0.31)	(2.21)
ln(Assets)	-0.033*	-0.029	-0.013	-0.008	-0.021	-0.010	0.059
	(-1.65)	(-1.47)	(-0.64)	(-0.42)	(-0.95)	(-0.44)	(1.42)
Tobin's Q	-0.199***	-0.196***	-0.190***	-0.180***	-0.154***	-0.112***	0.060
	(-7.20)	(-7.09)	(-6.90)	(-6.57)	(-5.48)	(-3.92)	(1.13)
MarketRet	-0.525	-0.527	-0.540	-0.549	-0.591	-0.467	-1.677**
	(-1.44)	(-1.44)	(-1.48)	(-1.51)	(-1.53)	(-1.12)	(-2.17)
Intercept	2.080***	2.039***	2.300***	1.963***	1.602***	1.401***	-0.956
	(6.24)	(6.12)	(5.43)	(4.59)	(4.15)	(3.39)	(-1.26)
N Obs	91,528	91,528	91,528	91,528	83,751	71,093	14,953
N Clusters	3,996	3,996	3,996	3,996	3,928	3,713	566
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.120	0.120	0.121	0.123	0.122	0.127	0.116

This table presents panel regressions of the cumulative abnormal returns (CAR) over [0:1] days relative to the call date on vagueness, the earnings surprise, and control variables. Abnormal stock returns are computed following Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW); see Section 4.1 for details. In column (1), the measure of vagueness is the frequency on uncertain words in all words spoken jointly by management during each conference call. In the following columns, we differentiate between presentation and answers vagueness, as well as CEO and CFO vagueness. The effect of vagueness on the earnings response coefficient is modeled as an interaction term with the earnings surprise. All variables are defined in Table A.1 in the Supplementary Appendix. The sample comprises all US public companies from 2003 to 2015. Column (7) uses the S&P500 companies. t-statistics shown in parentheses are clustered by firm. Significance levels: * - 10%, ** - 5%, *** - 1%

Table 3: Managerial turnover and the language of earnings conference calls

	Panel (a): Two different manager at the same firm			Panel (b): Same manager at two different firms		
	Control (1)	Old/New Manager (2)	Difference (3)	Control (4)	Old/New Firm (5)	Difference (6)
CEO turnovers		N= 1,578			N= 68	
$\rho_{BEF/AFT}(\%UnctEPR)$	0.74	0.66	-0.09 *** (-4.80)	0.82	0.15	0.67 *** (5.68)
$\rho_{BEF/AFT}(\%Unct_{CEO}Pres)$	0.65	0.46	-0.19 *** (-7.80)	0.61	0.22	0.39 *** (2.78)
$\rho_{BEF/AFT}(\%Unct_{CEO}Answ)$	0.70	0.26	-0.44 *** (-16.86)	0.69	0.43	0.26 *** (2.20)
CFO turnovers		N= 1,665			N= 279	
$\rho_{BEF/AFT}(\%UnctEPR)$	0.76	0.69	-0.07 *** (-4.25)	0.80	0.12	0.68 *** (11.60)
$\rho_{BEF/AFT}(\%Unct_{CFO}Pres)$	0.76	0.51	-0.25 *** (-12.72)	0.80	0.19	0.61 *** (10.79)
$\rho_{BEF/AFT}(\%Unct_{CFO}Answ)$	0.54	0.22	-0.32 *** (-10.95)	0.45	0.41	0.04 (0.58)

Panel (a) shows correlations, at the same firm, between average frequency of uncertain words in the earnings press release (EPR) as well as the presentation and answers parts, before and after a manager (CEO or CFO) turnover takes place. For each "turnover" firm, a matching "control" firm from the same Fama-French 17 industry is identified, which did not experience a manager turnover. The matching is based on similarity of observation period, average assets as well as %Unct words spoken by the CEO or CFO in the presentation and answers part during the pre-turnover period. Average frequency of uncertain words for each "control" firm is calculated using the same number of quarters before and after the turnover date as for the corresponding "turnover" firm. Only manager turnovers with at least five quarters of data available before and after for both the "turnover" and "control" firm are considered. Panel (b) provides a complementary analysis by following the same manager (a "switcher") from one firm to another. Significance testing of the differences is based on Fisher transformations of the correlation coefficients, according to:

$$z = \frac{F(\rho_1) - F(\rho_2)}{\sqrt{\frac{1}{(N_1-3)} + \frac{1}{(N_2-3)}}}$$

Significance levels: * - 10%, ** - 5%, *** - 1%

Table 4: Estimating vagueness at the manager level

	CEO		CFO	
	(1)	(2)	(3)	(4)
%UnctPres	0.207***	0.095***	0.086***	0.059***
	(63.50)	(25.08)	(22.23)	(10.15)
%UnctAnaly	0.054***	0.046***	0.055***	0.045***
	(19.04)	(17.31)	(11.42)	(9.10)
%NegAnsw	0.108***	0.068***	0.038***	0.028***
	(32.81)	(20.76)	(9.73)	(7.05)
%NegAnaly	-0.012***	-0.008***	-0.004	-0.004
	(-4.17)	(-2.68)	(-0.80)	(-0.78)
SurpDec	0.003	0.055	0.013	0.081
	(0.08)	(1.42)	(0.18)	(1.14)
StockRet	0.012*	-0.010	0.008	0.000
	(1.77)	(-1.57)	(0.72)	(0.01)
EPS growth (yoy)	0.047	-0.022	-0.118	-0.136
	(0.66)	(-0.33)	(-0.98)	(-1.13)
DailyVola	0.012**	0.026***	0.000	0.022**
	(2.11)	(4.53)	(0.00)	(2.03)
ln(Assets)	-0.004***	-0.021***	-0.012***	-0.024***
	(-4.97)	(-7.11)	(-9.52)	(-4.50)
MarketRet	-0.013	-0.022	-0.011	-0.010
	(-0.80)	(-1.47)	(-0.38)	(-0.35)
Nobs	94,341	94,341	87,183	87,183
Manager f.e.	No	Yes	No	Yes
R^2	0.064	0.336	0.010	0.223

The dependent variable in columns (1) and (2) is the call-level vagueness in CEO answers (%Unct$_{CEO}$Answ). In columns (3) and (4) it is the call-level vagueness in CFO answers (%Unct$_{CFO}$Answ). Columns (1) and (3) are estimated using OLS, columns (2) and (4) additionally include CEO and CFO fixed effects, respectively. $\%Unct_{MGR}Pres$ controls for vagueness in communication resulting from persistent firm characteristics (such as firm culture) and time-varying business conditions. Other explanatory variables include negativity in answers (measured separately for CEO and CFO), negativity and uncertainty in analyst questions as well as various firm characteristics. All variables are defined in Table A.1 in the Supplementary Appendix. Variants of these regressions using more and different control variables are presented in Table **??** in the Supplementary Appendix. t-statistics shown in parentheses are clustered by manager. Significance levels: * - 10%, ** - 5%, *** - 1%

Table 5: Manager style by age cohort

Age	CEO style				CFO style			
cohort	N	p25	Average	p75	N	p25	Average	p75
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1910	1	0.47	0.47	0.47				
1920	11	-0.19	0.02	0.28				
1930	126	-0.10	0.06	0.21	6	-0.10	0.15	0.52
1940	897	-0.10	0.05	0.18	314	-0.08	0.11	0.29
1950	1,473	-0.14	0.01	0.15	1,295	-0.14	0.05	0.21
1960	698	-0.17	-0.02	0.10	1,323	-0.19	0.00	0.16
1970	56	-0.23	-0.08	0.06	240	-0.21	-0.02	0.15
1980	2	-0.34	-0.30	-0.26	3	-0.54	0.16	1.00

This table summarizes style of vagueness for managers from different age cohorts, defined as the decade of birth. The sample is limited to managers for which we can obtain age from Execucomp. For each cohort, the number of CEOs (left side of the table) as well as average style and the 25th and 75th percentile of style is shown. The same information is provided for CFOs on the right side of the table. Managerial style of vagueness is estimated according to Equation 4, Section 4.2.2.

Table 6: Manager vagueness style and immediate earnings response: Refining Hypothesis 1

	Full sample		SP500		non-SP500	
	CEO	CFO	CEO	CFO	CEO	CFO
	(1)	(2)	(3)	(4)	(5)	(6)
SurpDec	1.110***	1.209***	0.758***	0.860***	1.157***	1.253***
	(13.44)	(14.02)	(4.02)	(4.44)	(12.88)	(13.33)
VagueStyle	0.524***	-0.025	0.507*	0.444*	0.489***	-0.081
	(3.58)	(-0.23)	(1.86)	(1.82)	(2.95)	(-0.66)
VagueStyle × SurpDec	-0.176***	0.009	-0.394***	-0.242***	-0.131**	0.034
	(-3.60)	(0.24)	(-3.65)	(-2.62)	(-2.46)	(0.91)
VagueResid	-0.083	0.162***	-0.293*	0.137	-0.059	0.175***
	(-1.09)	(3.31)	(-1.88)	(1.42)	(-0.68)	(3.19)
VagueResid × SurpDec	-0.002	-0.004	0.097	-0.086**	-0.013	0.005
	(-0.07)	(-0.28)	(1.53)	(-2.29)	(-0.51)	(0.30)
%UnctPres	-0.222***	-0.104*	-0.096	0.037	-0.237***	-0.121**
	(-3.00)	(-1.85)	(-0.71)	(0.29)	(-2.80)	(-1.96)
%UnctPres × SurpDec	0.003	-0.024	0.059	0.015	-0.011	-0.031
	(0.14)	(-1.27)	(1.01)	(0.26)	(-0.42)	(-1.61)
Guidance	-0.744***	-0.766***	-0.342**	-0.344**	-0.835***	-0.846***
	(-8.28)	(-8.01)	(-2.24)	(-2.26)	(-7.97)	(-7.58)
Guidance × SurpDec	0.224***	0.218***	0.249***	0.229***	0.221***	0.213***
	(6.98)	(6.56)	(3.84)	(3.30)	(6.16)	(5.81)
MarketRet	-0.816**	-0.597	-1.373*	-1.710**	-0.650	-0.275
	(-2.07)	(-1.40)	(-1.87)	(-2.17)	(-1.41)	(-0.55)
Intercept	1.865***	1.544***	-0.624	-1.025	1.575***	1.216**
	(4.66)	(3.63)	(-0.73)	(-1.30)	(3.37)	(2.45)
N Obs	78,740	67,689	16,367	14,250	62,373	53,439
N Clusters	3,416	3,324	571	548	3,072	2,982
Other speech (+ int.)	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Firm f.e.	No	No	No	No	No	No
R^2	0.124	0.127	0.116	0.118	0.128	0.131

This table presents panel regressions of the cumulative abnormal returns (CAR) over [0:1] days relative to the call date on vagueness, the earnings surprise, and control variables. Columns (1) and (2) use all US public companies from 2003 to 2015, columns (3) and (4) the S&P500 firms, columns (5) and (6) the non-S&P500 firms. Abnormal stock returns are computed following Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW); see Section 4.1 for details. The effect of vagueness on the earnings response coefficient is modeled as an interaction term of $Vague_{MGR}Style$ with the earnings surprise (and $Vague_{MGR}Resids$ with the earnings surprise). $Vague_{MGR}Style$ is the MGR's (CEO's or CFO's) style of vagueness estimated from the language of her answers to analyst questions during earnings conference calls, according to Equation 4. $Vague_{MGR}Resids$ represents the residuals from Equation 4, i.e., deviations from style. In addition to the shown variables, all regressions control, as indicated at the bottom of the table, for the same controls as Table 2, columns (5)-(7), respectively. All variables are defined in Table A.1 in the Supplementary Appendix. t-statistics shown in parentheses are based on standard errors clustered by manager. Significance levels: * - 10%, ** - 5%, *** - 1%.

Table 7: Manager vagueness style and immediate earnings response: Turnover sample

	all turnover		SP500 turnover		Non-SP500 turnover	
	CEO	CFO	CEO	CFO	CEO	CFO
	(1)	(2)	(3)	(4)	(5)	(6)
SurpDec	1.151***	1.293***	0.921***	0.669***	1.223***	1.448***
	(9.05)	(9.81)	(3.71)	(2.93)	(8.47)	(9.33)
VagueStyle	0.699***	0.072	0.596	0.558	0.585**	-0.010
	(3.13)	(0.41)	(1.56)	(1.63)	(2.12)	(-0.05)
VagueStyle × SurpDec	-0.252***	-0.040	-0.486***	-0.373***	-0.182**	0.012
	(-3.57)	(-0.64)	(-3.87)	(-3.25)	(-2.25)	(0.16)
VagueResid	-0.137	0.186***	-0.303	0.078	-0.117	0.226***
	(-1.28)	(2.73)	(-1.49)	(0.65)	(-0.94)	(2.81)
VagueResid × SurpDec	-0.029	-0.035	0.075	-0.101**	-0.044	-0.023
	(-0.86)	(-1.52)	(0.94)	(-2.18)	(-1.20)	(-0.90)
%UnctPres	-0.440***	0.006	-0.160	-0.163	-0.564***	0.056
	(-3.03)	(0.06)	(-0.53)	(-0.92)	(-3.37)	(0.49)
%UnctPres × SurpDec	0.016	-0.001	0.104	0.103*	-0.016	-0.026
	(0.36)	(-0.04)	(1.06)	(1.67)	(-0.33)	(-0.80)
Guidance	-0.784***	-0.813***	-0.548**	-0.711***	-0.889***	-0.830***
	(-5.45)	(-5.27)	(-2.37)	(-3.01)	(-4.98)	(-4.19)
Guidance × SurpDec	0.178***	0.192***	0.254***	0.274***	0.165***	0.177***
	(4.04)	(4.15)	(3.02)	(3.11)	(3.24)	(3.32)
MarketRet	0.018	0.270	-0.125	-0.752	0.178	0.777
	(0.03)	(0.47)	(-0.13)	(-0.82)	(0.26)	(1.06)
Intercept	7.067***	10.682***	7.194***	11.953***	7.215***	10.186***
	(6.99)	(9.25)	(2.87)	(4.21)	(6.29)	(7.44)
N Obs	39,154	34,617	10,286	10,449	28,868	24,168
N Clusters	1,210	1,236	323	372	1,030	1,002
Other speech (+ int.)	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	No	No	No	No	No	No
Firm f.e.	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.107	0.0836	0.103	0.0803	0.115	0.102

This table presents panel regressions of the cumulative abnormal returns (CAR) over [0:1] days relative to the call date on vagueness, the earnings surprise, and control variables. Columns (1) and (2) use all US public companies from 2003 to 2015 that experienced a CEO or CFO turnover, respectively, in that time period. Columns (3) and (4) use the S&P500 firms with a turnover, and columns (5) and (6) the non-S&P500 firms with a turnover. Abnormal stock returns are computed following Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW); see Section 4.1 for details. The effect of vagueness on the earnings response coefficient is modeled as an interaction term of $Vague_{MGR}Style$ with the earnings surprise (and $Vague_{MGR}Resids$ with the earnings surprise). $Vague_{MGR}Style$ is the MGR's (CEO's or CFO's) style of vagueness estimated from the language of her answers to analyst questions during earnings conference calls, according to Equation 4. $Vague_{MGR}Resids$ represents the residuals from Equation 4, i.e., deviations from style. In addition to the shown variables, all regressions control, as indicated at the bottom of the table, for the same controls as Table 2, columns (5)-(7), respectively. All variables are defined in Table A.1 in the Supplementary Appendix. t-statistics shown in parentheses are based on standard errors clustered by manager. Significance levels: * - 10%, ** - 5%, *** - 1%

Table 8: Manager vagueness style and immediate earnings response: CFO switchers

	all	SP500	non-SP500
	(1)	(2)	(3)
SurpDec	1.336***	0.799*	1.503***
	(5.60)	(1.77)	(5.39)
VagueStyle	0.361	1.866***	-0.020
	(1.01)	(2.82)	(-0.05)
VagueStyle × SurpDec	-0.268**	-0.734***	-0.179
	(-2.20)	(-3.03)	(-1.31)
VagueResid	0.107	0.022	0.205
	(0.69)	(0.09)	(1.12)
VagueResid × SurpDec	0.006	-0.221**	0.047
	(0.13)	(-2.34)	(0.80)
%UnctPres	-0.070	-0.220	-0.075
	(-0.37)	(-0.53)	(-0.35)
%UnctPres × SurpDec	-0.029	0.105	-0.059
	(-0.48)	(0.82)	(-0.87)
Guidance	-0.878***	-1.041**	-0.825**
	(-3.02)	(-2.52)	(-2.13)
Guidance × SurpDec	0.126	0.344**	0.091
	(1.48)	(2.25)	(0.92)
MarketRet	0.720	-1.411	1.695
	(0.64)	(-0.75)	(1.22)
Intercept	11.097***	13.877***	8.944***
	(5.18)	(2.98)	(3.54)
N Obs	9,554	3,207	6,347
Other speech (+ int.)	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes
Industry f.e.	No	No	No
Firm f.e.	Yes	Yes	Yes
R^2	0.0951	0.0851	0.122

This table presents panel regressions of the cumulative abnormal returns (CAR) over [0:1] days relative to the call date on vagueness, the earnings surprise, and control variables. Column (1) uses all US public companies from 2003 to 2015 where a CFO moves from one firm to another. Column (2) uses the S&P500 firms with a moving CFO, and column (3) uses the non-S&P500 firms with a moving CFO. Abnormal stock returns are computed following Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW); see Section 4.1 for details. The effect of vagueness on the earnings response coefficient is modeled as an interaction term of $Vague_{CFO}Style$ with the earnings surprise (and $Vague_{CFO}Resids$ with the earnings surprise). $Vague_{CFO}Style$ is the CFO's style of vagueness estimated from the language of her answers to analyst questions during earnings conference calls, according to Equation 4. $Vague_{CFO}Resids$ represents the residuals from Equation 4, i.e., deviations from style. In addition to the shown variables, all regressions control, as indicated at the bottom of the table, for the same controls as Table 2, columns (5)-(7), respectively. All variables are defined in Table A.1 in the Supplementary Appendix. t-statistics shown in parentheses are based on standard errors clustered by manager. Significance levels: * - 10%, ** - 5%, *** - 1%

Table 9: Manager vagueness and earnings informativeness in the short-run: Testing Hypothesis 2

	ACAR01		AbnVol	
	CEO	CFO	CEO	CFO
	(1)	(2)	(3)	(4)
VagueStyle	-0.459***	-0.256***	-0.041***	-0.041***
	(-3.98)	(-3.15)	(-2.70)	(-4.19)
VagueResid	-0.007	-0.031	-0.000	0.002
	(-0.16)	(-1.00)	(-0.05)	(0.55)
%UnctPres	0.077	0.051	0.028***	0.015***
	(1.56)	(1.22)	(5.19)	(3.18)
Guidance	0.231***	0.233***	0.047***	0.050***
	(3.95)	(3.78)	(6.52)	(6.72)
SurpDecAbs	0.431***	0.437***	0.046***	0.048***
	(30.67)	(28.78)	(31.25)	(30.52)
MarketRet	-0.648**	-0.608**	0.143***	0.152***
	(-2.49)	(-2.16)	(5.53)	(5.41)
Intercept	4.597***	5.000***	0.281***	0.354***
	(15.36)	(15.37)	(7.11)	(8.50)
N Obs	78,740	67,689	92,684	79,117
N Clusters	3,416	3,324	4,017	3,884
Other speech	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes
Industry f.e.	Yes	Yes	Yes	Yes
Firm f.e.	No	No	No	No
R^2	0.119	0.118	0.118	0.119

This table presents panel regressions. In columns (1) and (2), the dependent variable is the absolute cumulative abnormal returns (ACAR) over [0:1] days relative to the call date. Abnormal stock returns are computed following Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW); see Section 4.1 for details. In columns (3) and (4), the dependent variable is the abnormal trading volume; see Section 5.1 for details. $Vague_{MGR}Style$ is the MGR's (CEO's or CFO's) style of vagueness estimated from the language of her answers to analyst questions during earnings conference calls, according to Equation 4. $Vague_{MGR}Resids$ represents the residuals from Equation 4, i.e., deviations from style. In addition to the shown variables, all regressions control, as indicated at the bottom of the table, for the same controls as Table 2, columns (5)-(7), respectively. (Interactions are not included in this table.) All variables are defined in Table A.1 in the Supplementary Appendix. *t*-statistics shown in parentheses are clustered by manager.
Significance levels: : * - 10%, ** - 5%, *** - 1%

Table 10: Manager vagueness and analyst reactions to earnings: Testing Hypothesis 3

	AnalyDelay		ShareAnalyPost		RevFreqPost	
	CEO	CFO	CEO	CFO	CEO	CFO
	(1)	(2)	(3)	(4)	(5)	(6)
VagueStyle	0.008*	0.006*	-0.024**	-0.013**	0.027**	0.010
	(1.66)	(1.87)	(-2.45)	(-2.26)	(2.47)	(1.59)
VagueResid	-0.001	0.001	0.003	-0.001	0.005	0.001
	(-0.46)	(0.69)	(1.14)	(-0.35)	(1.56)	(0.78)
%UnctPres	-0.003*	-0.003**	0.003	0.008***	0.008**	0.005*
	(-1.72)	(-2.30)	(0.88)	(3.24)	(2.42)	(1.65)
Guidance	-0.025***	-0.025***	0.067***	0.066***	-0.015***	-0.017***
	(-12.07)	(-11.59)	(15.99)	(15.31)	(-3.51)	(-3.89)
SurpDecAbs	-0.007***	-0.007***	0.008***	0.008***	-0.001	-0.000
	(-15.18)	(-14.05)	(10.08)	(9.19)	(-0.87)	(-0.19)
MarketRet	-0.012	-0.018**	0.026**	0.029**	0.003	0.006
	(-1.51)	(-2.20)	(2.05)	(2.08)	(0.18)	(0.37)
Intercept	0.115***	0.130***	0.482***	0.485***	-0.257***	-0.252***
	(10.10)	(10.70)	(21.64)	(20.67)	(-11.51)	(-10.59)
N Obs	89,679	76,695	94,319	80,469	92,256	78,818
N Clusters	4,004	3,864	4,019	3,891	4,015	3,878
Other speech	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Industry f.e.	Yes	Yes	Yes	Yes	Yes	Yes
Firm f.e.	No	No	No	No	No	No
R^2	0.147	0.155	0.146	0.152	0.224	0.203

This table presents panel regressions. In columns (1) and (2), the dependent variable is AnalyDelay, which is the average number of trading days between the call date and subsequent revisions by individual analysts following the firm. In columns (3) and (4), the dependent variable is ShareAnalyPost, which is share of analysts that revises their forecasts within 3 days of the conference call. In columns (5) and (6), the dependent variable is post-announcement revision frequency, the of revisions after the conference call of quarter t up to the earnings announcement of quarter t+1 divided by the number of analysts. $Vague_{MGR}Style$ is the MGR's (CEO's or CFO's) style of vagueness estimated from the language of her answers to analyst questions during earnings conference calls, according to Equation 4. $Vague_{MGR}Resids$ represents the residuals from Equation 4, i.e., deviations from style. In addition to the shown variables, all regressions control, as indicated at the bottom of the table, for the same controls as Table 2, columns (5)-(7), respectively. (Interactions are not included in this table.) All variables are defined in Table A.1 in the Supplementary Appendix. *t*-statistics shown in parentheses are clustered by manager.
Significance levels: : * - 10%, ** - 5%, *** - 1%

Table 11: Manager vagueness and firm value

	SP500		Non-SP500	
	CEO	CFO	CEO	CFO
	(1)	(2)	(3)	(4)
VagueStyle	-0.287**	-0.195***	0.074	-0.021
	(-2.36)	(-2.87)	(1.46)	(-0.94)
%UnctPres	0.060	0.044	-0.139***	0.046**
	(0.59)	(0.74)	(-3.23)	(2.11)
%UnctAnaly	0.269**	0.177	0.533***	0.234***
	(1.99)	(1.60)	(9.68)	(6.21)
%NegAnsw	-0.366***	-0.023	-0.389***	-0.121***
	(-2.96)	(-0.28)	(-7.19)	(-4.30)
%NegAnaly	-0.282**	-0.379***	0.022	-0.077**
	(-2.16)	(-3.43)	(0.46)	(-2.19)
ln(Assets)	-0.162***	-0.152***	-0.163***	-0.135***
	(-7.14)	(-7.25)	(-19.05)	(-17.89)
Intercept	3.609***	3.486***	2.586***	2.541***
	(11.61)	(13.27)	(25.48)	(32.13)
N Obs	778	873	4,994	6,560
Industry f.e.	Yes	Yes	Yes	Yes
R^2	0.389	0.406	0.268	0.239

This table presents cross-sectional regresssions. The dependent variable is Tobin's Q, averaged over time. $Vague_{MGR}Style$ is the MGR's (CEO's or CFO's) style of vagueness estimated from the language of her answers to analyst questions during earnings conference calls, according to Equation 4. All control variables are averaged over time. All variables are defined in Table A.1 in the Supplementary Appendix. t-statistics shown in parentheses are clustered by Fama-French 48 industries.
Significance levels: : * - 10%, ** - 5%, *** - 1%

A Supplementary Appendix

Table A.1: Definitions of variables

Outcome variables (sorted alphabetically)	
AbnVol	Abnormal trading volume measured as the log ratio of trading volume over [0:1] days relative to the call divided by (two times) the average daily trading volume over the 40 day-period ending 5 days before the call
(A)CAR01	(Absolute) Cumulative Abnormal Return over [0:1] days relative to the call. Abnormal stock returns are computed following Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW); see Section 4.1 for details
AnalyDelay	Average number of days between the call and individual analyst forecast revisions
RevFreqPost	Post-announcement revision frequency, number of revisions after the conference call of quarter t up to the earnings announcement of quarter t+1, divided by the number of analysts.
ShareAnalyPost	The share of analysts that revises their forecasts within 3 days of the conference call
Tobin's Q	The ratio of the market value of assets to their book value
Style variables	
Vague$_{MGR}$Style	Manager's style of vagueness, that is her fixed effect in the percentage of uncertain words she used when answernig questions from analysts. Estimated according to Equation 4 for all CEOs and CFOs
Vague$_{MGR}$Resids	Unusual vagueness of manager's answers. Represents incidental deviations from manager style of vagueness
Control variables (sorted alphabetically)	
AnalyDispPre	Analyst dispersion prior to the call, the standard deviation of analysts forecasts for earnings for quarter t tallied three days before the conference call of quarter t
ln(Assets)	The natural logarithm of total assets
Complexity$_{MGR}$Pres	The average length of sentences spoken by the manager during the presentation part of the call. Calculated separately for the CEO and CFO
Complexity$_{MGR}$Answ	The average length of sentences spoken by the manager when answering questions from analysts. Calculated separately for the CEO and CFO
DailyVola	Daily stock volatility computed from daily returns
EarnSurp	Earnings surprise, given as a percentage of the share price. It is the difference between actual and consensus forecast earnings, divided by the share price 5 trading days before the announcement in quarter t, multiplied by 100
EPS growth	The fraction by which earnings in a quarter exceed earnings in the same quarter in the prior year
Guidance	A binary indicator equal to one if a company provided earnings guidance for a given quarter, and zero otherwise
MarketRet	The value-weighted market return for the period starting 5 days after an earnings announcement for the quarter t1 and ending 5 days prior to the earnings announcement for the quarter t
%Neg$_{MGR}$Pres	The percentage of negative words in all words spoken by the manager during the presentation part of the call. Calculated separately for the CEO and CFO
%Neg$_{MGR}$Answ	The percentage of negative words in all words spoken by the manager when answering questions from analysts. Calculated separately for the CEO and CFO
%NegAnaly	The percentage of negative words in questions from analysts

Table A.1: Definitions of variables (cont.)

Control variables cont.	
%Numbers$_{MGR}$Pres	The number of numbers per 100 words mentioned by the manager during the presentation part of the call. Calculated separately for the CEO and CFO.
%Numbers$_{MGR}$Answ	The number of numbers per 100 words mentioned by the manager when answering questions from analysts. Calculated separately for the CEO and CFO.
StockRet	Stock return (in percent) in quarter t, that is the difference between the share price 5 days before the earnings announcement for quarter t and the share price 5 days after the earnings announcement for quarter t1, divided by the stock price 5 days after the earnings announcement for quarter t1, multiplied by 100
SurpDec	Deciles of EarnSurp. Specifically, SurpDec is obtained by grouping firms into deciles, from 5 to 1 from largest positive to smallest positive surprise, then 0 for zero surprises, and then from -1 (for the smallest negative surprises) through -5 (for the largest negative surprises)
%Unct$_{MGR}$Pres	The percentage of uncertain words in all words spoken by the manager during the presentation part of the call. Calculated separately for the CEO and CFO
%Unct$_{MGR}$Answ	The percentage of uncertain words in all words spoken by the manager when answering questions from analysts. Calculated separately for the CEO and CFO
%UnctAnaly	The percentage of uncertain words in questions from analysts
%UnctEPR	The percentage of uncertain words in the earnings press release

Table A.2: Comparison of different CEO style estimation approaches

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
%Unct$_{CFO}$Pres only	1	0.98	0.97	0.92	0.90	0.86	0.90
%Unct$_{CFO}$Pres + Firm characteristics		1	0.99	0.95	0.93	0.88	0.92
Baseline (Eq. 4)			1	0.95	0.94	0.88	0.92
Baseline + %Unct$_{CFO}$				1	0.98	0.91	0.93
Baseline + %Unct$_{CFO}$ + %UnctEPR					1	0.93	0.93
Baseline + %Unct$_{CFO}$ + %UnctEPR + DispPreCall						1	0.93
Baseline + %Unct$_{CFO}$ + %UnctEPR + DispPreCall + Δ%Unct$_{CEO}$							1

In this table we compare the individual CEO fixed effects obtained under various specifications, including the baseline specification from Eq. 4. The dependent variable in each specification is %Unct$_{CFO}$Answ, the frequency of uncertain words used by the CEO when answering questions from analysts. The first column lists control variables used in each specification. Remaining columns present pairwise correlations between fixed effects from all the specifications.