MANAGERIAL DIVERSITY AND CORPORATE COMMUNICATION IN PERIODS OF CRISIS.

Chiara De Amicis

Bayes Business School (formerly Cass)

Sonia Falconieri

Bayes Business School (formerly Cass)

Abstract

This paper employs earnings conference calls to investigate if and how the style of corporate disclosures changes during times of crisis, when information frictions between firms and the market are exacerbated. Furthermore, the paper explores the extent to which managerial traits affect the language of corporate disclosure during crisis. To this purpose, we use a sample of more than 38,000 earnings conference calls between 2006 and 2013 and focus on the 2008 global financial crisis (GFC). Our analysis delivers several key insights. Firstly, we show that the sentiment and the "quantity" of information disclosed change during periods of crisis, generally becoming more conservative. Secondly, our results document that managerial characteristics affect differently the style of corporate communication during crisis. While gender seems to mainly impact the tone of the disclosure, overconfidence and experience affect mostly the "quantity" of information disclosed. Lastly, we find evidence consistent with executives prioritising favourable analysts during the Q&A. Also, financial analysts respond more than investors to managerial diversity.

Key Words: managerial diversity, corporate communication, textual analysis, crisis

1. Introduction

In recent years, academic research has shown a growing interest in understanding what affects the language of various types of corporate disclosures. Using content and textual analysis, these studies provide compelling evidence that managers' linguistic choices transmit value-relevant information, and, importantly, that investors react to the soft signals conveyed through their tone (Tetlock et al., 2008; Mayew and Venkatachalam, 2012; Price et al., 2012). More recent papers further document that the language of spoken corporate disclosures is influenced by manager-specific characteristics (Davis et al., 2015) among which gender has been shown to be particularly important (De Amicis et al., 2020).

None of the existing research however has studied whether the style of corporate communication changes, and if so how, during periods of crisis. This is relevant because on the one hand communication with relevant stakeholders is a crucial part of a firm's crisis response strategy (Coombs, 2009). On the other hand, during periods of crisis asymmetric information problems between the management and market participants are exacerbated (Maslar et al., 2021) which can result in the management having stronger incentives to conceal bad news in a bid to prevent excessively negative reaction by stakeholders (Fu et al., 2021). This paper aims to fill this gap. Specifically, the contribution of this paper is twofold. Firstly, we analyse the sentiment of corporate disclosures during the 2008 global financial crisis compared to the period immediately before and after the crisis. Secondly, we investigate the extent to which observed changes in the style of communication during the 2008 financial crisis are influenced by several manager-specific characteristics such as ethnicity, gender, overconfidence, experience, and age. To the best of our knowledge, there is no addressing these issues that pertains to the 2008 financial crisis. We believe this represents an excellent laboratory to gain critical insights that can prove useful in understanding more recent crisis such as the one caused by the Covid pandemic.

Our choice of the managerial characteristics is guided by the existing literature. An extensive literature in psychology and sociology widely documents significant differences between men and women in the use of their language (Lakoff, 1973; Haas, 1979; Thomson and Murachver, 2001; Newman et al., 2008). According to these studies, women tend to communicate more emotionally and less assertively. In a recent paper, De Amicis et al. (2020) provide the very first evidence of language differences between male and female managers in corporate communications. The authors analyse a large sample of US conference calls between 2004 and 2018, and find that female executives are on average more positive and less vague than their male colleagues in both sessions of the conference call.

These behavioural differences have been found to also impact corporate decisions. Female executives tend to engage less in M&A activity and take on less debt as a result of them being less overconfident and more risk adverse than men (Huang & Kisgen, 2013; Palvia et al., 2015). Furthermore, female managers are generally associated with more accounting conservatism (Francis et al. ,2015); and, being more sensitive to ethical issues, they are also less involved in fraud and misconduct incidents (Cumming et al., 2015, Dimungu-Hewage and Poletti-Hughes, 2022).

On the other hand, the leadership literature has widely documented substantial differences in leadership style of female and male managers. Experimental evidence suggests

that female managers are perceived as more communal than male managers, i.e. more concerned about others' needs and interests, which in turn fosters trust and inspires trustworthiness, which are particularly important at times of crisis (Ryan et al., 2011, Post, 2019). These gender differences have also been shown to directly affect the style and effectiveness of communication during an organisational crisis (Cowen and Montgomery, 2020). In line with this evidence, Sergent and Stajkovic (2020) employ theme dictionaries from applied psychology to conduct a qualitative analysis of the pandemic briefings conducted by each US governor between April 1 and May 5, 2020, during the Covid pandemic, and find that female governors expressed more empathy and awareness for the feelings of their constituents and displayed more confidence when addressing the public.

Other managerial characteristics have been shown to matter for corporate finance/governance decisions (Bertrand and Schoar, 2003; Graham et al. 2013). One such characteristic is CEO overconfidence, defined as the tendency to systematically overestimate future returns, and/or equivalently underestimate the likelihood and impact of adverse events on the firm's cash flows (Malmendier and Tate, 2005). Evidence documents that managerial overconfidence biases corporate decisions. Overconfident CEOs tend to overinvest (Malmendier and Tate, 2005), and engage in more acquisitions which are typically followed by negative market reactions (Malmendier and Tate, 2008). Managerial overconfidence has also been associated to dividend policy (Deshmukh et al. 2013) and financing decisions (Malmendier et al., 2011) and innovation (Galasso and Simcoe, 2011). There is also evidence that managerial overconfidence affects accounting policies and financial reporting. Overconfident CEOs tend to apply less conservative accounting practices, such as delaying loss-recognition and withholding negative news (Bouwman 2014; Ahmed and Duellman 2013), and are more likely to engage in earnings mis-statements (Schrand and Zechman, 2012).

Using a standard cheap talk framework, Kawamura (2015) addresses the question of how over- (under)confidence affects the nature of communication. His results show that overconfidence reduces the quality of the information transmission as it strengthens the incentives of the overconfident agent to send extreme messages and misreport his information. This is particularly relevant in situation of severe asymmetric information such as crisis and downturns.

A novel contribution of this paper is to include in our analysis CEO ethnicity as one of the managerial traits that could affect corporate disclosures during crisis. Culture, language and communication are closely interconnected (Ginsburgh and Weber, 2014). Research has related communication styles to the cultural dimensions identified by Hofstede (2001). It has been argued that individualistic cultures tend to use low-context communication which is characterized by a more direct and self-centred speech. In contrast, collectivistic cultures tend to prefer high-context communication which is more concerned about the overall context, and privileges more cautious messages particularly when facing potentially negative or challenging situations (Liu, 2016). On the other side, the management literature provides support to the so called "savior effect" which predicts that ethnic minority CEOs are more likely to be replaced with white male leaders when the company is underperforming during their tenure (Cook and Glass, 2014). The resulting career concerns could potentially shape the style of communication of ethnic minority executives particularly at time of crisis. The ethnic effect in the context of corporate disclosures is largely unexplored. A recent paper by Brochet et al. (2019) analyses

the effect of CEO cultural background on a sample of English-spoken earnings conference calls between 2002 and 2012 of firms located in 42 countries and found that CEOs from more individualistic cultures employ a more positive tone and greater self-reference. As our sample only includes US listed firms, our analysis enables us to explore how persistent is the effect of CEO cultural communication on their communication style during crisis.

Finally, we also include in our analysis the CEO age and experience which have been both associated to corporate decisions. CEO age has been documented to affect risk taking behaviour although the evidence is mixed. Managerial career and reputation concerns would suggest that CEOs tend to display less risk aversion as they become older because these concerns are attenuated. On the other hand, younger CEOs might want to show boldness and therefore undertake riskier investment decision to signal their superior ability (Prendergast and Stole, 1996). Serfling (2014) provides evidence supporting the second conjecture. He finds that older CEOs are generally more conservative which results in less investment in R&D and operating leverage among others. The boldness could also be reflected in the way older CEOs communicate with the market.

Similar arguments apply to CEO experience. A recent paper by Bochkay (2019) analyses the impact of CEO tenure specifically on the sentiment of earnings conference calls. The authors show that CEOs tend to speak more positively at the beginning of their tenure when career concerns are more pressing. Additionally, older and more experienced executives could have already gone through crisis, and therefore be better prepared at crisis communication.

We then investigate the language of voluntary corporate disclosures during the global financial crisis and employ a sample of 38,170 conference calls by US listed firms in the period between 2006 and 2013, where we identify the years between 2008 and 2010 as the crisis period.[1] Conference calls consists of two parts. In the Management Discussion section (MD), which is prepared in advance, the executives present the firm's quarterly results whereas in the Question and Answer section (QA) financial analysts are allowed to ask questions and/or clarifications. Hence, the QA section of the call defines a more dynamic and interactive environment which challenges the ability of the executives holding the call to set and control the tone of the conversation.

We employ textual analysis to measure the sentiment of the call as captured by the tone of the language used (the difference between positive and negative words) as well as by its vagueness (the number of words indicating uncertainty) in both sections of the call. We rely on the financial dictionary compiled by Loughran and McDonald (2011) to construct our measures. We also calculate the length of the speech in each session, as total number of words spoken by the relevant participant respectively in the MD and QA session, to capture the "quantity" of information provided.

We then analyse how the style of earning conference calls changes during the crisis and the extent to which these changes depend on the individual managerial characteristics discussed above. Our results show that the style of communication of corporate news does change during

[1] We stop in 2013 in order to have a comparable number of years pre and post crisis. Results are qualitatively similar if we extend to 2014 our sample of if we start in 2005. far away from the financial crisis but the results are robust if we extend the sample by a few years and are available from the authors upon request.

the crisis period, becoming generally more conservative i.e. less positive and more ambiguous in both session of the calls. We also find that the length of the speech is affected.

More interestingly, we document that, individual managerial characteristics have a different impact on the style of corporate communication during the crisis. Specifically, gender is the only trait that significantly affects the sentiment of the call. Gender acts as a moderator as female executives remain more optimistic and less vague during the crisis compared to male executives. In contrast, experience and overconfidence appear to affect only the "quantity" of the information disclosed, i.e. the length of the speech. Finally, executive age and ethnic background display a much weaker influence on the style of the calls.

We also study the market reaction to conference calls during the crisis, and if the market value certain managerial characteristics more than others. We use two metrics to gauge the market reaction. Firstly, we look at the length of financial analysts' questions and find some suggestive evidence that executives cast conference calls in line with the evidence presented by Cohen et al (2020). We also find that the length of analysts' questions is sensitive to all managerial characteristics except gender. We next look at the investors' reaction around the call captured by the Cumulative Abnormal Returns (CAR). Our results show that the market attach a greater value to information disclosure during crisis, in line with the idea that this helps mitigating the information frictions (Maslar et al. 2021). Contrary to financial analysts however, investors do not react to any managerial characteristics.

Our paper makes several important contribution to the literature. Firstly, it contributes to the literature on crisis communication by providing new insights on how corporate disclosure changes in periods of crisis. The paper also contributes to the growing literature on how managerial characteristics shape the style of corporate disclosures, by investigating this link works in periods of crisis. We also provide some novel evidence on the impact of CEO ethnicity on the style of conference calls. Finally, our analysis advances our understanding of the interplay between financial analysts and executives during period of crisis.

The rest of the paper is organised as follows. The next section details the characteristics of the sample and our empirical strategy. Results are presented and discussed in Section 3. In the last section we discuss the implications of our findings and suggests avenues for future research.

2. Data and Methodology

2.1 Data and sample construction

We obtain our set of transcripts of quarterly earnings conference calls for US incorporated and listed companies between 2006 and 2013 from FactSet and Bloomberg where they are available in a machine-readable format. Each transcript is divided into two distinct parts: the management discussion (MD) and the questions and answers (QA). The MD are scripted of the firm's current results and future prospects. In all our transcripts, the MD starts with the name and title of the executive(s) delivering the call which enables us to parse the session. As we are interested in CEOs linguistic style, we retain only those earnings conference calls in which the CEO speaks. In the QA, which immediately follows the MD, financial analysts are invited to ask questions/clarifications to the executives. Questions and answers are always marked with "Q" and "A", respectively which allows us to clearly identify who is

talking at every point in time. Next, we match the names of the CEOs in the transcripts with Execucomp and BoardEx annual data to obtain their gender and full name or, if they are missing in either of these sources, do so manually. Observations with missing or unmatched CEOs are excluded from the final sample. In order to obtain meaningful measures of tone, we include in our sample only conference calls where the executive's intervention in the MD and all managers' answers in the QA is at least 200 words long, and analysts' questions are at least 50 words long (Larcker and Zakolyukina, 2012). Balance sheet data and information about returns obtained from Compustat and CRSP, respectively, while we use I.B.E.S database to retrieve analysts' past recommendations. The full and final sample consists of an unbalanced panel of 38,170 quarterly earnings conference calls held by approximately 3,570 unique US listed firms between 2006 and 2013. Panel A of Table 1 presents the distribution of our sample of quarterly conference calls by year and industry.

[Table 1 here]

2.2 Methodology and Sentiment Measures

Our measures of sentiment are tone and vagueness computed based on positive, negative or uncertain words in the financial wordlist compiled by Loughran and McDonald (2011).[2] This list consists of 2,337 negative words, 353 positive words and 285 words indicating uncertainty. The table below shows some examples of words belonging to each of this category.

Positive words	Achieve, attain, excellent, improve, profitable
Negative words	anomaly, deterioration, weakly and serious
Uncertain words	approximate, contingency, indefinite, nearly, presume, variability

Following the literature (Davis et al., 2015; De Amicis et al., 2020) the CEO tone is defined as the difference between positive and negative words scaled by the length of the speech (the total number of words spoken):

$$Tone\_k = \frac{\#\ of\ positive\ words - \#\ of\ negative\ words}{\#\ of\ words}$$

where k = {MD; QA}.

Tone_MD defines the tone of the CEO speech in the whole MD session. For the QA, the format of the transcripts does not allow us to identify the name of manager answering the financial analyst's question. Therefore, we are only able to construct an aggregate measure of tone and vagueness for all the answers provided by the executives participating to the call. While this is not a perfect measure, CEOs do tend to answer the majority of questions. Therefore, we believe this remains an informative measure to capture the sentiment of the interactive part of the call.

[2] We choose the Loughran and McDonald word list because it refers specifically to financial disclosures, is richer and also includes uncertain words.

Vagueness indicates a more ambiguous, less direct communication style, and is calculated as the total number of uncertain words scaled by the total number of words (Dzieliński et al., 2019):

$$Vagueness\_k = \frac{\#\ of\ uncertain\ words}{\#\ of\ words}$$

where k = {MD; QA}.

As for tone, *Vagueness_MD* captures the vagueness of the CEO speech for the whole MD. Similarly, for the QA, *Vagueness_QA* indicates the vagueness of all the managers' answers.

Finally, we also measure the length of each session, *Length_k,* with k = {MD, QA}, defined respectively as the total number of words spoken by the executive during the MD and QA respectively. Length can be interpreted as a proxy for the quantity of information disclosed or the level of details provided, both of which could be impacted in periods of crisis.

We start our analysis by investigating how the style of conference calls changes in response to the uncertainty caused by the crisis which exacerbates the asymmetric information between the firm and the market with regards to the firm's future prospects (Maslar et al. 2021). To this end, we estimate the following pooled OLS regression model:

$$Tone/Vagueness/Length\_k = \alpha + \beta\ GFC + d\ Firm\ Controls + g\ Other\ Controls + \ industry\ FE + \varepsilon, \quad (1)$$

where k = {MD; QA}

In Equation 1, the variable of interest is *GFC* which is a binary variable that takes value 1 if the conference call takes place during the crisis years (2008-2010) and 0 otherwise.

Firm controls include *FirmAge,* defined as the logarithm of the firm's age counted from the first year it appears in Compustat, and *MktCap,* defined as the logarithm of quarterly market capitalisation as a proxy of the firm's size. We also control for firm's performance indicators which could affect the sentiment of the conference call. As measures of current performance, we use the earnings surprise for the quarter (*SUE);* the (log of 1+ the) return on assets for the quarter (*ROA)*; quarterly sales growth relative to the previous quarter (*Sales g.);* growth of quarterly earnings per share relative to the previous quarter (*EPS g.).* To partially capture growth opportunities and expectations of future performance, we also include the firm's quarterly stock returns relative to the previous quarter (*Return*).

Chen et al. (2018) find that a manager's and financial analysts' tone tend to become less optimistic as the day wears on. Therefore, we control for *CCtime*, defined as the log of the time of day at which each conference call took place. We also include industry fixed effects to control for time invariant characteristics of the industry of the firm. [3] Definitions of all the variables used in our analysis are provided in Appendix I.

[3] We cannot include year fixed effects due to the obvious collinearity with our dummy *GFC*.

Next, in order to explore how managerial characteristics affect the style of communication during the GFC we expand Equation 1 as follows:

$$Tone/Vagueness/Length\_k = \alpha + \beta_1 Crisis + \beta_2 Trait + \beta_3 Crisis*Trait + \delta Firm\ Controls + \gamma Other\ Controls + industry\ FE + \varepsilon, \quad (2)$$

Where *Trait* denotes a specific managerial characteristic. We consider five different CEO traits starting from *Ethnicity* which defines the CEO cultural background. Information on CEO ethnicity is collected from ISS (Bernile et. al., 2018) which identifies the following ethnic groups: White/Caucasian, African-American, Hispanic, Asian. The information is only available for approximately 21,000 observations, and more than 85 per cent of them has a White/Caucasian executive. We base ourselves on Hofstede (2001) classification of ethnic characteristics, which identifies White/Caucasian as the most individualistic culture relative to all the others (Brochet et al. 2019). Consequently, we construct *Ethnicity* as a binary variable that takes value 1 if the CEO has a White/ ethnic background and 0 otherwise.

We then define the *Gender* as a binary variable which takes value 1 if the CEO is female and 0 otherwise.

Next, we define the executive's O*verconfidence*. We follow De Amicis et al. (2020) to construct this variable. Their measure is based in turn on Malmandier and Tate (2005) whereby a manager is considered overconfident if he/she holds stock options that are more than 67 per cent in the money or, in other words, the stock price exceeds the exercise price by more than 67 per cent at least twice in our sample period. The variable *Overconfidence* is thus a binary variable equal to 1 if the manager is overconfident based on these criteria, and 0 otherwise.

The last two managerial characteristics we employ in our analysis are *Experience* and A*ge. Experience* is calculated for each conference call as the (log of 1 + the) number of previous conference calls in our sample held by the same CEO (De Amicis et al. 2020). *Age* is simply defined as the age of the CEO at the time of the conference call.

Our variable of interest in regression (2) is therefore the interaction term *Trait*GFC* which captures if and how individual managerial characteristics influence corporate communication during crisis.

3. Results

3.1 Crisis, Managerial characteristics, and corporate communication

The descriptive statistics relative for the variables employed in our sample are reported in Panel B of Table 1. Consistent with previous literature (e.g. Huang et al. 2014; De Amicis et al. 2020) we note that the executive tone is on average less positive and more ambiguous in the QA session relative to the MD session. With respect to the managerial characteristics only 3.2 per cent of conference calls in our sample are delivered by a female CEO, and the proportion is relatively stable over time. Similarly, the sample is dominated by White/Caucasian CEOs who represent 93 per cent of the sample. The proportion of calls delivered by female executives is slightly higher among ethnic minorities, 6 per cent versus 4

per cent White/Caucasian. [4] Furthermore, approximately a third of conference calls in our sample are delivered by an overconfident executive while the average age of CEOs in the sample is 56 years old and the average number of conference calls delivered by an executive (experience) is 7.

[Table 1 here]

In Table 2 we report the results of our baseline regression (1) which investigates how the style of conference calls changes during the GFC.

Our results show that the executive tone in the MD session becomes significantly less positive during the crisis years, so overall it seems that executives adopt a more cautious communication style in response to the higher uncertainty. The magnitude of the change of tone is larger in the QA session which reflects the fact that executives are put more under pressure by the analysts' questions and are less able to control their tone. Indeed, while the tone of the MD decreases by 5 per cent, in the Q&A the tone during the crisis is 24 per cent lower than in the rest of the sample. We also observe an increase in the level of uncertainty although this is only significant in the MD session and with a quite small coefficient. It is interesting instead to observe the changes to the length of the call. Our results show that during the crisis years the length of the speech in the MD session is longer. In contrast, the length of the answers in the QA session is shorter. The economic significance of the effect is also relevant as during the crisis the length of the CEO speech is approximately 10 per cent longer while the overall length of the answers is almost 13 per cent shorter. This suggests that while executives tend to provide more information in their scripted part, they remain more cautious and concise in their live interaction with financial analysts.

[Table 2 here]

The rest of the analysis explores whether certain managerial characteristics affect the style of communication during the crisis years. We start our analysis with the executive ethnic background. This is a novel contribution of this paper as little evidence is currently available about this in the literature.

In Table 3, we report results that show how CEO *Ethnicity* shapes the style of earning conference calls during crisis. Interestingly, we find that most of the effects are limited to the MD session. CEOs from a White/Caucasian background exhibit a less optimistic and more ambiguous tone. They also tend to speak more than non-White/Caucasian executives. However, we do not find any significant difference driven by ethnicity on any metric of the QA session. Our findings are not in line with the recent evidence provided by Brochet et al. (2019) who show that executives from more individualistic cultural communities display more optimism. In contrast, our findings seem more consistent with the "saviour effect" documented by the management literature (Cook and Glass, 2014) which implies that executives from ethnic minorities have more compelling career concerns. [5]

[4] Untabulated figures available upon request from the authors.

[5] Untabulated baseline regression results without the interaction term delivers qualitatively similar direct effect of CEO ethnicity.

Turning our attention to the interaction term *Ethnicity*GFC,* we find that the coefficient estimate is negative but only weakly significant in the MD tone column, which indicates that White/Caucasian executives adopt a more negative tone during the crisis than executives from ethnic minorities. The coefficient estimate of the interaction term is also positive and strongly statistically significant for the length of the QA session. White/Caucasian CEOs reduce the length of their answers to financial analysts by substantially less than CEOs from ethnic minorities during the crisis. This could be a further indication that executives from ethnic minorities adopt a more cautious communication style in challenging periods. Ethnicity does not seem to otherwise have any significant effect on the sentiment of the call. Overall, CEO ethnicity does not seem to be a strong determinant of the style of corporate communication.

[Table 3 here]

Next, Table 4 looks at the executive gender, so our variable of interest is now *Gender*GFG*. The regression results show that gender has a moderator effect on the tone of the call. Female executives remain significantly more positive and less uncertain than male executives during the crisis years. This applies to both sessions of the call, but the magnitude of the effect is larger for the MD session. Indeed, for the MD session, conference calls delivered by female executives during the crisis period exhibit a more positive and less uncertain tone than in non-crisis years. Specifically, the tone of conference calls delivered by male CEOs during the crisis is 6 per cent lower than in the rest of the period. In contrast, the tone of calls delivered by female executives during the crisis is more positive by 8.6 per cent. Similarly, the tone of the QA session decreases by 24 per cent for calls delivered by male CEOs during the crisis, while it only drops by 5.5 per cent for female executives. We do not find instead any significant difference in the length of the talk of the two sessions between male and female executives during the crisis years. Our findings lend further support to the evidence from the leadership literature that female executives do tackle crisis differently. Our findings show that this is also reflected in the way female executives communicate with investors, and are in line with some of the anecdotical evidence from the recent Covid pandemic which have commended female leaders for a more direct, honest and inspiring communication.[6]

[Table 4 here]

We now turn our attention to managerial overconfidence defined based on the Malmendier and Tate (2005) measure. The regression results are reported in Table 5 and show that managerial overconfidence does not impact the sentiment of the call during crisis. In fact, the interaction term is never significant in the regressions on the tone and vagueness of the call. On the contrary however, overconfidence displays a statistically significant moderator effect on the length of the talk of both sessions of the call. In other words, during a crisis overconfident CEOs increase the length of the MD speech by substantially less than non-overconfident CEOs, 3 per cent against 10 per cent, and they also shorten their answers to financial analysts in the QA session by less than non-overconfident CEOs.

[6] Watch Angela Merkel's Coronavirus Speech - English Subtitles (nymag.com)

[Table 5 here]

Perhaps not surprisingly, the effect of managerial experience on the style of the calls during crisis is very much comparable to that of overconfidence just discussed.

The regression results for managerial experience are reported in Table 6 and show that, like with overconfidence, experience exhibits the same strongly significant moderator effect on the length of the MD and QA session. More experienced CEOs increase the length of the MD less than less experienced CEOs during the crisis, while they shorten their exchange with financial analysts by less than less experienced executives. In contrast to overconfidence, we also find that the interaction term in the regression of the QA tone is positive and statistically significant again indicating a moderator effect. However, the magnitude of the coefficient is very small.

[Table 6 here]

The last managerial characteristic we explore is the executive age for which we report the regression results in Table 7. Executive's age does seem to impact the tone of the call. The interaction term is negative and statistically significant in both the regressions on tone. However, the economic significance of the effect is very small to be considered meaningful. Similarly, we do observe a statistically significant impact on the length of the talk of both sessions of the call, but the magnitude of the effect is small. Overall, the result shows that the CEO age does not seem to have a strong influence on the style of communication when compared to the other managerial characteristics examined above.

[Table 7 here]

Taken together the results presented in this section provide some interesting insights on the role of managerial characteristics in corporate communication during crisis. We can thus draw some important conclusions. Firstly, we find that executives do adjust their corporate communications during crisis periods, and this results in significant changes to the level of optimism and length of both sessions of the calls. Such changes however are different depending on the individual managerial characteristics. Among all the managerial characteristics investigated, we document that gender is the only one that has a significant impact on the sentiment of the call, i.e. optimism and vagueness. In contrast, managerial overconfidence and experience exhibit a strong impact on the length of the talk, i.e. the "quantity" of the information provided, which reflects a higher boldness of the executive. Finally, the age and ethnicity of the CEO appear to both have a more limited impact on the style of corporate communication in downturns.

In the next section we explore how the market responds to the style of conference calls and to managerial characteristics during crisis.

3.2 Market reaction to corporate disclosure

How does the market react to corporate disclosure in period of crisis? And is the reaction affected by managerial characteristics such as gender? In this section we address these questions.

We consider two different metrics of market reaction. Firstly, we look at the length of the financial analysts' questions. Do analysts become more inquisitive during period of crisis? Do managerial characteristics influence, if at all, analysts' behaviour? The second measure we employ is the Cumulative Abnormal Returns immediately after the conference calls.

To address these questions, we will estimate the following OLS model:

$$FA\_Length/CAR(0,1) = \alpha + \beta_1 GFC + \beta_2 Trait + \beta_3 GFC*Trait + \delta Call\ controls + \phi Firm\ controls + \gamma Other\ controls + Industry\ FE + \varepsilon, \quad (3)$$

The relevant dependent variables are defined below, whereas the control variables are the same as defined earlier. In both specifications we now also include controls for the style and sentiment of the call.

Financial analysts' speech

An increasing literature has attempted to provide insights on the manager-analysts interaction during conference calls. Evidence shows that analysts tend to have a less positive tone than managers during calls (Brockman et al., 2015). Several studies also document that managers discriminate among financial analysts in conference calls by giving priority to the friendlier ones (Mayew 2008, Cohen et al. 2020). In this paper, we contribute to this literature by looking at the interaction between managers and executives in periods of crisis which has been largely unexplored. We focus our attention on a critical metric, the length of the analysts' questions, *FA_Length,* defined as the log transformation of the total number of words spoken by all analysts participating to the QA session of the call. The results of this analysis are reported in Table 8. The *Call controls* in the regression include measures of the sentiment and length of the MD session.

The first specification highlights the effect of the crisis on the length of the analysts' speech. Perhaps surprisingly we find that analysts overall speak less, i.e. either ask less or shorter questions, during a crisis. The magnitude of the effect is rather small as the overall talk decreases by approximately 1 per cent during the crisis. A possible explanation for this result could be that the MD session is on average longer during the crisis as per our earlier findings. Table 8 shows that analysts are sensitive to the quantity of information disclosed, in that a longer MD session significantly reduces the length of the analysts' questions. The result could also be consistent with executives "casting" conference calls, i.e. discriminating among the analysts that are chosen to intervene in the call, privileging those that are more favourable to the firm which in turn results in less probing. This alternative interpretation is also supported by the fact that the length of the questions, while unaffected by the executive tone in the MD session, exhibits instead a significant negative correlation with the MD uncertainty.

Our conjecture is consistent with what documented by Mayew (2008) and, more recently, Cohen et al. (2020) who further show that managers' prioritisation of favourable

analysts becomes more likely in periods of poor performance, which typically also increases the uncertainty of the MD session.

The remaining columns in Table 8 study how managerial characteristics influence the analysts' talk during the crisis. Interestingly, gender appears to be the only managerial trait that has no significant impact on the length of the FA talk during the crisis. All the other managerial characteristics instead moderate the negative effect of the crisis. In other words, the total length of analysts' questions in conference calls held during the crisis is longer for White, overconfident, older and more experienced executives. This is consistent with our previous findings that show that executives with these characteristics tend to speak less in the MD session during crisis thereby likely triggering more probing by the analysts in the QA session.

[Table 8 here]

Cumulative Abnormal Returns

The existing evidence documents that the stock market generally considers earnings conference calls as informative, and that the sentiment of the call conveyed by the executives has a significant impact on the market reaction around the call (Tetlock et al. 2008, Price et al. 2012), and that changes of tone in earnings conference calls are predictive of future stock market performances (Fu et al. 2021, Druz et al. 2020)

In this paper we investigate the investors' reaction to the style of conference calls during periods of crisis and if they place any value to specific managerial characteristics. We do this by testing Equation 3 where our left-hand variable is the cumulative abnormal return from the day of the conference call to the day after, *CAR(0,1).*

Results are reported in Table 9. Column 1 of Table 9 reports the baseline results without any managerial trait. Interestingly, the coefficient of our dummy *GFC* has a positive and statistically significant coefficient estimate. This indicates that corporate disclosure during period of crisis is even more valuable to investors because it helps mitigating the asymmetric information problems which are heightened during crisis. The effect remains generally positive although not always significant across all specifications. Interestingly and contrary to financial analysts, none of the managerial traits exhibits any significant differential impact on the market reaction during the crisis. In contrast, and in line with the existing evidence, our findings confirm that the market reaction is significantly affected by the tone of the call. A more positive tone in both sessions of the call leads to a stronger market reaction, whereas uncertainty does not have any significant effect. Investors also appear to pay attention to the length of the executives' answers in the QA session. Longer answers significantly weakens the market reaction. A possible explanation for this result is that investors perceive the firm has more explaining to do when executives' answers are longer.

[Table 9 here]

Overall, the analysis of this section provides some novel insights on the response of investors and analysts to the style of conference calls. Firstly, the analysts' behaviour we document seems consistent with a selective intervention of favourable analysts to the QA session. Secondly, the market generally values more corporate disclosure in periods of crisis.

Lastly, only analysts appear to show awareness of the effect of different managerial traits, while we do not find any manager-specific effect on the call returns.

4. Conclusions

This paper focuses on the analysis of corporate communication during periods of crisis which has been generally overlooked in the literature despite the recent growing interest in understanding the content and determinants of voluntary corporate disclosures.

We apply textual analysis to a large sample of over 38,000 earning conference calls between 2006 and 2013 and concentrate our attention on the years of the global financial crisis (GFC) between 2008 and 2010.

We then address three main questions. Firstly, we analyse how the style of conference calls change during crisis. Next, we explore the extent these changes in communication style depend on several individual managerial characteristics such as ethnicity, gender, overconfidence, experience and age. Finally, we study how financial analysts and investors respond to conference calls during period of crisis and whether their reaction is in anyway influence by the profile of the executive delivering the call.

Our analysis provides several novel and important insights. We provide evidence that firms adjust the style of their disclosures during crisis which becomes generally less optimistic and more ambiguous. Also, the "quantity" of information disclosed change. While more details are provided in the scripted part of the call, executives tend to be more concise and brief in their answers to analysts in the QA session. Further, our findings clearly suggest that these changes are affected differently by the executive's individual characteristics. Gender differences appear to clearly drive differences in the sentiment of the disclosure, while overconfidence and experience mostly impact the length of the two sessions. Perhaps surprisingly, we find that the executive ethnicity has a rather limited influence instead similarly to age.

Finally, the analysis shows that analysts and investors respond differently to corporate disclosure during crisis. Analysts are sensitive to managerial characteristics but investors are not. Importantly, we find results consistent with executives strategically selective favourable analysts to speak in the QA session.

This paper consolidates our understanding of the determinants of the style of corporate disclosures and the importance of individual managerial traits in determining it. Corporate communication remains a vital part of firms' response to crisis. This paper represents a first step to look in greater depth at how executives adjust their communication style in response to crisis, and what the impact on the market is of such changes. Future research could further explore how the style of corporate communication depends on the nature of the crisis by comparing across different periods of crisis.

References

Ahmed, A. S. and Duellman, S., 2013. "Managerial overconfidence and accounting conservatism." *Journal of Accounting Research*, 51(1), pp. 1–30.

Bernile, G., Bhagwat, V., and Yonker, S., 2018. "Board diversity, firm risk, and corporate policies". *Journal of Financial Economics*, 127(3), pp. 588-612.

Bertrand, M., and Schoar, A., 2003. "Managing with style: The effect of managers on firm policies", *Quarterly Journal of Economics*, 118, pp. 1169–1208.

Bochkay, K., Chychyla, R. and Nanda, D., 2019. "Dynamics of CEO disclosure style." *The Accounting Review*, 94(4), pp. 103–140.

Bouwman, C., 2014. "Managerial Optimism and Earnings Smoothing." *Journal of Banking and Finance*, 41(C), pp. 283–303.

Brochet, F., Miller, G.S., Naranjo, P. and Yu, G., 2019. "Managers' cultural background and disclosure attributes". *The Accounting Review*, 94(3), pp.57-86.

Brockman, P., Li, X. and Price, S.M., 2015. "Differences in conference call tones: Managers vs. analysts". *Financial Analysts Journal*, 71(4), pp.24-42.

Chen, J., Demers, E. and Lev, B., 2018. "Oh, what a beautiful morning! Diurnal influences on executives and analysts: Evidence from conference calls". *Management Science*, 64(12), pp.5899-5924.

Cohen, L., Lou, D. and Malloy, C., 2020. "Casting conference calls", *Management Science*, 66 (11), pp. 5015-39.

Cook, A. and Glass, M.C., 2014. "Analysing promotions of racial/ethnic minority CEOs", *Journal of Managerial Psychology*, 29(4), pp. 440-54.

Coombs, T.W., 2009, "Conceptualizing Crisis Communication", in *Handbook of Risk and Crisis Communication,* Routledge.

Cowen, A.P. and Montgomery, N.V., 2020. "To Be or Not to Be Sorry? How CEO Gender Impacts the Effectiveness of Organizational Apologies." *Journal of Applied Psychology*, 105 (2), p. 196.

Cumming, D., Leung, T.Y. and Rui, O., 2015. "Gender diversity and securities fraud." *Academy of management Journal* 58(5), pp. 1572-1593.

Davis, A. K., Ge, W., Matsumoto, D. and Zhang, J. L., 2015. "The effect of manager-specific optimism on the tone of earnings conference calls", *Review of Accounting Studies*, 20(2), pp. 639–673.

De Amicis, C., Falconieri, S. and Tastan, M., 2020. "Sentiment Analysis and Gender Differences in Earnings Conference Calls", *Journal of Corporate Finance*, 71, p. 101809.

Deshmukh, S., Goel A.M., and Howe, K.M., 2013. "CEO Overconfidence and Dividend Policy." *Journal of Financial Intermediation* 22(3), pp. 440–63.

Dimungu-Hewage, D. and Poletti-Hughes, J., 2022. Does board diversity decrease corporate fraud? International evidence from family vs. non-family firms." *Review of Corporate Finance* 2, forthcoming.

Druz, M., Petzev, I., Wagner, A.F. and Zeckhauser, R.J., 2020. "When managers change their tone, analysts and investors change their tune". *Financial Analysts Journal*, 76(2), pp.47-69.

Dzieliński, M., Wagner, A. and Zeckhauser, R. J., 2019. "Straight talkers and vague talkers: The effects of managerial style in earnings conference calls." *NBER Working paper No. W23425*.

Francis, B., Hasan, I., Park, J.C. and Wu, Q., 2015. "Gender differences in financial reporting decision making: Evidence from accounting conservatism". *Contemporary Accounting Research*, 32(3), pp.1285-1318.

Fu, X., Wu, X. and Zhang, Z., 2021. "The information role of earnings conference call tone: Evidence from stock price crash risk", *Journal of Business Ethics,* 173, pp. 643-60.

Galasso, A. and Simcoe, T.S., 2011. "CEO overconfidence and innovation." *Management Science*, 57(8), pp.1469-1484.

Ginsburgh, V.A. and Webes S., 2014. "Culture, linguistic diversity, and economics", in Handbook of the Economics of Art and Culture, Elsevier.

Graham, J., Harvey, C., and Puri, M., 2013. "Managerial attitudes and corporate actions", *Journal of Financial Economics*, 109, pp. 103–121

Haas, A., 1979. "Male and female spoken language differences: Stereotypes and evidence." *Psychological Bulletin*, 86(3), p.616.

Hofstede, G, 2001. "Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations." Thousand Oaks, CA: Sage Publications.

Huang, X., Teoh, S. H. and Zhang, Y., 2014. "Tone management". *The Accounting Review*, 89(3), pp. 1083–1113.

Joeks, J., Pull, K. and Vetter, K., 2013. "Gender diversity in the boardroom and firm performance: What exactly constitutes a "critical mass?". *Journal of Business Ethics*, 118, pp. 61–72

Kawamura, K., 2015. "Confidence and competence in communication", *Theory and Decision,* 78, pp. 233–259

Lai, K. M. Y., Srinidhi, B., Gul, F. A. and Tsui, J. S. L., 2017. "Board gender diversity, auditor fees, and auditor choice". *Contemporary Accounting Research*, 34(3), pp. 1681–1714.

Lakoff, R., 1973. "Language and woman's place". *Language in Society*, 2(1), pp. 45–80.

Larcker, D. F. and Zakolyukina, A. A., 2012. "Detecting deceptive discussions in conference calls". *Journal of Accounting Research*, 50(2), pp. 495–540.

Liu, M., 2016. "Verbal Communication Styles and Cultures". In the Oxford Encyclopaedia of Communication.

Loughran, T. and McDonald, B., 2011. "When is a liability not a liability? Textual analysis, dictionaries, and 10-Ks". *The Journal of Finance*, 66(1), pp. 35–65.

Malmendier, U. and Tate, G., 2005. "CEO Overconfidence and Corporate Investment." *Journal of Finance* 60(6), pp. 2661–2700.

Malmendier, U. and Tate, G., 2008. "Who Makes Acquisitions? CEO Overconfidence and the Market's Reaction." *Journal of Financial Economics*, 89(1), pp. 20–43.

Malmendier, U., Tate, G. and Yan, J., 2011. "Overconfidence and Early-Life Experiences: The Effect of Managerial Traits on Corporate Financial Policies." *Journal of Finance*, 66(5), pp. 1687–1733.

Mayew, W.J., 2008. "Evidence of management discrimination among analysts during earnings conference ca2lls". *Journal of Accounting Research*, 46(3), pp.627-659.

Mayew, W.J. and Venkatachalam, M., 2012. "The power of voice: Managerial affective states and future firm performance". *The Journal of Finance*, 67(1), pp.1-43.

Maslar, D.A., Serfling, M., Shaikh, S., 2021. "Economic downturn and the informativeness of management earnings forecast". *Journal of Accounting Research*, 59, pp. 1481-1520

Newman, M.L., Groom, C.J., Handelman, L.D. and Pennebaker, J.W., 2008. "Gender differences in language use: An analysis of 14,000 text samples". *Discourse processes*, 45(3), pp.211-236.

Palvia, A., Vähämaa, E. and Vähämaa, S., 2015. "Are female CEOs and chairwomen more conservative and risk averse? Evidence from the banking industry during the financial crisis." *Journal of Business Ethics*, 131, pp. 577–594.

Post, C., Latu, M.I. and Belkin, L.Y., 2019. "A Female Leadership Trust Advantage in Times of Crisis: Under What Conditions?", *Psychology of Women Quarterly*. 43(2), pp. 215-31

Prendergast, C., Stole, L., 1996. "Impetuous youngsters and jaded old-timers: Acquiring a reputation for learning", *Journal of Political Economy.* 104, pp. 1105-1134.

Price, S. M., Doran, S. D., Peterson, D. R. and Bliss, B. A., 2012. "Earnings conference calls and stock returns: The incremental informativeness of textual tone", *Journal of Banking & Finance*, 36, pp. 992–1011.

Ryan, M. K., Haslam, S. A., Hersby, M. D., & Bongiorno, R., 2011. "Think crisis–think female: The glass cliff and contextual variation in the think manager–think male stereotype". *Journal of Applied Psychology,* 96(3), pp. 470–484.

Serlfing, M., 2014. "CEO Age and the Riskiness of Corporate Policies", *Journal of Corporate Finance* 25, pp. 251-273.

Sergent, K., and Stajkovic, A. D., 2020. "Women's leadership is associated with fewer deaths during the COVID-19 crisis: Quantitative and qualitative analyses of United States governors". *Journal of Applied Psychology,* 105(8), pp. 771-783.

Schrand, C. M., and Zechman, S.L.C., 2012. "Executive Overconfidence and the Slippery Slope to Financial Misreporting." *Journal of Accounting and Economics* 53(1–2), pp. 311–29.

Tetlock, P.C., Saar-Tsechansky, M. and Macskassy, S., 2008. “More than words: Quantifying language to measure firms' fundamentals”. *The Journal of Finance*, 63(3), pp.1437-1467.

Thomson, R. and Murachver, T., 2001. “Predicting gender from electronic discourse.” *British Journal of Social Psychology*, 40(2), pp.193-208.

Table 1. Descriptive statistics

This table presents descriptive statistics for our sample of quarterly earnings conference calls held by US listed firms from 2006 to 2013. Panel A shows the distribution of the conference calls in our sample by industry and year. panel B reports sample summary statistics. All variables are defined in Appendix I. Each continuous variable is winsorized at 1 and 99% to mitigate outliers

Panel A Distribution by industry and year

Distribution by industry (2-digit SIC)		Distribution by year	
Agriculture, Forestry & fishing	58	2006	6,671
Mining	2,069		
Construction	490	2007	6,568
Manufacturing	15,027		
Transportation, communications, electric, Gas and sanitary service	3,925	2008	6,172
Wholesale trade	1,205	2009	5,936
Retail trade	2,500	2010	6,757
Finance, insurance and real estate	6,958	2011	2,286
Services	6,271	2012	1,843
Others	118	2013	2,388
N	38,621	N	38,621

Panel B Summary statistics

Variable	N	Mean	Median	Std. dev.	25%	75%
Textual variables						
Tone_MD	38,621	0.022	0.022	0.020	0.008	0.035
Vagueness_MD	38,621	0.013	0.012	0.008	0.007	0.017
Length_MD^	38,621	1,916	1,424	1,598	820	2486
Tone_QA	38,621	0.009	0.009	0.011	0.002	0.017
Vagueness_QA	38,621	0.017	0.017	0.007	0.013	0.021
Length_QA^	38,621	1,246.4	1,150.0	688.6	799.0	1,556.0
FA_Length^	38,621	736.639	693.000	348.0	481.0	940.0
CEO characteristics						
Gender	38,621	0.032	0	0.176	0	0
Ethnicity	21,172	0.930	1	0.255	1	1
Overconfidence	24,844	0.320	0	0.466	0	1
Age	33,305	56.127	56.000	7.819	51	61
Experience^	38,621	7.765	7.000	6.087	3	12
Firm level variables						
WoB	24,935	0.104	0.111	0.098	0	0.167
CC_time^	38,252	12.586	11.000	3.510	10	16
SUE	38,621	0.190	0.086	2.190	-0.349	0.586
ROA	38,621	0.018	0.018	0.032	0.007	0.032
Return	38,543	0.029	0.025	0.204	-0.093	0.140
Sales g	38,609	0.029	0.019	0.167	-0.042	0.086
MktCap	38,592	4,966.0	1,286.2	10,915.6	449.1	4,022.8
EPS g	38,621	-0.121	-0.064	2.262	-0.556	0.250
FirmAge^	38,621	20.301	17.000	13.300	10.000	27.000
CAR	38,383	0.001	0.000	0.072	-0.038	0.041

Table 2. The sentiment of conference calls during the *GFC*

This table reports coefficient estimates from the OLS regression of the CEO sentiment in MD and QA sessions of earnings conference calls on the indicator *GFC* and other control variables over the period between 2006 and 2013 described in Eq. (1). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	Tone_MD	Vagueness_MD	Length_MD	Tone_QA	Vagueness_QA	Length_QA
Variable	(1)	(2)	(3)	(4)	(5)	(6)
GCF	-0.0012***	0.0002**	0.1033***	-0.0022***	-0.0000	-0.1284***
	(5.79)	(2.40)	(13.83)	(-19.27)	(-0.30)	(-25.39)
CC_time	0.0002***	-0.0001***	-0.0188***	-0.0001***	-0.0000***	0.0080***
	(6.69)	(-6.23)	(-16.61)	(-4.07)	(-3.88)	(10.11)
SUE	0.0007***	-0.0001***	-0.0022	0.0003***	-0.0000	-0.0034***
	(15.54)	(-4.59)	(-1.27)	(10.19)	(-0.64)	(-2.80)
ROA	0.0081**	-0.0004	-1.2302***	0.0089***	0.0044***	1.6059***
	(2.46)	(-0.28)	(-9.64)	(4.58)	(3.59)	(17.09)
Return	0.0089***	-0.0010***	-0.0564***	0.0046***	-0.0008***	-0.0486***
	(18.22)	(-5.47)	(-3.17)	(17.17)	(-4.81)	(-3.96)
Sales g.	0.0062***	-0.0007***	0.0654***	0.0029***	-0.0004*	0.0032
	(10.73)	(-2.98)	(2.94)	(8.74)	(-1.88)	(0.21)
MktCap	0.0000***	-0.0000***	-0.0000***	0.0000***	-0.0000***	0.0000***
	(17.16)	(-17.34)	(-5.29)	(8.44)	(-19.26)	(37.96)
EPS g.	0.0002***	-0.0000	-0.0017	0.0001***	0.0000	0.0025**
	(4.34)	(-1.51)	(-1.03)	(2.89)	(0.21)	(2.18)
FirmAge	0.0000	-0.0000***	-0.0027***	0.0000**	-0.0000***	0.0028***
	(0.42)	(-11.49)	(-8.40)	(2.13)	(-8.73)	(13.19)
Constant	0.0180***	0.0146***	7.5359***	0.0104***	0.0186***	6.8185***
	(38.96)	(82.20)	(435.21)	(39.56)	(121.25)	(571.00)
Observations	38,170	38,170	38,170	38,170	38,170	38,170
Adj. R^2	0.10	0.05	0.05	0.10	0.07	0.13

Table 3. Ethnicity and sentiment of conference calls during the *GFC*

This table reports coefficient estimates from the OLS regression of the CEO sentiment in MD and QA sessions of earnings conference calls on the indicators *Ethnicity* and *GFC* and their interaction, *Ethnicity*GFC*, and other control variables over the period between 2006 and 2013 described in Eq. (2). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	Tone_MD	Vagueness_MD	Length_MD	Tone_QA	Vagueness_QA	Length_QA
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Ethnicity	-0.0025***	0.0011***	0.0883***	-0.0002	0.0002	-0.0433**
	(-3.18)	(3.98)	(3.00)	(-0.47)	(0.67)	(-2.34)
GFC	0.0003	-0.0000	0.0967**	-0.0019***	-0.0001	-0.2087***
	(0.24)	(-0.02)	(2.54)	(-3.25)	(-0.28)	(-8.78)
Ethnicity*GFC	-0.0021*	0.0003	-0.0080	-0.0003	0.0001	0.1046***
	(-1.88)	(0.89)	(-0.20)	(-0.54)	(0.41)	(4.25)
CC_time	0.0001***	-0.0001***	-0.0133***	-0.0001***	0.0000	0.0089***
	(2.74)	(-4.72)	(-7.78)	(-3.34)	(0.06)	(8.84)
SUE	0.0008***	-0.0001***	0.0005	0.0003***	-0.0000	-0.0045***
	(12.25)	(-2.64)	(0.17)	(7.02)	(-0.60)	(-2.77)
ROA	0.0160***	0.0016	-1.0953***	0.0159***	0.0041**	1.1340***
	(2.66)	(0.73)	(-4.64)	(4.75)	(1.99)	(7.57)
Return	0.0105***	-0.0010***	-0.0548**	0.0053***	-0.0008***	-0.0698***
	(15.20)	(-3.98)	(-2.09)	(14.34)	(-3.44)	(-4.46)
Sales g.	0.0064***	-0.0008**	0.0844**	0.0031***	-0.0005*	-0.0119
	(7.68)	(-2.50)	(2.50)	(6.44)	(-1.79)	(-0.57)
MktCap	0.0000***	-0.0000***	-0.0000***	0.0000***	-0.0000***	0.0000***
	(14.26)	(-11.15)	(-5.52)	(5.21)	(-15.95)	(27.60)
EPS g.	0.0003***	-0.0000	-0.0043*	0.0001***	0.0000	0.0020
	(4.13)	(-0.13)	(-1.78)	(2.88)	(0.37)	(1.42)
FirmAge	0.0000	-0.0000***	-0.0012***	0.0000***	-0.0000***	0.0023***
	(0.93)	(-9.44)	(-2.64)	(2.59)	(-7.01)	(8.93)
Constant	0.0216***	0.0132***	7.3868***	0.0106***	0.0180***	6.9171***
	(21.64)	(36.32)	(194.07)	(19.12)	(56.93)	(295.00)
Observations	20,976	20,976	20,976	20,976	20,976	20,976
Adj. R^2	0.12	0.06	0.05	0.11	0.08	0.13

Table 4. CEO gender and sentiment of conference calls during the *GFC*

This table reports coefficient estimates from the OLS regression of the CEO sentiment in MD and QA sessions of earnings conference calls on the indicators *Gender* and *GFC* and their interaction, *Gender*GFC*, and other control variables over the period between 2006 and 2013 described in Eq. (2). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	Tone_MD	Vagueness_MD	Length_MD	Tone_QA	Vagueness_QA	Length_QA
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Gender	0.0013	-0.0015***	0.0507	0.0009**	-0.0011***	-0.0555***
	(1.58)	(-5.36)	(1.60)	(1.96)	(-4.27)	(-2.61)
GFC	-0.0013***	0.0002***	0.1008***	-0.0022***	0.0000	-0.1283***
	(-6.27)	(2.87)	(12.42)	(19.57)	(0.12)	(-24.98)
Gender*GFC	0.0032***	-0.0009**	-0.0106	0.0017**	-0.0006*	0.0053
	(2.91)	(-2.35)	(-0.25)	(2.50)	(-1.69)	(0.19)
CC_time	0.0002***	-0.0001***	-0.0198***	-0.0001***	-0.0000***	0.0081***
	(6.60)	(-6.08)	(16.27)	(4.16)	(-3.75)	(10.17)
SUE	0.0007***	-0.0001***	-0.0024	0.0003***	-0.0000	-0.0034***
	(15.55)	(-4.61)	(1.27)	(10.19)	(-0.65)	(-2.80)
ROA	0.0085**	-0.0006	-1.3002***	0.0091***	0.0042***	1.5984***
	(2.56)	(-0.46)	(9.52)	(4.68)	(3.44)	(17.01)
Return	0.0089***	-0.0010***	-0.0553***	0.0046***	-0.0008***	-0.0489***
	(18.25)	(-5.52)	(2.91)	(17.19)	(-4.85)	(-3.98)
Sales g.	0.0062***	-0.0007***	0.0653***	0.0029***	-0.0004*	0.0033
	(10.72)	(-2.98)	(2.75)	(8.74)	(-1.88)	(0.21)
MktCap	0.0000***	-0.0000***	-0.0000***	0.0000***	-0.0000***	0.0000***
	(17.13)	(17.21)	(4.96)	(8.40)	(-19.20)	(37.95)
EPS g.	0.0002***	-0.0000	-0.0018	0.0001***	0.0000	0.0025**
	(4.40)	(-1.60)	(1.04)	(2.95)	(0.14)	(2.16)
FirmAge	0.0000	-0.0000***	-0.0027***	0.0000**	-0.0000***	0.0028***
	(0.43)	(-11.50)	(7.85)	(2.13)	(-8.73)	(13.19)
Constant	0.0180***	0.0146***	7.5516***	0.0104***	0.0186***	6.8195***
	(38.91)	(82.31)	(406.80)	(39.53)	(121.35)	(570.88)
Observations	38,170	38,170	38,170	38,170	38,170	38,170
Adj. R^2	0.11	0.05	0.04	0.10	0.07	0.13

Table 5. CEO overconfidence and sentiment of conference calls during the *GFC*

This table reports coefficient estimates from the OLS regression of the CEO sentiment in MD and QA sessions of earnings conference calls on the indicators *Overconfidence* and *GFC* and their interaction, *Overconf*GFC*, and other control variables over the period between 2006 and 2013 described in Eq. (2). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	Tone_MD	Vagueness_MD	Length_MD	Tone_QA	Vagueness_QA	Length_QA
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Overconfidence	-0.0019***	0.0008***	0.0826***	-0.0009***	0.0006***	0.0356***
	(-4.73)	(5.56)	(5.52)	(4.38)	(4.63)	(3.72)
GFC	-0.0020***	0.0004***	0.1041***	-0.0024***	0.0001	-0.1388***
	(-6.33)	(3.36)	(9.45)	(-13.91)	(1.44)	(-19.34)
Overconf.*GFC	0.0009	-0.0002	-0.0735***	0.0003	-0.0003*	0.0322***
	(1.64)	(-1.08)	(-3.74)	(1.14)	(-1.69)	(2.63)
CC_time	0.0001**	-0.0000***	-0.0159***	-0.0001***	0.0000	0.0083***
	(2.28)	(-2.63)	(-11.09)	(-4.42)	(0.96)	(8.93)
SUE	0.0008***	-0.0001***	-0.0004	0.0003***	-0.0000	-0.0033**
	(13.18)	(-3.74)	(-0.18)	(8.29)	(-0.86)	(-2.24)
ROA	0.0118**	-0.0006	-0.7974***	0.0191***	0.0014	1.2428***
	(2.07)	(-0.30)	(-3.96)	(6.24)	(0.71)	(8.79)
Return	0.0104***	-0.0012***	-0.0322	0.0053***	-0.0006***	-0.0406***
	(16.15)	(-5.13)	(-1.41)	(15.33)	(-3.15)	(-2.78)
Sales g.	0.0071***	-0.0008***	0.0623**	0.0029***	-0.0003	-0.0059
	(9.11)	(-2.79)	(2.13)	(6.67)	(-1.28)	(-0.30)
MktCap	0.0000***	-0.0000***	-0.0000***	0.0000***	-0.0000***	0.0000***
	(15.47)	(-12.30)	(-6.07)	(5.32)	(-16.32)	(28.16)
EPS g.	0.0002***	-0.0000	-0.0029	0.0001**	0.0000	0.0013
	(3.35)	(-0.71)	(-1.43)	(2.46)	(0.92)	(0.99)
FirmAge	-0.0000	-0.0000***	-0.0014***	0.0000	-0.0000***	0.0013***
	(-0.40)	(-8.68)	(-3.67)	(1.60)	(-7.08)	(5.38)
Constant	0.0208***	0.0135***	7.4665***	0.0109***	0.0178***	6.9015***
	(32.78)	(57.69)	(321.43)	(31.21)	(86.97)	(462.49)
Observations	24,822	24,822	24,822	24,822	24,822	24,822
Adj. R^2	0.12	0.05	0.05	0.12	0.08	0.12

Table 6. CEO experience and sentiment of conference calls during the *GFC*

This table reports coefficient estimates from the OLS regression of the CEO sentiment in MD and QA sessions of earnings conference calls on the variable *Experience* and the indicator *GFC* and their interaction, *Exp.*GFC*, and other control variables over the period between 2006 and 2013 described in Eq. (2). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	Tone_MD	Vagueness_MD	Length_MD	Tone_QA	Vagueness_QA	Length_QA
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Experience	-0.0009***	0.0004***	0.1486***	-0.0006***	0.0002***	-0.0074
	(-5.09)	(5.55)	(22.81)	(-6.09)	(3.13)	(-1.58)
GFC	-0.0007	0.0002	0.2833***	-0.0029***	-0.0003*	-0.2889***
	(-1.36)	(1.11)	(15.74)	(-10.24)	(-1.65)	(22.04)
Exp.*GFC	-0.0001	-0.0001	-0.1162***	0.0005***	0.0001	0.0776***
	(-0.22)	(-0.94)	(-13.17)	(3.44)	(1.06)	(12.62)
CC_time	0.0002***	-0.0001***	-0.0147***	-0.0001***	-0.0000***	0.0081***
	(5.72)	(-5.25)	(-12.86)	(-4.94)	(-3.25)	(10.13)
SUE	0.0007***	-0.0001***	-0.0024	0.0003***	-0.0000	-0.0036***
	(15.61)	(-4.65)	(-1.37)	(10.21)	(-0.70)	(2.99)
ROA	0.0105***	-0.0012	-1.4747***	0.0098***	0.0038***	1.5350***
	(3.14)	(-0.88)	(-11.60)	(5.05)	(3.12)	(16.30)
Return	0.0089***	-0.0010***	-0.0469***	0.0046***	-0.0008***	-0.0518***
	(18.16)	(-5.39)	(-2.65)	(17.04)	(-4.79)	(4.23)
Sales g.	0.0061***	-0.0007***	0.0737***	0.0029***	-0.0004*	0.0043
	(10.61)	(2.87)	(3.33)	(8.64)	(-1.81)	(0.27)
MktCap	0.0000***	-0.0000***	-0.0000***	0.0000***	-0.0000***	0.0000***
	(16.85)	(17.00)	(-4.22)	(8.15)	(-19.05)	(37.95)
EPS g.	0.0002***	-0.0000	-0.0021	0.0001***	0.0000	0.0022**
	(4.46)	(-1.62)	(-1.30)	(2.95)	(0.12)	(1.98)
FirmAge	0.0000	-0.0000***	-0.0032***	0.0000**	-0.0000***	0.0024***
	(1.29)	(-12.16)	(-9.97)	(2.48)	(-9.39)	(11.10)
Constant	0.0196***	0.0139***	7.2479***	0.0115***	0.0183***	6.8403***
	(34.12)	(63.92)	(336.30)	(35.65)	(94.91)	(452.45)
Observations	38,170	38,170	38,170	38,170	38,170	38,170
Adj. R^2	0.11	0.05	0.06	0.10	0.07	0.14

Table 7. CEO age and sentiment of conference calls during the *GFC*

This table reports coefficient estimates from the OLS regression of the CEO sentiment in MD and QA sessions of earnings conference calls on the variable *Age* and the indicator *GFC* and their interaction, *Age*GFC*, and other control variables over the period between 2006 and 2013 described in Eq. (2). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	Tone_MD	Vagueness_MD	Length_MD	Tone_QA	Vagueness_QA	Length_QA
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Age	-0.0003***	0.0000***	-0.0040***	-0.0001***	0.0000***	0.0030***
	(11.73)	(4.75)	(4.98)	(5.96)	(5.90)	(5.47)
GFC	0.0028*	-0.0003	-0.0743	0.0007	-0.0009	-0.0387
	(1.71)	(0.55)	(1.22)	(0.76)	(1.60)	(0.94)
Age*GFC	-0.0001**	0.0000	0.0027**	-0.0001***	0.0000	-0.0014*
	(2.51)	(0.84)	(2.49)	(3.05)	(1.33)	(1.91)
CC_time	0.0001***	-0.0001***	-0.0109***	-0.0001***	-0.0000	0.0047***
	(3.98)	(4.37)	(8.74)	(5.64)	(0.81)	(5.56)
SUE	0.0008***	-0.0001***	-0.0023	0.0003***	-0.0000	-0.0036***
	(14.76)	(4.39)	(1.21)	(9.16)	(1.09)	(2.81)
ROA	0.0086**	-0.0014	-1.1199***	0.0113***	0.0024*	1.5882***
	(2.35)	(0.91)	(8.12)	(5.42)	(1.83)	(16.14)
Return	0.0093***	-0.0011***	-0.0289	0.0049***	-0.0008***	-0.0548***
	(17.74)	(5.62)	(1.52)	(16.86)	(4.35)	(4.27)
Sales g.	0.0065***	-0.0008***	0.0608**	0.0030***	-0.0004*	0.0089
	(10.17)	(3.23)	(2.53)	(8.23)	(1.88)	(0.53)
MktCap	0.0000***	-0.0000***	-0.0000***	0.0000***	-0.0000***	0.0000***
	(17.22)	(15.06)	(5.11)	(6.72)	(18.37)	(33.22)
EPS g.	0.0002***	-0.0000	-0.0012	0.0001***	0.0000	0.0015
	(4.50)	(0.23)	(0.72)	(3.12)	(0.50)	(1.28)
FirmAge	0.0000**	-0.0000***	-0.0017***	0.0000***	-0.0000***	0.0015***
	(2.32)	(10.60)	(4.96)	(2.83)	(8.31)	(6.70)
Constant	0.0330***	0.0121***	7.6690***	0.0148***	0.0160***	6.7178***
	(26.64)	(25.55)	(164.39)	(20.94)	(38.64)	(208.61)
Observations	33,283	33,283	33,283	33,283	33,283	33,283
Adj. R^2	0.11	0.05	0.04	0.11	0.07	0.12

Table 8. Financial analyst reaction to corporate disclosure and managerial characteristics during the *GFC*

This table reports coefficient estimates from the OLS regression of the *FA talk* in the QA session of earnings conference calls on managerial *Traits* during the GFC controlling for linguistic features of CEO disclosure during the MD and other firm specific control variables (*Firm controls*) over the period between 2006 and 2013 described in Eq. (3). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	FA Talk	FA Talk	FA Talk	FA Talk	FA Talk	FA Talk
Variable	(1)	(2)	(3)	(4)	(5)	(6)
GFC	-0.0105**	-0.0805***	-0.0094*	-0.0911***	-0.0383***	0.0857**
	(-2.08)	(-3.56)	(-1.83)	(-10.19)	(-5.41)	(2.28)
Ethnicity		-0.0690***				
		(-3.83)				
Ethnicity*GFC		0.0805***				
		(3.44)				
Gender			0.0181			
			(0.83)			
Gender*GFC			-0.0359			
			(-1.25)			
Experience				0.0034***		
				(4.60)		
Exp.*GFC				0.0069***		
				(7.70)		
Overconfidence					0.0240**	
					(2.57)	
Overconf.*GFC					0.0666***	
					(5.52)	
Age						0.0036***
						(7.10)
Age*GFC						-0.0016**
						(-2.33)
Tone_MD	0.0230	0.0220	0.0251	0.0904	-0.2190	0.1237
	(0.17)	(0.14)	(0.19)	(0.68)	(-1.47)	(0.89)
Vagueness_MD	-1.7887***	-1.9826***	-1.7928***	-1.8859***	-1.1217***	-1.3225***
	(-4.93)	(-4.57)	(-4.93)	(-5.23)	(-2.62)	(-3.49)
Length_MD	-0.0073**	-0.0266***	-0.0073**	-0.0112***	-0.0327***	-0.0111***
	(-2.06)	(-6.84)	(-2.06)	(-3.18)	(-8.12)	(3.03)
Constant	6.2396***	6.5253***	6.2391***	6.2545***	6.5200***	6.1255***
	(207.38)	(175.72)	(207.37)	(208.26)	(187.89)	(146.28)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	38,170	20,976	38,170	38,170	24,822	33,283
Adj. R^2	0.15	0.14	0.15	0.15	0.14	0.14

Table 9. Market reaction to corporate disclosure and managerial characteristics during the GFC

This table reports coefficient estimates from the OLS regression of the *CAR* computed from the day of the conference call to the day immediately after on managerial *Traits* during the GFC controlling for linguistic features of CEO disclosure during the MD and QA sessions of earnings conference calls together with other firm specific control variables (*Firm controls*) over the period between 2006 and 2013 described in Eq. (3). All independent variables are defined in Appendix. All specifications include industry fixed effects. The t-statistics in parenthesis are computed using Huber-White standard errors. *, **, and *** indicate significance at 10, 5, and 1% levels, respectively.

	CAR(0,1)	CAR(0,1)	CAR(0,1)	CAR(0,1)	CAR(0,1)	CAR(0,1)
Variable	(1)	(2)	(3)	(4)	(5)	(6)
GFC	0.0027***	-0.0004	0.0029***	0.0020	0.0020*	-0.0073
	(3.64)	(-0.011)	(3.84)	(1.58)	(1.85)	(-1.26)
Ethnicity		0.0040				
		(1.49)				
Ethnicity*GFC		0.0017				
		(0.42)				
Gender			-0.0024			
			(-0.83)			
Gender*GFC			-0.0051			
			(-1.23)			
Experience				0.0001		
				(0.68)		
Exp.*GFC				0.0000		
				(0.33)		
Overconfidence					-0.0018	
					(1.31)	
Overconf.*GFC					0.0021	
					(1.11)	
Age						-0.0000
						(-0.34)
Age*GFC						0.0002*
						(1.82)
Tone_MD	0.2222***	0.250***	0.2228***	0.2231***	0.2398***	0.2414***
	(11.00)	(9.23)	(11.03)	(11.04)	(9.67)	(11.06)
Vagueness_MD	0.0010	0.0822	-0.0039	-0.0002	-0.0066	0.0109
	(0.02)	(1.16)	(-0.08)	(-0.00)	(-0.10)	(0.19)
Length_MD	-0.0003	-0.0003	-0.0002	-0.0003	-0.0007	-0.0010*
	(-0.52)	(-0.41)	(-0.49)	(-0.63)	(-1.12)	(-1.77)
Tone_QA	0.5003***	0.4570***	0.5022***	0.5006***	0.5240***	0.5210***
	(14.00)	(9.38)	(14.05)	(14.00)	(11.58)	(13.48)
Vagueness_QA	-0.0053	-0.0287	-0.0098	-0.0066	0.0918	-0.0031
	(-0.09)	(-0.36)	(-0.17)	(-0.11)	(1.23)	(-0.05)
Length_QA	-0.0028***	-0.0053***	-0.0028***	-0.0029***	-0.0048***	-0.0039***
	(-3.83)	(-5.04)	(-3.88)	(-3.93)	(-4.89)	(-4.77)
Constant	0.0088	0.0238**	0.0091	0.0096	0.0264***	0.0219***
	(1.35)	(2.50)	(1.39)	(1.45)	(3.01)	(2.72)
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	38,010	20,923	38,010	38,010	24,779	33,238
Adj. R^2	0.04	0.04	0.04	0.04	0.04	0.04

Appendix I

Variable definitions

Linguistic measures	
Tone_MD	Tone of the CEO during the MD defined as the difference of CEO positive words minus CEO negative words scaled by the CEO talk in the MD.
Vagueness_MD	Vagueness of the CEO during the MD defined as number of CEO vague words scaled by the CEO talk in the MD.
Length_MD	The log of the number of words spoken by the CEO during the MD session of the conference call.
Tone_QA	Tone of managers' answers during the QA session defined as the difference of manager positive words minus manager negative words scaled by manager talk in the QA.
Vagueness_QA	Vagueness of managers' answers during the QA session defined as number of manager vague words scaled by manager talk in the QA.
Length_QA	The log of the number of words spoken by the managers during the QA sessions of the conference call.
FA_Length	The log of the number of words spoken by the financial analysts during the QA session of the conference call.
Managerial characteristics	
Ethnicity	Indicator variable which takes a value of one if the CEO holding the call classified her/himself as belonging to the white/Caucasian ethnic group.
Gender	Indicator variable which takes a value of one if the CEO holding the call is a female, and zero otherwise.
Experience	The log of (1+ the) number of conference calls in the sample held by the same CEO at the date of any conference call.
Overconfidence	An indicator variable equal to one if the CEO stock options that are more than 67 per cent in the money at least twice in the sample period, and zero otherwise.
Age	The age of the CEO at the date of the conference call.
Other variables	
CAR(0,1)	Cumulative abnormal returns from the day of the event (day 0) to the day immediately after the earnings conference call (day +1). Abnormal returns are defined in excess of CRSP value-weighted market return.
CC_time	Log of the time of day at which each conference call took place.
EPS g.	Growth of quarterly earnings per share relative to the previous quarter.
FirmAge	The log of the firm's age counted from the first year it appears in Compustat.
MktCap	The logarithm of firm's quarterly market capitalization.
Returns	Quarterly stock returns relative to the previous quarter.
ROA	The log of (1 + the) quarterly return on assets defined as the ratio of earnings before interests and taxes (EBIT) to total assets.
Sales g.	Quarterly sales growth relative to the previous quarter.
SUE	Quarterly earnings surprise measured as change of quarterly net income relative to same quarter one-year-ahead net income scaled by the absolute value of same quarter one-year-ahead net income.