The capital market consequences of language barriers in the conference calls of non-U.S. firms

Francois Brochet
fbrochet@bu.edu

Patricia Naranjo
patricia.naranjo@rice.edu

Gwen Yu*
gyu@hbs.edu

November 2015

Abstract

We examine how language barriers affect the capital market reaction to information disclosures. Using transcripts from non-U.S. firms' English-language conference calls, we find that the calls of firms in countries with greater language barriers are more likely to contain non-plain English and erroneous expressions. For non-U.S. firms that hire an English-speaking manager, we find less use of non-plain English and fewer erroneous expressions. Calls with a greater use of non-plain English and more erroneous expressions show lower intraday price movement and trading volume. The capital market responses to non-plain English and erroneous expressions are more negative when the firm is located in a non-English-speaking country and has more English-speaking analysts participating in the call. Our results highlight that, when disclosure happens verbally, language barriers between speakers and listeners affect its transparency, which in turn impacts the market's reaction.

Keywords: Linguistic complexity; Non-plain English; Voluntary disclosure; Capital market consequences; Language barriers

* Corresponding author: Harvard Business School, Morgan Hall 383, Boston, MA 02163, Tel: (617) 495-6547, Fax: (617) 496-7387, Email: gyu@hbs.edu.

This paper previously circulated with the title "Causes and consequences of linguistic complexity in non-U.S. firm conference calls." We are grateful for helpful comments and guidance from the editor (Amy Hutton) and two anonymous referees. We also thank Dirk Black, Andy van Buskirk (discussant), John Core, Ilia Dichev, Ian Gow, Michelle Hanlon, Young Han Kim, Joshua Madsen (discussant), Scott Richardson, Eddie Riedl, Mani Sethuraman, Nemit Shroff, Irem Tuna, Oktay Urcan, Rodrigo Verdi, Teri Yohn (discussant), Jingran Zhao, and seminar participants at the 2013 AAA Annual Meeting, the 2013 AAA FARS midyear meeting, the 2013 EAA annual meeting, the 2012 UNC-Duke Fall Camp, Dartmouth College, Emory University, HEC Paris, London Business School, the University of Toronto, and the Yale SOM Accounting Research Conference. We are grateful to Emmanuel DeGeorge for sharing the Bloomberg earnings announcement dates. Gwen Yu acknowledges financial support from the Division of Research at Harvard Business School. Patricia Naranjo is grateful for financial support from the Deloitte & Touche Foundation, the MIT Sloan School of Management, and Rice University. All errors are our own.

I. INTRODUCTION

With the globalization of capital markets, it is becoming increasingly important for non-U.S. firms to communicate in English, the de facto language of global investors. Yet non-U.S. firms face cultural and institutional barriers to doing this, which may inhibit their disclosure of information to the capital markets. In this study, we examine how language barriers affect the disclosure quality of non-U.S. firms' communication via conference calls, a primary voluntary disclosure channel.

Though prior research examines the properties of U.S. firms' conference calls (e.g., Bushee et al. 2004), it does not explore those of non-U.S. firms. Following investor demand, many non-U.S. firms hold conference calls in English, raising a question: can nonnative English speakers effectively communicate using calls in English.[1] Thus, non-U.S firms' conference calls provide a unique opportunity to examine whether and how language barriers affect corporate disclosures.

We hypothesize that these barriers—through the increased use of complex expressions, erroneous ones, or both—, will affect how investors' reaction to the information in conference calls. Prior studies show that language barriers inhibit individuals from speaking proficiently (Dustmann and van Soest 2001; Bleakley and Chin 2004). We argue that, when firms in a non-English-speaking country hold conference calls in English, the language barrier reduces their narrative's transparency. Insofar as this leads to a lower capital market reaction (Miller 2010), investors will then react less to the disclosures.

[1] In our conversations with managers of non-U.S. firms, the managers confirmed that holding conference calls in English is a growing trend in the industry. When asked why, many mentioned that it helped firms reach existing and potential global investors. While some companies initially held two separate calls for domestic and foreign investors, they found it challenging to provide consistent information across the two calls. Hence, there was a strong preference for a single call, which, for many firms, ended up being in English. For more information on global investor relations practices, see reports by the National Investor Relations Institute (e.g., "Global investor relations practices: Buy-side perceptions and Expectations Best-in Class Global IR practices" (2011)).

Presumably, managers, who conduct calls in English, view themselves as proficient in the language or can hire other managers or investor relations officers, who are native English speakers.[2] Furthermore, as shown by Lundholm et al. (2014), firms from non-English-speaking countries may strive to provide regulatory filings in *plainer* English than U.S. peers, which contradicts the prediction that language barriers could lead to less transparent disclosures. If managers can fully mitigate the language deficiencies, then we would not find a relation between language barrier and disclosure transparency. Hence, it is an open empirical question whether language barriers affect the quality of disclosures in earnings conference calls.

We focus on two mechanisms by which language barriers might inhibit managerial communications. The first is linguistic complexity, which we measure based on the use of "non-plain English," according to guidelines established by the Securities and Exchange Commission (SEC)'s 1998 Plain English initiative. Miller (2010) and Loughran and McDonald (2014b) have proposed an empirical measure to capture the various dimensions of non-plain English.[3] Following their work, we classify as more linguistically complex the transcripts of calls that frequently violate the plain English principles.

Second is the use of erroneous expressions (Ionin et al. 2008). We capture the frequency of managers' errors in conference calls by measuring (i) their frequency of grammatical errors, (ii) their use of the passive voice, and (iii) their abnormal use of articles. These three measures represent typical errors of nonnative speakers described by the linguistics literature (Ionin et al. 2008; Lee and Seneff 2008; Carrio-Pastor and Alonso-Almeida 2014). We expect managers in

[2] Also, firms whose managers lack English proficiency may use real-time translators to overcome language barriers. However, our data shows that the portion of firms in our sample that uses translators is 1%, which suggests that the additional processing cost from using a translator exceeds the benefits. Furthermore, in robustness checks, we control for the selection effect of firms that hold conference calls and subscribe to Thomson StreetEvents, the vendor that provides the transcripts for our study. Our results are robust after controlling for the selection effect.

[3] The dimensions of plain English are as follows: (i) using shorter sentences, (ii) using shorter words, (iii) avoiding the passive voice, (iv) using personal pronouns, and (v) avoiding superfluous phrases. (See section III for details.)

countries with a greater language distance from English to make more of these mistakes. Throughout the paper, we refer to linguistic complexity and erroneous expressions as linguistic opacity.

Next, we examine how the capital market responds to linguistic opacity. Conference calls not only reveal a significant amount of financial information, they also provide managers with an opportunity to explain the context of those financials. Unclear explanations may reduce investors' confidence in their interpretation of a disclosure (Bloomfield 2002). Our main test examines investors' reaction—as measured by lower return volatility and trading volume (Verrecchia 2001)—to the linguistic opacity of the calls of non-U.S. firms.

Our sample consists of 11,305 conference call transcripts from non-U.S. firms between 2002 and 2010 available from Thomson StreetEvents. We measure linguistic opacity using the transcripts of management's answers during the Q&A portions of the calls. We exclude the presentation portion because it tends to be scripted and less spontaneous (Lee 2015).

We first test whether our proxies for linguistic opacity are associated with language barriers. We find strong evidence that linguistic opacity in conference calls is positively associated with the language distance from English in the companies' home countries, which we proxy for using the language classification from Lewis (2009). Managers from firms in countries that are linguistically further from English, such as Japan and Italy, use more non-plain English expressions and commit more grammar errors.[4] Our results hold when we measure linguistic opacity and language barriers at the executive level, instead of the firm level. For firms domiciled in non-English-speaking countries, we isolate the Anglophone executives—those born or educated in English-speaking countries. We find that their answers are less likely to contain non-plain

[4] We measure the country's proficiency in spoken English using its average score on the speaking portion of the TOEFL (Test of English as a Foreign Language) exam. See section III for details.

English and errors. In contrast, only local executives with no Anglophone background give unclear, error-prone answers.

Second, we test whether linguistic opacity in non-U.S. firms' disclosures affects the disclosure's information content—the extent to which the capital market reacts to information releases—using two measures of information content: abnormal stock return volatility (Matsumoto et al. 2011) and abnormal trading volume (Beaver 1968; Kim and Verrecchia 1997). We measure the capital market responses using *intraday* data during the Q&A portion of the call. This tight time window rules out other events close to the calls that may affect the market response.[5]

Using a regression model, we find that the use of non-plain English or erroneous expressions leads to lower abnormal stock return volatility and abnormal trading volume during the conference calls after controlling for the magnitude of the earnings surprise and a variety of country, firm, and call characteristics. The results suggest that a one standard deviation increase in *Non-Plain English*—equivalent to the change in complexity of an average Canadian firm to that of an average South Korean firm—leads to a 5.66% reduction in intraday abnormal volume following the call. We obtain similar results with *Linguistic Errors*: a one standard deviation increase leads to a 3.76% reduction in intraday abnormal volume.[6]

Finally, we conduct two cross-sectional tests. First, we explore variation in the supply-side forces. We expect the association between linguistic opacity and the capital market response to be stronger when firms face higher language barriers and weaker when firms are located in countries

[5] Due to data unavailability of conference calls held outside of trading hours, the sample size is reduced to 4,085 observations for our capital market tests. We repeat our capital market tests using daily instead of intraday data, so as to include calls held outside of trading hours. We also find a negative association between linguistic opacity and the information content of conference calls when measured over a three-day window centered on the call.

[6] Managers' speech may exhibit greater linguistic opacity for other reasons than language barriers. For example, if caught off guard by a question, a manager might give a more complex answer, although this may result in greater—rather than lower—information content. To further attribute our results to language barriers, we perform a sensitivity test where we replace linguistic opacity with its fitted measure from a regression on language barrier proxies. The results hold.

where English dominates—Australia, Canada, South Africa, and the U.K. We find that linguistic opacity leads to lower return volatility and trading volume for firms in non-English-speaking countries.

Second, we explore variation in the demand for English conference calls, which we measure using the portion of Anglophone analysts (i.e., those who work in an English-speaking country) participating in the call. Analysts who are not from the firm's home country face a higher cost of information gathering outside of the call (Bae et al. 2008) and therefore must rely more on the call itself to value the company. We predict and find that, when demand for English calls held by firms in non-English-speaking countries is greater, there is a more negative association between linguistic opacity and the market's responses.

We contribute to the literature in two ways. First, our results provide new insights into conference calls. Prior research documents that conference calls provide information beyond earnings releases (Frankel et al. 1999). We show that language barriers accompany lower information content. These results extend the understanding of how the disclosure narrative can affect the information content of earnings news (Bushee et al. 2003). Second, our paper responds to a call for research into the content analysis of corporate disclosure in an international setting (Li 2010). Most studies that consider non-U.S. firms' disclosure quality focus on quantitative information (Leuz et al. 2003; Srinivasan et al. 2015). Recent exceptions include work by Lundholm et al. (2014) and Lang and Stice-Lawrence (2015). While these studies examine the written filings of non-U.S. firms, conference calls (held in English) provide a unique source of variation in disclosure quality; to our knowledge, no other studies examine the implications of language barriers in a voluntary disclosure setting. While the economic magnitude of the

documented effect is modest, we highlight a new source of friction in capital markets' information dissemination.

The rest of the paper is organized as follows. In the next section, we review the prior literature and develop our main hypotheses. In section III, we describe our data and empirical measures, and present the summary statistics. We present our main results in section IV and additional analysis in section V. Section VI concludes.

II. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Complexity in the narrative of corporate disclosures

A longstanding literature has analyzed the content of corporate financial reports to assess their narrative complexity. Using well-known proxies such as the Fog index to measure readability, these studies conclude that U.S. firms' annual reports are difficult to read (Li 2008). Similar findings have been documented using the annual reports of firms in the U.K. (Jones 1988), Hong Kong (Courtis 1995), and Italy (Hammami 2011).

Several studies use firms cross-listed on U.S. exchanges and examine how the readability of U.S. disclosures compares with disclosures in other jurisdictions (e.g., Courtis and Hassan 2002; Schroeder et al. 1991). More closely related to our study, Lundholm et al. (2014) show that the readability of the MD&A section of cross-listed firms' annual reports increases with their incentives to bond to the U.S. capital markets.[7] This suggests that the firm's level of commitment helps determine the complexity level.

[7] In contrast to Lundholm et al. (2014), we do not limit our sample to firms cross-listed in the U.S. More than half (58%) of our sample firms are non-U.S. firms listed only on their local exchanges. Also, we study a different disclosure means, i.e., conference calls versus the annual reports examined by Lundholm et al. Finally, we focus on different measures of linguistic complexity, i.e., non-plain English. An important advantage of the non-plain English measure is

Our work differs in several respects. First, unlike research that examines readability in written documents, we examine the use of non-plain English and linguistic errors in the context of spoken language. The linguistics and psychology literature supports the view that greater complexity in speaking affects the ease with which the audience can understand the message. Studies find something hard to read is even harder to understand by listening, and something easy to read is even easier to understand by listening (Flesch 1951). Therefore, one could expect opacity (i.e., non-plain English and linguistic errors) to affect spoken language more than it would a text.[8] To our knowledge, this question has not been directly examined in the context of earnings conference calls.[9]

Second, we innovate by focusing on opacity stemming from language barriers. Non-U.S. firms' English-language conference calls provide a unique setting for examining the effect of language barriers. Because the calls involve spontaneous communication, especially during the Q&As, the effect of language barriers is likely to be greater relative to other disclosures.

The linguistics literature shows that speaking in a less complex manner (i.e., plain English) is difficult for non-native speakers (Flesch 1946). This literature also finds that complexity in non-native's speech thwarts listener comprehension (Munro and Derwing 1995). Thus, in the context of our study, more complexity is less desirable (rather than being a signal of sophistication). We also examine linguistic errors as measured by the frequency of grammatical errors and other speech

---

that how the information is communicated drives some of its components (e.g., the active voice), which are therefore less likely to be confounded by firm complexity (Bonsall et al. 2015).

[8] Studies examining the effect of complexity in verbal communication can be found in numerous fields, including broadcasting (e.g., Allen 1952; Harwood 1955; Molstad 1955), advertising (Lowrey 2006), criminology (Eastwood et al. 2010), and behavioral economics (Alter and Oppenheimer 2006).

[9] One exception is Bushee et al. (2014), who examine the effect of linguistic complexity (as measured by Fog) on earnings response coefficients and information asymmetry in a sample of U.S. firms' conference calls. Our study differs because it examines the effect of non-U.S. firms' language barriers.

patterns symptomatic of a lower command of English. Collectively, we refer to linguistic complexity and the number of linguistic errors as linguistic opacity.

Information content of earnings conference calls

The literature documents that the information released during earnings conference calls has capital market consequences. Frankel et al. (1999) and Bushee et al. (2003) find a higher level of trading activity and returns volatility during the conference call period. These studies suggest that conference calls impart value-relevant information.

While many studies have examined the properties and content of earnings conference calls in the U.S. (e.g., Bushee et al. 2004; Hollander et al. 2010; Matsumoto et al. 2011), there is little research on the calls outside of the U.S.[10] A recent strand of the literature examines the capital market consequences of complexity in written corporate disclosures. Studies find that the readability of 10-K filings is informative about the persistence of future earnings (Li 2008) and the complexity of those 10-Ks reduces investors' reactions to the filings (Miller 2010; Loughran and MacDonald 2014a), a finding that also applies to analyst reports (De Franco et al. 2015). These findings inform our own hypothesis by showing that, even within a single country where English is the primary language, disclosure readability affects market participants' reaction to the information conveyed. We build on this literature to derive our hypotheses, and thus our first hypothesis follows.

[10] There are two exceptions. First, Bassemir et al. (2012) examine the conference calls of German firms listed on the Prime Standard Index of the Deutsche Börse. That stock exchange mandates that, as one of its disclosure requirements for being part of the index, firms must conduct at least one conference call per year. The study finds that firms conduct on average two (mostly closed) calls per year. Second, using a set of Taiwanese firms, Liang et al. (2012) find foreign ownership can motivate firms in emerging markets holding conference calls. These studies suggest that firms may decide to hold calls based on the institutional features of their home countries, the main stock exchange on which they are listed, or both. However, to our knowledge, no cross-country studies show how the properties of earnings conference calls vary across countries.

***H1**: Greater linguistic opacity (i.e., use of non-plain English and erroneous expressions) in non-U.S. firms' conference calls will decrease the extent to which investors react to the information released.*

Following the prior literature, we consider price changes and trading volume as proxies for conference calls' information content. (See Holthausen and Verrecchia (1990) and Kim and Verrecchia (1991, 1997) for theoretical support.) Price changes reflect the average change in investors' belief about an information release, whereas trading volume reflects idiosyncratic interpretations of the announcement. Applied to our setting, if a manager's answers are clearer, investors may ceteris paribus react more strongly to the calls (in terms of belief revision) because less complexity leads to a more precise narrative about the firm's fundamentals. Also, if less complexity increases investors' confidence in their interpretations of the reported signal, it will lead to greater trading volume.

Cross-sectional predictions

In the context of our study, linguistic opacity impedes investors' understanding and response through a language barrier. Thus, we expect the association in H1 to be greater when call participants face a greater language barrier.

In our first cross-sectional test, we exploit variation in language barriers using supply-side forces, i.e., the language barriers of the firm managers participating in the call. Firms located in non-English-speaking countries face greater barriers than those in English-speaking countries, assuming that the former are more likely to have top executives who are not native English speakers. We predict that firms in English-speaking countries will show a weaker association between linguistic opacity and capital market response.

***H2a:** The association between linguistic opacity and the capital market response will be stronger (i.e., more negative) for firms domiciled in non-English-speaking countries compared to those in English-speaking countries.*

However, firms in non-English-speaking countries can hire Anglophone managers. Hence, we formulate another hypothesis at the manager level:

H2b: *The association between linguistic opacity and the capital market response will be stronger (i.e., more negative) for firms without an Anglophone manager compared to firms with one.*

In our next cross-sectional test, we exploit the variation in language barriers on the demand side, i.e., from the users' perspective, holding the supply-side barrier constant (i.e., by focusing on firms from non-English-speaking countries). There is ample evidence showing that the information content of conference calls increases with user demand, such as when investors want greater clarity on M&A deals (Kimbrough and Louis 2011) or when analysts are more involved during calls (Matsumoto et al. 2011).

We argue that non-U.S. firms will face greater language barriers when there is greater demand from English-speaking (i.e., Anglophone) analysts for such calls. This increase occurs because Anglophone listeners who are not from the firm's home country face a higher language barrier to acquiring information outside of the call; they therefore rely more heavily on the call itself. We predict that linguistic opacity will lead to a more negative capital market consequence when Anglophone analysts participate more.

H3: *For firms in non-English-speaking countries, the association between linguistic opacity and the capital market response will be stronger (i.e., more negative) when there is greater demand from English-speaking users (as captured by Anglophone analysts' participation in conference calls).*

III. DATA AND DESCRIPTIVE STATISTICS

Sample selection

We obtain the conference call transcripts of non-U.S. firms between 2002 and 2010 from Thomson StreetEvents. Table 1 shows the details of the sample selection process. We use all conference calls, subject to minimal constraints. We drop calls unrelated to earnings

announcements (e.g., M&A conference calls) and require the calls to occur within the three days around an earnings announcement.[11, 12] Next, we drop calls with a length that is in the bottom 5% of our sample, measured by the total number of words. This ensures that our measures are based on dialogues with sufficient text. We drop calls from countries with fewer than 10 observations during our sample period. Finally, we require firms to have financial data: total assets, net income, common equity, and total debt from Worldscope and daily price, volume, and market value data from Datastream. We obtain analyst data from I/B/E/S and management guidance issuance from Capital IQ. Our final sample consists of 11,305 conference calls from 1,086 firms domiciled in 36 countries.[13] All of our tests are reported based on continuous variables winsorized at 1 percent for each tail to decrease the influence of outliers.

Measures of linguistic opacity from language barriers

Language barriers manifest themselves in two measurable ways: greater linguistic complexity and linguistic errors. We measure complexity using non-plain English. This measure is based on the SEC's guidelines from the Plain English Rules (1998) and has been implemented in accounting (Miller 2010) and finance (Loughran and McDonald 2014b). The rule identifies several key attributes of plain English, such as the use of short sentences; definite, concrete everyday language; and the active voice. Loughran and McDonald (2014b) empirically implement those attributes into a composite measure. We follow them and create the measures outlined below, using management's answers during conference call Q&As:

- Average sentence length; average word length.

[11] Following Griffin et al. (2011), we collect earnings announcement dates from Bloomberg.
[12] Consistent with prior literature (Matsumoto et al. 2011), we confirm that the majority of conference calls (94%) are held on the earnings announcement date or within the three-day window around it.
[13] For the capital market tests, we drop calls with missing intraday data and those held during non-trading hours using the time zone of the exchange. This results in a final sample of 4,085 call observations.

- Use of the passive voice: We identify auxiliary verb forms ("to be," "to have," "will be," "has been," "have been," "had been," "will have been," "being," "am," "are," "is," "was," and "were") and then code those forms as passive if they are followed by a word ending in "ed" or one of 158 irregular verbs.
- Personal pronouns: We count instances of "we," "us," "our," "ours," "you," "your," "yours," because the SEC Plain English handbook indicates that the use of those pronouns improves the clarity of financial communication.
- Other: Following Loughran and McDonald (2014b), we combine three other categories, i.e., negative phrases, superfluous words, and the use of the word "respectively" into one. Specifically, we count instances of 12 negative compound phrases (page 27 of the SEC handbook), eight superfluous phrases (page 25 of the handbook), and the word "respectively."[14]

To combine the above measures into a single measure, we scale each word or phrase count by the total number of words in the call's Q&A portion and the passive voice count by the total number of sentences. We then standardize each attribute into a zero-mean, standard-deviation-of-one variable. We add up each normalized variable (negatively signed for personal pronouns, since they are positively associated with plain English) to obtain our measure of *Non-Plain English*.

Second, we proxy for reduced linguistic errors by measuring three speech attributes that are symptomatic of the difficulties faced by non-native speakers. Following prior studies (Ionin et al.

[14] Loughran and McDonald (2014b) also include the use of legal words as another dimension of non-plain English. However, this usage is more likely to be relevant in the context of written communications, especially in a litigious environment like the U.S. (Baginski et al. 2002); it is less relevant to verbal communications like conference calls. Legal words in written disclosures reflect the firm's perception of the litigation environment rather than its managers' language barriers. We therefore exclude this from our measure of linguistic complexity; including it yields qualitatively similar results.

2008; Carrio-Paster and Alonso-Almedia 2014), we assess the occurrences of grammatical errors, the abnormal use of articles, and the frequency of the passive voice.

We count instances of grammatical errors in managers' answers to analysts and scale the number of errors by the number of sentences in the Q&A. We automate Microsoft Word's grammar check to count errors across transcripts in our sample. The grammar check flags instances of grammar errors such as misused words, negation, subject-verb agreement, etc. We include all dimensions except errors due to transcription: capitalization, punctuations, hyphenated words, and contractions.

We supplement grammatical errors with two speech patterns shown to affect non-native speakers. The first is the use of the article "the." Non-native English speakers are more likely to show abnormal article use in English (Ionin et al. 2008). Accordingly, we compute the frequency of the word "the" in management's speech during each conference call's Q&A, and calculate its absolute deviation from the average frequency of the word's incidence in U.S. conference calls, scaled by the number of words from the call's Q&A, to measure their abnormal usage. The second speech pattern is the use of the passive voice (Carrio-Pastor and Alonso-Almeida 2014). We measure this attribute by counting the auxiliary verb forms followed by a word ending in "ed" or one of 158 irregular verbs, scaled by the number of sentences from the call's Q&A.[15]

We combine these three measures into our measure of *Linguistic Errors*. As with the *Non-Plain English* measure, we use the sum of the standardized values of each measure.

Table 2 provides the descriptive statistics of our linguistic opacity measures and their average scores per country and year. Panel A presents the distribution of linguistic opacity in our

[15] We exclude "passive voice" to avoid double counting the use of the passive voice, which we include separately to construct the linguistic error measure.

full sample. Both measures of linguistic opacity exhibit meaningful variation, with standard deviations of 2.83 and 1.88, respectively.

Panel B presents the number of observations and mean linguistic opacity scores by country. Japan and Italy have the highest mean *Non-Plain English* scores. Countries with the most frequent *Linguistic Errors* are Japan and Poland, followed by Italy. English-speaking countries such as the U.K. and Canada have negative mean scores on both linguistic opacity measures. We also report the within-country standard deviation in the linguistic opacity measures. The mean within-country standard deviation of the non-plain English (linguistic errors) measure is 2.68 (1.79). The mean within-country variation of English-speaking countries is smaller than it is for the non-English-speaking countries. In contrast, the mean within-firm variation in the linguistic opacity measures remains relatively stable (1.68 for *Non-plain English* and 1.18 for *Linguistic Errors*, not tabulated) relative to the cross-country variation. This suggests that country-level, rather than firm-level, factors largely drive linguistic opacity, lending more support to the validity of our measures.

Finally, Panel C presents the distribution across years. Both measures appear to decrease over time, especially from 2006 onward. This is consistent with firms improving their disclosures to better communicate with an increasingly global investor base.

IV. EMPIRICAL TESTS AND RESULTS

Determinants of linguistic complexity in foreign firm conference calls

We begin by examining the determinants of linguistic opacity using the following empirical model with firms indexed as *i* and call quarters as *t*:

$$\textit{Non-Plain English (Linguistic Errors)}_{i,t} = \beta_1 * \textit{Language Barrier}_i + \sum \beta_k * \textit{Controls}_{i,t} + \textit{Industry FE} + \textit{Year FE} + \varepsilon_{i,t}. \quad (1)$$

Non-Plain English and *Linguistic Errors* are our measures of linguistic complexity. We first validate the measures by examining whether linguistic opacity is associated with the language barrier in the firm's home country.

We use two proxies for language barriers. First is the *Language Distance* between English and the country's dominant language, as designed by Lewis (2009) and used by Jeanjean et al. (2010) to examine firms' decisions to issue annual reports in English. The distance is based on a classification system that groups languages by families (e.g., Sino-Tibetan, Altaic, Indo-European) with up to three levels of branches and sub-branches within each family. English is classified under the Indo-European family, within the Germanic branch and the Western sub-branch.[16] This variable accounts for differences between languages as a categorical variable, recognizing that it is likely easier for a non-native English speaker to learn English if her native language is in the same branch (e.g., German or Dutch) than if it is in a different family (e.g., Turkish or Mandarin). Second, we measure the proficiency of spoken English for non-natives (*Speaking Proficiency*) using the mean country-level score from the speaking portion of the TOEFL exam.[17] The score is available from 2005, when ETS first introduced the test to assess individuals' speaking ability. For observations between 2006 and 2010, we use the annual country-level means. For observations prior to 2006, we use the 2006 scores. We assign higher values to indicate greater language barriers by multiplying the *Speaking Proficiency* variable by negative one.

We include various conference-call-level controls. *Translated* indicates calls that use a professional translator and provide English translations. We also control for management's

[16] Each country is given a score based on the distance between its dominant language and English as follows: 5 if it is from a different family; 4 for different branches of the same family; 3 for the same branch but different first sub-branch levels; 2 for the same first-level but different second-level sub-branches; and 1 for the same language.

[17] The TOEFL (Test of English as a Foreign Language) is extensively used as an admission requirement for non-native speakers at various (primarily academic) institutions around the world. The test is designed and administered by the Educational Testing Service (ETS) and has been taken by over 27 million individuals since its introduction in 1964.

propensity to be forthcoming in information releases, using the number of times it discusses numbers in its answers to analysts (*# of Numbers* (Blankespoor 2013)). We predict the *# of Numbers* will show a negative relation with opacity in the call's narrative, as quantified statements are more verifiable (Hutton et al. 2003). In addition, we control for the lack of vocal clarity in managers' answers by counting incidences of "[inaudible]" or "[indiscernible]" in the transcripts. We include indicators for conference calls where the manager was reluctant to provide information (*Reluctant*) and for those where the analysts found at least one answer unclear (*Unclear*). Appendix A Panel B provides a list of the phrases included in our search.

We also control for the amount of information released during the calls using the count of total words (*Words*), an indicator for conference calls in the fourth quarter versus during interim periods (*Quarter*), and an indicator (*Guidance*) for firms that issued management guidance within the 10 days around the call.

To capture variation in opacity that should not be driven by language barriers, we control for the incidence of a concurrent earnings announcement press release in English by the firm (*Press Release*); when there is a press release, we measure its opacity using the Fog index (*Fog Press Release*). We retrieve company-initiated press releases in English through Factiva.

Following Li (2008), we also include various firm-level determinants shown to be associated with opacity in financial reports, absent any language barriers. Firm size (*Size*), profitability (*ROA*), the number of reporting segments (*# Segments*), Tobin's Q (*Q*), and *Leverage* proxy for various dimensions of business complexity, whereas the number of analysts (*Log Analysts*), the percentage of analysts covering the firm (as per I/B/E/S) who participate in the call (*Participants*), and cross-listed firms (*ADR*) account for differences in the information environment driven by the demand side. *SEO* (*M&A*) indicates unusual firm events (equity

offerings and acquisitions) that may require more complex disclosures. We expect a positive association between linguistic opacity and the volatility of both stock returns (*Volatility*) and earnings (*Earnings Volatility*). The level of linguistic opacity may also change with the properties of reported earnings and anticipated economic news. Hence, we include in the determinants model the complexity of the presentation section (*Fog Presentation*), special items (*Special Items*), and an indicator for future negative stock returns (*Neg_ret*).

Finally, we include various country-level measures of the information environment in each country. We control for financial development using the log of equity market capitalization (*Market Cap*) and the annual changes in the market index (*Market Return*). We include price synchronicity (*Synchronicity*) and *Zero Returns* to account for the information environment's transparency and liquidity; the rule of law index (*Law*) and *Uncertainty avoidance* account for institutional and cultural differences across countries. Managers from cultures with greater uncertainty avoidance may find it more difficult to communicate forward-looking information to a global audience in plain English. Appendix A provides detailed variable definitions.

Table 3 presents descriptive statistics for the determinants included in the study. We present the results for the entire conference call sample and separately for the calls of firms in English-speaking and non-English-speaking countries. These firms differ along several dimensions. Firms from non-English-speaking countries exhibit a higher mean for both *Non-Plain English* (0.71 vs. −0.98) and *Linguistic Errors* (0.49 vs. −0.63) than their counterparts from English-speaking countries do, as expected. The capital market reaction to the calls (*IAVOL_Q&A* and *IAVAR_Q&A*) is shown in percentage terms. The mean intraday abnormal volume response (*IAVOL_Q&A)* is 0.67%, comparable to the levels reported in prior studies using U.S. firms (Matsumoto et al. 2011).

Our sample of firms from English-speaking countries consists of smaller, less profitable firms, but with a greater analyst following. English-speaking countries show a greater proportion of zero returns than non-English-speaking ones (0.57 versus 0.36) as well as lower stock market synchronicity and uncertainty avoidance. Also, managers in non-English-speaking countries are, on average, more likely to be unclear, reluctant to answer questions, and inaudible. Panel B presents the Pearson and Spearman correlations among the variables included in equation (1). *Non-Plain English* and *Linguistic Errors* are highly correlated at 0.53 (Spearman), suggesting that both measures capture similar variations in linguistic opacity.

We next present a regression analysis of the determinants of linguistic opacity (equation (1)). We estimate the model using ordinary least squares (OLS) and cluster the standard errors by firm and by year. The results are presented in Table 4.

Table 4 shows that linguistic opacity is positively associated with the language barrier in the firm's home country. In columns 1 and 2, *Non-Plain English* is the dependent variable. The coefficient on *Language Distance* is positive and significant, 0.14 (t-stat=2.36) in column 1. The coefficient on *Speaking Proficiency*(-1)* is also positive and significant, 0.16 (t-stat=6.29) in column 2. In columns 3 and 4, we repeat the analysis using *Linguistic Errors* as our measure of linguistic opacity. We find that the coefficients on both *Language Distance* and *Speaking Proficiency*(-1)* are positive and significant, confirming our earlier findings that a higher language barrier leads to greater linguistic opacity in non-U.S. firms' disclosure.

Several conference call characteristics exhibit a significant association with linguistic opacity. Conference calls where managers provide more quantitative information (*# of Numbers*) exhibit plainer English, consistent with greater transparency in management's answers. However, calls where managers are reticent show a lower level of opacity. Calls with more complex

language during the presentation (*Fog Presentation*) also show more linguistic errors.[18] Interestingly, conference calls that are translated show a greater use of non-plain English. This suggests that hiring a real-time translator is unlikely to increase the effectiveness of the information disclosure. It may also point to the characteristics of firms that hire translators, which comprise only a very small portion of our sample (less than 1%).

We find evidence that linguistic opacity is associated with various firm characteristics. Firms with a higher analyst following (*Log_Analysts*) and that are cross-listed exhibit a lower linguistic opacity level. Overall, the primary takeaway from Table 4 is that the effect of language barriers on *Non-Plain English* and *Linguistic Errors* is robust to the inclusion of other determinants of country-, firm-, and call-level opacity.

The research design in Table 4 assumes that the firms' home countries serve proxy for their executives' English proficiency. However, executives from countries where English is not the primary language may learn English through schooling or professional experience. Also, companies domiciled in a non-English-speaking country may hire native English-speaking managers (Shroff et al. 2014).

We provide additional validation by measuring linguistic opacity at the manager level, instead of conference-call level. We classify managers as English-speaking and non-English-speaking based on nationality and experience. We examine whether there are differences in linguistic opacity for Anglophone and non-Anglophone executives using the following model.

$$\textit{Non-Plain English (Linguistic Errors)}_{e,i,t} = \beta_1 * \textit{Anglophone Executive}_e + \sum \beta_k * \textit{Controls} + \textit{Industry, Year, Firm FE} + \varepsilon_{e,i,t}. \quad (2)$$

[18] However, when we perform a placebo test (not tabulated) using the presentation portion, we find that non-plain English bears no significant association with language distance or speaking proficiency. Linguistic errors continue to be significantly associated with country-level proxies for language barriers, although the coefficient is much smaller for speaking proficiency when compared to the Q&A. Overall, this suggests that presentations are much less affected by language barriers than Q&As but that they are still affected.

The unit of analysis is individual executive *e* participating in the calls of firm *i* in quarter *t*. *Anglophone Executive* is our main variable of interest; it takes a value of one for executives identified as Anglophone, zero otherwise. We consider an executive as Anglophone if she is from an English-speaking country (as per her nationality) or has a degree from one.[19] We limit this test to top executives, who are most commonly involved in conference calls, and whose bios are most consistently available (CEOs, CFOs, and COOs). We include firm fixed effects to capture only within-firm variation in linguistic opacity. This tightens our identification and allows us to rule out alternative explanations (e.g., complexity in firm's operations) that may be correlated with measures of linguistic opacity.

Table 5 shows the estimated coefficients across the English-speaking and non-English-speaking executive groups. We find a negative and significant coefficient on *Anglophone Executive* both when the dependent variable is *Non-Plain English* (coef=−0.27, $p<0.05$) and *Linguistic Errors* (coef=-0.13, $p<0.01$).[20] The findings indicate that *Non-Plain English* and *Linguistic Errors* are significantly lower for the Anglophone managers after controlling for firm fixed effects.

The capital market consequences of opacity from language barriers

Measures of capital market reaction

To capture the capital market consequences of linguistic opacity in conference calls, we examine the return volatility and trading volume during conference calls (see Ball and Brown 1968; Beaver 1968; Lev 1989). If linguistic opacity affects the comprehensibility of the

[19] We use BoardEx to collect data on manager nationality and educational background. For education, we include both undergraduate and graduate degrees. For managers with missing BoardEx data, we use online searches to supplement our analysis (e.g., LinkedIn). Our sample size drops by half, due to data unavailability for many executives.

[20] The estimated coefficients on the indicator variable are comparable to the differences in the means between English- and non-English-speaking countries (1.69 for *Non-Plain English* and 1.12 for *Linguistic Errors*, as per columns 2 and 3 in Table 3). This suggests that hiring an Anglophone executive could compensate for the linguistic opacity gap between the two country groups.

information being released, we expect more opacity to reduce the calls' information content. We follow the methodology from Matsumoto et al. (2011) to compute intraday return volatility and trading volume. Matsumoto et al. (2011) examine intraday responses to conference calls for U.S. firms. We closely follow their variable construction using the tick-by-tick data of cross-listed firms provided by the Trade and Quote (TAQ) WRDS database, and non-cross-listed firms provided by Thomson.[21]

We examine the market response to the Q&A portion of the call. We measure the reaction in the securities that English-speaking investors are most likely to trade, i.e., cross-listed shares, when available. However, many of our sample firms are not listed in the U.S. For those firms, we use home country shares to construct the capital market measures.[22]

We first determine the measurement window. Since conference call end times are not available in StreetEvents, they must be estimated. Following Matsumoto et al. (2011), we estimate the length of the call by assuming a pace of 160 words per minute during the presentation and 157 words per minute for the Q&A. We assume that the presentation starts 116 seconds after the official start time, to exclude introductory remarks.

Having estimated start and end times, we merge the conference call and intraday data by date and time.[23] We then compute the return volatility and trading volume during the presentation and Q&A. Following prior studies, we use absolute returns to measure return volatility (Frankel et al. 1999; Matsumoto et al. 2011). We calculate the absolute returns as the absolute difference between the end- and start-time quote midpoints, scaled by the start-time quote midpoint, and the

[21] Thomson Reuters International Tick History data offers global tick data for both OTC and exchange traded instruments across 400+ exchanges (Thomson Tick History Factsheet: http://thomsonreuters.com/products/financial-risk/01_198/tick-history-brochure.pdf). The data also cover international equities not listed on U.S. exchanges.

[22] Even for those firms, language barriers still apply insofar as foreign (primarily U.S.) investors buy and sell shares directly on the local exchange. We later control for foreign holdings in our cross-sectional tests.

[23] StreetEvent's conference call time stamps are based on the Greenwich Meridian time zone (GMT). We thus convert this to the exchanges' local time, as provided by Thomson.

trading volume as the log of the sum of all shares traded between the start and end times. To control for firm-level intraday patterns in share turnover and price movement, we subtract the median absolute return and log trading volume during the same period and day of the week as the conference call over the two weeks preceding the call. We thus obtain adjusted absolute returns (*IAVAR_Q&A*) and trading volume (*IAVOL_Q&A*) as measures of the information content of the conference call Q&A. To decrease the influence of outliers, we winsorize all capital market measures at 1 percent for each tail.

Regression analysis

We test our first hypothesis (H1) using the following regression model with firms indexed as *i* and call quarters as *t*:

$IAVAR((IAVOL)\_Q\&A_{i,t} = \beta_1 * Non\text{-}Plain\ English\ (Linguistic\ Errors)_{i,t} + \sum_k \beta_k\ Control_{i,t} + FE + \varepsilon_{i,t}$.(3).

IAVAR_Q&A, *IAVOL_Q&A*, *Non-Plain English*, and *Linguistic Errors* are defined above. According to H1, we predict a negative β_1. In addition to the variables included in our determinants tests, we include the following control variables. We control for intraday news potentially related to the earnings announcement by including the absolute returns during the 24-hour period before the presentation (*One day return*). We include an indicator for calls held on Fridays (*Friday*), in case firms strategically time calls based on their content (DeHaan et al. 2014). We control for the calls' underlying news via the earnings surprise (*SUE*) and for loss quarters (*DLoss*). We also control for the time from the firms' fiscal year-end to the conference call date (*Replag*). We include an indicator variable for firm-quarters with calls that were followed or preceded by another call within a seven-day window (*Second call)* and absolute returns during the calls' presentation section (*IAVAR presentation*). As in our previous tests, we control for various firm-, country-, and

conference-call-level variables, defined in Appendix A. We include country, industry, and year fixed effects to control for systematic differences in the capital market variables across countries, industries, and time.[24] Time-of-day fixed effects account for systematic differences in the information environment for the morning calls (Chen et al. 2013);[25] time-zone fixed effects account for the level of foreign investors' participation.

Table 6 presents the results for our test of H1. In the first two columns, the dependent variable is *IAVOL_Q&A*. In column 1, the coefficient on *Non-Plain English* is negative and significant (coefficient=−0.02, t-stat=−1.65). The coefficient estimate suggests that a one standard deviation increase in *Non-Plain English* (=2.83) leads to a 5.66% reduction in intraday abnormal volume during the Q&A.[26] In column 2, the coefficient on *Linguistic Errors* is also negative and significant (coefficient=−0.02, t-stat=−2.60). The coefficient estimate suggests that a one standard deviation increase in *Linguistic Errors* (=1.88) leads to a 3.76% reduction in intraday abnormal volume during the conference call Q&A.[27] Consistent with H1, linguistic opacity during conference call Q&As is associated with lower trading volume. The association is robust to controlling for the negative effect of inaudible remarks on trading volume during the call.

In terms of other call-level control variables, we find that the information content of the Q&A is positively associated with that of the presentation and with the earnings surprise magnitude (positive coefficients on *IAVAR_Presentation* and *SUE*). Longer calls with more complex presentations, guidance issuance, and greater analyst participation also elicit more trading

[24] Because the estimation includes country fixed effects, the two country-level controls with no time variation (*Uncertainty Avoidance* and *Law*) are excluded.

[25] The conference calls' start times are clustered in the morning, from 9am to 11 am, local time. Approximately 40% of our sample calls begin during this period. In contrast to Chen et al. (2013), we find that morning calls show higher levels of linguistic complexity; this may be driven by the types of non-U.S. firms choosing to hold conference calls. Thus, throughout our analysis, we include the time-of-day fixed effects, as defined by the local time zone of the exchange.

[26] The 5.66% reduction is calculated as 0.02%*2.83.

[27] The 3.76% reduction is calculated as 0.02%*1.88.

volume, as per the positive coefficients on *Participants*, *Words*, and *Guidance*. In terms of the firm-level control variables, there is more trading volume during the conference call Q&As of smaller and high-performing firms with more segments, as per the negative coefficient on *Size* and the positive coefficients on *ROA* and *Segments*.

In columns 3 and 4, the dependent variable is *IAVAR_Q&A*. In column 3, the coefficient on *Non-Plain English* is negative and significant (coefficient=−0.01, t-stat=−2.85). In column 4, the coefficient on *Linguistic Errors* is also negative and significant (coefficient=−0.02, t-stat=−1.86). Hence, consistent with H1, linguistic opacity during conference call Q&As is associated with lower return volatility. Overall, the results in Panel A of Table 6 support our first hypothesis.[28]

Cross-sectional tests

In this section, we examine our cross-sectional tests, which predict that the effect of linguistic opacity will be greater when the effect of language barriers is likely more pronounced. We expand equation (3) with interaction terms to tease out groups with high language barriers. For our cross-sectional tests (i.e., H2a, H2b, and H3), we specify the following model:

$$\begin{aligned} \text{IAVAR((IAVOL)\_Q\&A}_{i,t} &= \beta_1 \times \text{Linguistic opacity}_{i,t} + \beta_2 \times \text{Linguistic opacity}_{i,t} \times \text{High\_Language\_Barrier}_{i,t} \\ &\quad + \beta_3 \times \text{High\_Language\_Barrier}_{i,t} + \textstyle\sum_k \beta_k \text{Control}_{i,t} + \text{FE} + \varepsilon_{i,t}. \end{aligned} \quad (4)$$

High_Language_Barrier$_{i,t}$ is an indicator equal to one when the observation is subject to high language barrier levels, zero otherwise. β_2, our main variable of interest, estimates the incremental effect of linguistic opacity when language barriers are higher.

In our first cross-sectional test, we partition the sample based on the country where the firm is domiciled. While we include calls from firms in English-speaking countries in our sample, their

[28] Another possible consequence of greater linguistic opacity is English-speaking analysts' participation. When there are greater language barriers, English-speaking analysts may anticipate reduced information and opt out. We repeat our analysis using Anglophone analysts as the dependent variable and find that greater linguistic opacity leads to less participation by Anglophone analysts (untabulated).

managers should face lower language barriers than non-English-speaking counterparts. Thus, we predict the market response to linguistic opacity in firms in non-English-speaking countries will be more negative than for firms in English-speaking countries (H2a).

To test this prediction, we estimate an OLS regression using equation (4). $High\_Language\_Barrier_{i,t}$ takes a value of one if a firm is domiciled in a non-English-speaking country, zero otherwise. English-speaking countries include Australia, Canada, South Africa, and the U.K. [29] Following H2a, we predict a negative β_2.

Table 7 Panel A reports the results. The β_1 coefficients are insignificant for both the *Non-Plain English* (columns 1 and 3) and *Linguistic errors* measures (columns 2 and 4). This suggests that, for firms domiciled in English-speaking countries, the effect of linguistic opacity on capital market responses is absent. In contrast, the β_2 coefficients are negative, significantly so for three out of four specifications. (The exception is *IAVOL* when *Linguistic Errors* is the measure of linguistic opacity.) Hence, linguistic opacity has a more negative effect on information content for firms from non-English-speaking countries.

We repeat the above cross-sectional test by relaxing the assumption that language barriers can be measured based on headquarters' location. That is, we test H2b, assuming that firms without Anglophone managers face higher language barriers than other firms do, regardless of their home country. To test this prediction, we estimate an OLS regression using equation (4). $High\_Language\_Barrier_{i,t}$ takes a value of one if the firm is based in a non-English-speaking country and if none of the top executives (i.e., CEOs, CFOs, and COOs) participating in the call

[29] Although one may argue that managers from those countries do not face language barriers, we include them because a language besides English is used by a substantial portion of each country's population, especially Canada and South Africa.

are an Anglophone managers, zero otherwise. The sample is limited to calls for which we have managerial background data. Following H2b, we predict a negative β_2.

Table 7 Panel B reports the results. Similar to Panel A, the β_1 coefficients are insignificant for both the *Non-Plain English* (columns 1 and 3) and *Linguistic errors* measures (columns 2 and 4). In contrast, the β_2 coefficients are negative, and significantly so at conventional levels. Furthermore, based on the F-tests, $\beta_1+\beta_2$ is consistently negative, and significantly so for three out of the four specifications. (The exception is *IAVOL* when *Linguistic Errors* is the measure of linguistic opacity.) Hence, linguistic opacity has a significant effect on the information content of firms with no Anglophone manager, consistent with H2b. Combined with the Table 5 results, which document significantly a lower opacity associated with Anglophone executives, the results suggest that firms with Anglophone executives can reap capital market benefits.[30]

In our final cross-sectional test, we measure language barriers using the portion of Anglophone analysts participating in the calls. In our setting of non-U.S. firms' conference calls, language barriers arise because the managers of non-U.S. firms do not speak the native language of investors. Thus, for non-Anglophone managers, language barriers will inhibit their ability to communicate with the Anglophone investors, rather than with all investors. We test whether firms in non-English-speaking countries face greater language barriers when more Anglophone analysts are in the audience (H3).

We build on equation (4) but restrict the sample to firms domiciled in non-English-speaking countries. $High\_Language\_Barrier_{i,t}$ takes a value of one for calls with a percentage of

[30] Caveats apply to this statement. First, the coefficient on *High Language Barrier* is not significant, which suggests that, on average, there is no capital market benefit to having an Anglophone manager per se. Second, in untabulated tests, we fail to document a significant difference between Anglophone and non-Anglophone managers when we restrict the sample to non-English-speaking countries. Although this lack of significance may be due to low statistical power (especially because we cannot measure capital market outcomes at the manager level), it also highlights the potential limits of hiring Anglophone managers to overcome language barriers.

Anglophone analysts that is higher than the country-industry-year median, zero otherwise. Following H3, we predict a more negative coefficient on linguistic opacity when more Anglophone analysts participate in the call of a firm based in a non-English-speaking country, i.e., $\beta_2 < 0$. We consider analysts Anglophone if they work at a firm in an English-speaking country, even if they are not native English speakers.[31] Indeed, analysts covering non-U.S. firms are typically either located in the same country as the firm or are English-speaking analysts working in London or New York.

Table 7 Panel C shows the estimated results for an OLS regression using equation (4). The dependent variable is *IAVOL_Q&A* in columns 1 and 2 and *IAVAR_Q&A* in columns 3 and 4. The linguistic opacity measure is *Non-Plain English* in columns 1 and 3 and *Linguistic Errors* in columns 2 and 4. In columns 1 and 2, the β_2 coefficients on the interaction term *Linguistic opacity* High_Language_Barrier*$_{i,t}$ are both negative and significant for *IAVOL_Q&A* ($p<0.1$ and $p<0.05$, respectively). Hence, for firms domiciled in non-English-speaking countries, greater linguistic opacity leads to a lower abnormal trading volume when more Anglophone analysts participate. This is consistent with H3. Finally, the insignificant coefficients on the *High_Language_Barrier*$_{i,t}$ variable suggest that we do not merely capture differences in the calls' information content based on the mix of analyst coverage (e.g., a proxy for firm visibility).

In columns 3 and 4, the β_2 coefficients on *Linguistic opacity* × *High_Language_Barrier*$_{i,t}$ are both negative yet not significant. However, the F-tests show that the mean effect of *Linguistic opacity* for firms with high language barrier ($= \beta_1 + \beta_2$) is negative and significant for both measures of *Linguistic opacity* ($p= 0.003$ and $p=0.028$, respectively). In contrast, the β_1 coefficients

[31] We obtain information on analysts' location using the following procedure. First, we extract the list of analysts, along with their employers' names, from the transcripts of conference calls held by firms based in non-English-speaking countries. Second, we search for the analysts online to learn their work location at the time of the call, which we primarily obtain from their LinkedIn profiles, if an analyst has one. These searches permit us to identify 2,254 out of the 5,416 analysts in our sample. We assume that analysts for whom we can find no data are local analysts.

are insignificant for both measures of *Linguistic opacity*. This suggests that only firms with a high language barrier, i.e., a high percentage of Anglophone analysts following, show a significant negative association between linguistic opacity and *IAVAR_Q&A*.

V. ADDITIONAL ANALYSES

Alternative dependent variables: Daily measurement of information content

While the use of intraday data is best for identification purposes, we lose half of our sample because of unavailable data or calls held outside of trading hours. To supplement our intraday findings, we measure the information content of conference calls over a three-day window centered on conference call dates. We follow Landsman and Maydew (2002) and DeFond et al. (2007) and measure the information content of the conference calls using the abnormal returns volatility and abnormal trading volume (see Appendix B for details).

We repeat our analysis using daily instead of intraday data by running an OLS regression with *AVOL* and *AVAR* as the dependent variables. We include the same set of control variables as in equation (3), except for controls based on intraday data, e.g., the time-of-day fixed effects. Estimated results are presented in Table 8 Panel A. We confirm that greater linguistic opacity is associated with less information content using daily measures of capital market data.

Alternative measures of linguistic opacity

We also examine alternative measures of linguistic opacity. We rerun our capital market tests using the *predicted* values as an alternative measure of opacity. The predicted values are based on a fitted regression using language barrier proxies as the predictors (i.e., language distance and TOEFL scores). Table 8 Panel B replicates Table 6 using *predicted measures* as the proxy for

linguistic opacity; we find that these measures exhibit a significant negative association with both *IAVAR_Q&A* and *IAVOL_Q&A.*

Finally, we repeat the analysis using linguistic complexity measures constructed from the calls' presentation portion only. Presentations are often scripted and rehearsed and are thus less likely be affected by language barriers. This is akin to a placebo test where linguistic opacity is less likely to reflect language barriers. Panel C of Table 8 shows the estimated results. We find significantly weaker results, consistent with language barriers only manifesting themselves in spontaneous communication (e.g., Q&As).

Selection effect of firms that hold a conference call

Firms' choice to hold conference calls (in English) is not random, nor is the availability of their call's transcripts through StreetEvents. A hierarchy of information dissemination is possible, in which some firms only have earnings announcements while others have earnings announcements followed by conference calls. Even among firms that hold conference calls, those seeking investor attention may be more inclined to purchase transcription services. To illuminate whether these selection effects affect our findings, we employ a two-stage Heckman procedure. We follow recommendations from Lennox et al. (2012) and model a firm's decision to hold a call using a probit specification. In the online appendix, we repeat our main analysis after controlling for the first-stage selection model. The estimated results resemble the findings in Table 6, and the conclusions from our earlier test hold after controlling for the decision to hold a call.

VI. CONCLUSION

We examine the linguistic opacity of conference calls held in English by firms headquartered outside of the U.S. and how this opacity affects the calls' information content. We posit that a

language barrier can inhibit managers' ability to communicate with investors. Consistent with this hypothesis, we find that the linguistic opacity of conference call Q&As, as measured by the use of non-plain English, more frequent linguistic errors, or both, is negatively associated with the country-level English proficiency of the firm's headquarters. Next, we hypothesize that investors react less to conference calls when the calls' narrative is more linguistically opaque. This is because the opacity decreases the average investor's degree of confidence in his or her interpretation of the publicly reported signal. We find evidence consistent with our hypothesis. That is, abnormal trading volume and stock return volatility during a conference call Q&A are negatively associated with the call's linguistic opacity.

Our study is the first to analyze conference calls in a cross-country setting. We find that the calls' linguistic opacity varies with country-level factors such as language barriers but also with firm characteristics. We also show that linguistic opacity has capital market consequences. We believe the results provide interesting evidence on the content analysis of non-U.S. firms' disclosure using conference calls and pave the way for future research using other disclosure venues.

REFERENCES

Allen, W. 1952. Readability of instructional film commentary. *Journal of Applied Psychology* 36: 164–168.

Alter, A., and D. Oppenheimer. 2006. Predicting short-term stock fluctuations by using processing fluency. *Proceedings of the National Academy of Sciences* 103: 9369–9372.

Bae, K., H. Tan, and M. Welker. 2008. International GAAP differences: the impact on foreign analysts. *The Accounting Review* 83: 593–628.

Baginski, S., J. Hassell, and M. Kimbrough. 2002. The effect of legal environment on voluntary disclosure: Evidence from management earnings forecasts issued in U.S. and Canadian markets. *The Accounting Review* 77 (1): 25–50.

Ball, R., and P. Brown. 1968. An empirical evaluation of accounting income numbers. *Journal of Accounting Research* 6 (2): 159–178.

Bassemir, M., Z. Novotny-Farkas, and J. Pachta. 2012. The effect of conference calls on analysts' forecasts – German evidence. *European Accounting Review* 22 (1): 1–33.

Beaver, W. H. 1968. The information content of annual earnings announcements. *Journal of Accounting Research* 6: 67–92.

Blankespoor, E. 2013. The impact of information processing costs on firm disclosure choice: Evidence from the XBRL mandate. Working paper, Stanford University.

Bleakley, H., and A. Chin. 2004. Language skills and earnings: Evidence from childhood immigrants. *The Review of Economics and Statistics* 86: 481–496.

Bloomfield, R. 2002. The "Incomplete Revelation Hypothesis" and financial reporting. *Accounting Horizons* 16: 233–243.

Bonsall, S.B., A. Leone, and B. Miller. 2015. A plain English measure of financial reporting readability. Working paper, Indiana University.

Bushee, B., I. Gow, and D. Taylor 2014. Linguistic complexity in firm disclosures: Obfuscation or information? Working paper, University of Pennsylvania.

Bushee, B.J., D.A. Matsumoto, and G.S. Miller. 2003. Open versus closed conference calls: The determinants and effects of broadening access to disclosure. *Journal of Accounting and Economics* 34 (1): 149–180.

———. 2004. Managerial and investor responses to disclosure regulation: The case of Reg FD and conference calls. *The Accounting Review* 79 (3): 617–643.

Carrio-Pastor, M., and F. Alonso-Almeida. 2014. English as a second language: Variations and pedagogical implications. *Procedia Social and Behavioral Sciences* 116 (21): 377–381.

Chen, J., E. Demers, and B. Lev. 2013. Oh what a beautiful morning! The time of day effect on the tone and market impact of conference calls. Working paper, New York University.

Courtis, J.K. 1995. Readability of annual reports: Western versus Asian evidence. *Accounting, Auditing and Accountability Journal* 8 (2): 4–17.

Courtis, J.K., and S. Hassan. 2002. Reading ease of bilingual annual reports. *Journal of Business Communication* 39 (4): 394–413.

De Franco, G., O.-K. Hope, D. Vyas, and Y. Zhou. 2015. Analyst report readability. *Contemporary Accounting Research* 32 (1): 76–104.

DeFond, M., M. Hung, and R. Trezevant. 2007. Investor protection and the information content of annual earnings announcements: International evidence. *Journal of Accounting and Economics* 43 (1): 37–67.

DeHaan, E., T. Shevlin, and J. Thornock. 2015. Market (in)attention and strategic scheduling and timing of earnings announcements. *Journal of Accounting and Economics* 60 (1): 36–55.

Dustmann, C., and A. van Soest. 2001. Language fluency and earnings: Estimation with misclassified language indicators. *Review of Economics and Statistics* 83: 663–674.

Eastwood, J., B. Snook, and S. J. Chaulk. 2010. Measuring reading complexity and listening comprehension of Canadian police cautions. *Criminal Justice and Behavior* 37 (4): 453–471.

Flesch, R. 1946. *The Art of Plain Talk*. New York, NY: Harper and Brothers.

———. 1951. *How to test readability*. New York, NY: Harper and Brothers.

Frankel, R., M. Johnson, and D. J. Skinner. 1999. An empirical examination of conference calls as a voluntary disclosure medium. *Journal of Accounting Research* 37 (1): 133–150.

Griffin, J., Hirschey, N., and Kelly, P. 2011. How important is the financial media in global markets? *Review of Financial Studies* 24 (12): 3941–3992.

Hammami, H. 2011. Accounting narratives' characteristics and firm performance in the MD&As of listed Italian companies. *International Journal of Accounting and Finance* 3 (1): 72–86.

Harwood, K.A. 1955. Listenability and Readability. *Speech Monographs* 22: 51–52.

Hollander, S., M. Pronk, and E. Roelofsen. 2010. Does silence speak? An empirical analysis of disclosure choices during conference calls. *Journal of Accounting Research* 48 (3): 531–563.

Holthausen, R.W., and R.E. Verrecchia. 1990. The effect of informedness and consensus on price and volume behavior. *The Accounting Review* 65 (1): 191–208.

Hutton, A., G. Miller, and D. Skinner. 2003. The role of supplementary statements with management earnings forecasts. *Journal of Accounting Research* 41(5): 867–890.

Ionin, T., M.L. Zubizarreta, and S.B. Maldonado. 2008. Sources of linguistic knowledge in the second language acquisition of English articles. *Lingua* 118 (4): 554–576.

Jeanjean, T., C. Lesage, and H. Stolowy. 2010. Why do you speak English (in your annual report)? *The International Journal of Accounting* 45(2): 200–223.

Jones, M.J. 1988. A longitudinal study of the readability of the chairman's narratives in the corporate reports of a UK company. *Accounting and Business Research* 18 (72): 297–305.

Kim, O., and R.E. Verrecchia. 1991. Trading volume and price reactions to public announcements. *Journal of Accounting Research* 29 (2): 302–321.

———. 1997. Pre-announcement and event-period private information. *Journal of Accounting and Economics* 24 (3): 395–419.

Kimbrough, M., and H. Louis. 2011. Voluntary disclosure to influence investor reaction to merger announcements: An examination of conference calls. *The Accounting Review* 86 (2): 637–667.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 1998. Law and finance. *Journal of Political Economy* 106: 1113–1155.

Landsman, W.R., and E.L. Maydew. 2002. Has the information content of quarterly earnings announcements declined in the past three decades? *Journal of Accounting Research* 40 (3): 797–808.

Landsman, W.R., E.L. Maydew, and J.R. Thornock. 2012. The information content of annual earnings announcements and mandatory adoption of IFRS. *Journal of Accounting and Economics* 53 (1–2): 34–54.

Lang, M., K. Lins, and D. Miller. 2003. ADRs, analysts, and accuracy: Does cross listing in the United States improve a firm's information environment and increase market value? *Journal of Accounting Research* 41 (2): 317–345.

Lang, M., and L. Stice-Lawrence. 2015. Textual analysis and international financial reporting: Large sample evidence. *Journal of Accounting and Economics* 60 (2–3): 110–135.

Lee, J., 2015, Can investors detect managers' lack of spontaneity? Adherence to pre-determined scripts during earnings conference calls. *The Accounting Review,* forthcoming.

Lee, J., and S. Seneff. 2008. An analysis of grammatical errors in non-native speech in English. *Proc. IEEE Workshop on Spoken Language Technology.*

Lennox, C., Francis, J., and Z. Wang. 2012. Selection models in accounting research. *The Accounting Review* 87 (2): 589–616.

Leuz, C., D. Nanda, and P. Wysocki. 2003. Earnings management and investor protection: An international comparison. *Journal of Financial Economics* 69: 505–527.

Lev, B. 1989. On the usefulness of earnings and earnings research: Lessons and directions from two decades of empirical research. *Journal of Accounting Research* 27 (Supplement): 153–192.

Lewis, P. M. 2009. Ethnologue: Languages of the World. 16th edition. Dallas Texas: SIL International.

Li, F. 2008. Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics* 45 (2–3): 221–247.

———. 2010. Textual analysis of corporate disclosures: A survey of the literature. *Journal of Accounting Literature* 29: 143–165.

Liang, J.-W., M.-F. Lin, and C.-L. Chin. 2012. Does foreign institutional ownership motivate firms in an emerging market to increase voluntary disclosure? Evidence from Taiwan. *Review of Quantitative Finance and Accounting* 39 (1): 55–76.

Loughran, T., and B. McDonald. 2014a. Measuring readability in financial text. *Journal of Finance* 69 (4): 1643–1671.

———. 2014b. Regulation and financial disclosure: The impact of plain English. *Journal of Regulatory Economics* 45 (1): 94–113.

Lowrey, T.M. 2006. The relation between script complexity and commercial memorability. *Journal of Advertising* 35 (3): 7–15.

Lundholm, R., R. Rogo, and J. Zhang. 2014. Restoring the Tower of Babel: An analysis of text and numbers in management communications of U.S. and cross-listed firms. *The Accounting Review* 89 (4): 1453–1485.

Matsumoto, D.A., E. Roelofsen, and M. Pronk. 2011. What makes conference calls useful? The information content of managers' presentations and analysts' discussion sessions. *The Accounting Review* 86 (4): 1383–1414.

Miller, B.P. 2010. The effects of reporting complexity on small and large investor trading. *The Accounting Review* 85 (6): 2107–2143.

Molstad, J. 1955. Readability formulas and film-grade placement. *Audio Visual Communication Review* 3: 99–108.

Morck, R., B. Yeung, and W. Yu. 2000. The information content of stock markets: Why do emerging markets have synchronous stock price movements? *Journal of Financial Economics* 58 (1–2): 215–260.

Munro, M.J., and T.M. Derwing. 1995. Processing time, accent, and comprehensibility in the perception of native and foreign-accented speech. *Language and Speech* 38: 289−306.

Schroeder, N., R. Aggarwal, and C. Gibson. 1991. Financial reporting by Japanese firms on the NYSE: An analysis of linguistic content. *Management International Review* 31(3): 233–251.

Shroff, N., R. Verdi, and G. Yu. 2014. Information environment and the investment decisions of multinational corporations. *The Accounting Review* 89 (2): 759−790.

Srinivasan, S., A. Wahid, and G. Yu. 2015. Admitting mistakes: Home country effect on the reliability of restatement reporting. *The Accounting Review* 90(3): 1201–1240.

Verrecchia, R. 2001. Essays in disclosure. *Journal of Accounting and Economics* 32 (1-3): 97-180

Appendix A: Variable definitions

Panel A Definitions of variables

Category	Variable name	Empirical measure & data source
Dependent Variables	*IAVAR_Q&A*	Absolute returns during the conference call Q&A section, minus the average of the same day/time window during the preceding two weeks. We calculate absolute returns as the absolute difference between the end- and start-time quote midpoints, scaled by the start-time quote midpoint.
	IAVOL_Q&A	Trading volume during the conference call presentation and Q&A, minus the average of the same day/time window during the preceding two weeks. We calculate trading volume as the log of the sum of all shares traded between the start and end times.
	AVAR	Mean of the squared market–model-adjusted returns divided by the variance of the market model residuals during the non-event period (Landsman et al. 2012). See Appendix B for details.
	AVOL	Mean event-period volume divided by the average estimation-period volume (Landsman et al. 2012). See Appendix B for details.
Conference call characteristics	*Non-Plain English*	Standardized composite measure of speech patterns in management's answers during conference call Q&A, based on (i) average sentence length, (ii) average word length, use of (iii) the passive voice, (iv) personal pronouns (*-1), (iv) negative phrases, (v) superfluous words, and (vi) the word "respectively."
	Linguistic Errors	Standardized composite measure of speech patterns in management's answers during conference call Q&A, based on (i) the number of grammar errors flagged by MS Word, (ii) the use of the passive voice, and (iii) abnormal use of the article "the," measured by the deviation from its use in U.S. conference calls.
	Translated	Indicator equal to 1 for conference calls that use a professional translator (providing translations from the local languages to English), identified by search terms "[translated]" or "(translated)," 0 otherwise.
	# of numbers	Log of the number of non-date and non-year numbers scaled by the total number o words.
	Inaudible	Number of times the conference call transcript contains the word "inaudible" or "indiscernible."
	Reluctant	Number of times the manager provides answers that show he does not want to directly address a question (see Panel B).
	Unclear	Number of times that analysts ask the manager to clarify. We search for specific terms (see Panel B) use the transcripts of the analysts' questions.
	Words	Log of the number of words in the Q&A section.
	Quarter	Indicator variable equal to 1 for conference calls corresponding to the fourth fiscal quarter and 0 otherwise.
	Guidance	Indicator variable equal to 1 if the firm issued earnings guidance in a 10 days surrounding the conference call or corresponding earnings announcement.
	Press releases	Indicator variable equal to 1 if the firm issues a press release related to the earnings announcement on the same or preceding day as the conference call and 0 otherwise. We use Press Release Wires on Factiva to search for press releases, using company names and earnings announcement dates as the search criteria. Search criteria are also limited to articles of 500 words or more and the subject terms of Corporate/Industrial News (Factiva code CCAT) and Earnings releases (Factiva code C151). Search criteria were relaxed in cases of no result or false hits.
	Fog press releases	Fog index of the press release text.
	Fog presentation	Fog index of the presentation portion of the call.

Appendix A: Variable definitions (Continued)

Category	Variable name	Empirical measure & data source
	Participants	Number of non-corporate participants in the call, scaled by analyst coverage, as per I/B/E/S.
	One day return	Absolute returns during the 24 hours before the conference call.
	Friday	Indicator variable equal to 1 if the conference call is held on a Friday and 0 otherwise.
	SUE	Absolute difference between the actual annual EPS minus the most recent mean analyst forecast, divided by the actual annual EPS.
	Dloss	Indicator variable equal to 1 for firms reporting negative earnings.
	Replag	Time from the firm's fiscal year-end to the conference call date.
	Second call	Indicator variable for calls that were followed or preceded by another local earnings call. We collect data for firms with multiple earnings calls within a seven-day window around the earnings announcement using Capital IQ's event files.
	Dloss	Indicator variable equal to 1 for firms reporting negative earnings.
	IAVAR presentation	Absolute returns during the conference call presentation section. We calculate absolute returns as the absolute difference between the end- and start-time quote midpoints, scaled by the start-time quote midpoint.
Firm characteristics	*Size*	Log market value of equity measured in U.S. dollars.
	ROA	Net income over total value of assets.
	# segments	Log of the number of segments.
	Q	Log market value of assets over book value of assets.
	Leverage	Total debt over book value of assets.
	Log_analysts	Log of the number of analysts covering the firm.
	ADR	Indicator variable equal to 1 if the firm is cross-listed, and 0 otherwise.
	SEO	Indicator for firms that issue equity during the reporting year (source: SDC).
	M&A	Indicator for firms that were involved in an M&A deal during the reporting year (source: SDC).
	Volatility	Yearly standard deviation of daily abnormal returns in the year before the conference call.
	Earnings Volatility	Five-year standard deviation of net income (minimum three years of data required) scaled by total assets. The five-year window ends with the fiscal year of the conference call.
	Special Items	Difference between earnings after extraordinary items and operating income scaled by total assets.
	Neg ret	Indicator variable that takes the value of 1 when the one-year-ahead-of-the-conference-call returns are negative, 0 otherwise.

Appendix A: Variable definitions (Continued)

Category	Variable name	Empirical measure & data source
Country - characteristics	*Language Distance*	Distance between English and the main language of each country studied, based on a five-point scale classification system. See Lewis (2009) for details at http://www.ethnologue.com/web.asp.
	Speaking proficiency	The measure is from the mean country-level score for the speaking portion of the TOEFL exam. The score is available from 2005. For observations between 2006 and 2010, we use the annual country-level means. For observations before 2006, we use 2006 scores. Data is available at www.ets.org.
	Market Cap	Log of equity market capitalization of the country's global Datastream Index.
	Market Return	Annual change in the Datastream global market index.
	Synchronicity	National average firm-level measure of synchronicity following Morck et al. (2000). *Synchronicity* $=\log(R^2/(1-R^2)$, where R^2 is obtained from the yearly market model regression of daily returns.
	Zero Returns	Yearly country average firm-level percentage of daily zero returns.
	Law	Rule of law as per La Porta et al. (1998).
	Uncertainty Avoidance	Hofstede's country-level Uncertainty Avoidance Index retrieved from http://geert-hofstede.com/countries.html.

Panel B Word list measuring "Reluctant" and "Unclear"

Variable	List of searched terms
Reluctant	cannot discuss/comment/disclose/share/answer/release/say
	cannot really discuss/comment/disclose/share/answer/release/say
	can't discuss/comment/disclose/share/answer/release/say
	can't really discuss/comment/disclose/share/answer/release/say
	not ready to discuss/comment/disclose/share/answer/release/say
	reluctant to discuss/comment/disclose/share/answer/release/say
	no comment, don't know, do not know, do not have an answer
	don't have an answer, do not have the answer, don't have the answer
	all I can tell you, all I can say
Unclear	don't understand
	do not understand
	repeat

Appendix B: Construction of the capital market variables

Abnormal daily returns variance (dAVAR): To obtain our measure of abnormal return variance, we first calculate the daily market-adjusted returns as:

$$u_{i,t} = R_{i,t} - (\alpha_{i,t} + \beta_{i,t} R_{m,t}). \quad (A.1)$$

$R_{i,t}$ is the stock return of firm *i* on day t, and $R_{m,t}$ is the return of the Datastream Global Market Index in the country of firm *i*. Both $\alpha_{i,t}$ and $\beta_{i,t}$ are obtained by estimating each parameter during the non-event period that corresponds to *t*–60 to *t*–10 and *t*+10 to *t*+60 relative to the conference call date t=0. Following DeFond et al. (2007), we measure abnormal daily volatility as the mean of the squared market-model-adjusted returns divided by the variance of firm *i*'s market model residuals during the non-event period. $dAVAR_{i,t}$ is given by:

$$\mathrm{AVAR}_{i,t} = \log\left(\frac{\bar{\mu}_{i,t}^2}{\sigma_{i,t}^2}\right). \quad (A.2)$$

$\bar{\mu}_{i,t}^2$ is the average squared market-model-adjusted returns of firm *i* for days *t*= –1,0,+1, and $\sigma_{i,t}^2$ is the variance of firm *i's* market model residuals for days *t*–60 to *t*–10 and *t*+10 to *t*+60 relative to the conference call date (t=0).

Abnormal daily volume (AVOL): Our measure of the abnormal daily trading volume corresponds to the mean event-period volume divided by the average estimation-period volume. Since the measure is highly skewed, we use the log of the ratio (Landsman and Maydew 2002; Landsman et al. 2012). Hence, we define *dAVOL* as:

$$\mathrm{AVOL}_{i,t} = \log\left(\frac{\bar{V}_{i,t}}{V_{i,t}}\right), \quad (A.3)$$

where $\bar{V}_{it}$ is the average trading volume of firm *i* over a three-day window and *t*= –1,0,+1. V_i is the average daily trading volume for firm i for days *t*–60 to *t*–10 and *t*+10 to *t*+60 relative to the conference call date (*t*=0).

Table 1 Sample selection

	# of conference calls	# of firm-years
Number of conference call transcripts 2002–2010	25,830	7,925
Less: Analyst calls, etc.	(5,029)	(494)
Less: Short conference calls	(814)	(203)
	19,987	7,228
Less: Missing identifiers, years	(7,394)	(2,126)
	12,593	5,102
Less: Incomplete returns	(85)	(43)
Less: Incomplete financials	(1,189)	(536)
Less: Countries with fewer than 10 observations	(14)	(11)
Total number of observations	**11,305**	**4,512**

Notes: This table presents the sample selection procedure. We limit our sample to conference calls that occur within the three days around an earnings announcement and that belong to the top 95% of our sample, measured using the total number of words. We require firms to have financial data from Worldscope and daily transaction data from Datastream.

Table 2 Distribution of linguistic opacity of non-U.S. firm conference calls

Panel A: Descriptive statistics of linguistic opacity

Variable	N	Mean	Std Dev	P10	P25	P50	P75	P90
Non-Plain English	11,305	0.02	2.83	-3.39	-1.92	-0.19	1.70	3.59
Linguistic Errors	11,305	0.04	1.88	-2.18	-1.25	-0.15	1.09	2.44

Panel B: Distribution of linguistic opacity by country

		Country-level measures of language barriers		Country mean of linguistic opacity		Country stdev of linguistic opacity	
Countries	# of firm-quarters	Language Distance	Speaking Proficiency	Non-Plain English	Linguistic Errors	Non-Plain English	Linguistic Errors
Argentina	36	5	22.00	1.84	1.63	3.51	2.01
Australia	202	1	30.00	-0.64	-0.61	2.31	1.23
Austria	115	2	24.88	1.25	0.74	3.23	2.13
Belgium	241	2	24.00	0.65	0.66	2.18	1.78
Brazil	77	5	21.00	0.26	0.15	2.81	2.39
Canada	3581	1	30.00	-1.14	-0.65	2.42	1.43
China	33	5	18.00	1.92	1.47	4.35	2.70
Czech Rep.	18	5	22.78	1.67	1.78	4.08	2.29
Denmark	311	3	26.00	-0.24	-0.12	2.34	1.75
Finland	424	5	23.00	0.59	0.05	2.40	1.80
France	610	5	21.00	1.01	0.57	2.50	1.68
Germany	1091	2	24.26	0.35	0.18	2.56	1.64
Greece	147	4	20.94	1.59	1.11	2.44	1.68
Hong Kong	60	1	30.00	-0.08	0.50	2.40	2.25
Hungary	72	5	22.33	2.05	1.13	2.96	2.15
India	42	1	30.00	0.73	0.72	1.89	1.47
Ireland	80	1	30.00	0.55	-0.51	2.29	1.27
Israel	301	5	24.00	-0.45	-0.04	2.52	1.70
Italy	555	5	18.68	2.91	2.24	3.00	2.22
Japan	112	5	16.00	3.18	2.65	3.03	2.82
Luxembourg	81	2	23.63	1.19	-0.33	2.91	1.48
Malaysia	14	5	20.57	-0.72	0.79	1.87	1.53
Mexico	82	5	21.20	0.46	0.35	3.49	1.54
Netherlands	368	2	25.00	0.72	0.17	2.80	1.78
Norway	334	3	24.49	1.03	0.68	2.54	1.72
Poland	23	4	22.13	2.00	2.62	1.85	1.22
Portugal	136	5	23.00	1.83	0.67	2.90	1.98
Singapore	66	1	30.00	-1.01	-0.88	1.43	0.96
South Africa	56	1	30.00	-0.29	-0.76	2.19	1.33
South Korea	70	5	18.03	1.74	2.03	4.47	2.60
Spain	239	5	21.00	1.76	1.53	2.96	2.32
Sweden	726	3	24.15	-1.25	-0.59	2.39	1.68
Switzerland	400	2	23.32	0.82	-0.06	2.48	1.49
Taiwan	53	5	18.36	-2.90	0.81	2.11	1.74
Thailand	15	5	17.73	-1.92	0.95	1.54	1.01
Turkey	30	5	18.93	2.58	0.93	3.57	1.85
U.K.	504	1	30.00	-0.60	-0.64	2.26	1.44
Country mean		3.43	23.52	0.63	0.59	2.68	1.79

Table 2 Distribution of linguistic opacity of non-U.S firm conference calls (Continued)

Panel C: Distribution of linguistic opacity by year

Year	# of firm-quarters	Mean Non-Plain English	Mean Linguistic Errors
2002	21	0.34	-1.06
2003	441	0.61	0.11
2004	860	0.50	-0.07
2005	1,105	0.11	0.29
2006	1,393	0.25	0.53
2007	1,623	0.05	0.28
2008	2,011	-0.09	-0.12
2009	2,075	-0.17	-0.15
2010	1,774	-0.28	-0.28

Notes: This table presents descriptive statistics. Panel A presents descriptive statistics for our linguistic opacity measures: *Non-Plain English* and *Linguistic Errors*. Panels B and C present the number of observations and mean values of our linguistic opacity measures by country and year, respectively. Panel B also reports the country-level descriptives of *Language Distance* and *Speaking Proficiency*, our proxies for language barriers.

Table 3 Descriptive statistics

Panel A: Descriptive statistics for all conference calls, by English- and non-English-speaking countries

	(1) All firms			(2) English-speaking countries	(3) Non-English-speaking countries	P-values (2)=(3)
	N	Mean	St dev.	Mean	Mean	
Linguistic opacity						
Non-Plain English	11,305	0.02	2.83	-0.98	0.71	<0.01
Linguistic errors	11,305	0.04	1.88	-0.63	0.49	<0.01
Grammar errors	11,305	34.82	13.07	33.08	36.01	<0.01
Passive voice	11,305	0.33	0.18	0.29	0.35	<0.01
Abnormal articles	11,305	0.94	0.83	0.66	1.14	<0.01
Capital market reaction						
IAVOL_Q&A (%)	4,085	0.67	1.15	0.63	0.70	0.06
IAVAR_Q&A (%)	4,085	0.29	0.79	0.30	0.29	0.84
AVOL	8,055	0.27	0.69	0.21	0.33	<0.01
AVAR	8,055	0.46	1.33	0.33	0.57	<0.01
Conference call characteristics						
Translated (%)	11,305	0.02	5.00	0.01	0.04	<0.01
# of numbers	11,305	0.01	0.01	0.01	0.01	<0.01
Inaudible	11,305	0.35	0.82	0.18	0.46	<0.01
Reluctant	11,305	0.12	0.30	0.08	0.16	<0.01
Unclear	11,305	0.02	0.13	0.02	0.02	<0.01
Words	11,305	7.89	0.53	7.87	7.91	<0.01
Quarter	11,305	0.25	0.43	0.27	0.23	<0.01
Guidance	11,305	0.27	0.44	0.17	0.34	<0.01
Press releases	11,305	0.56	0.50	0.88	0.35	<0.01
Fog press releases	6,366	15.71	2.90	16.00	15.23	<0.01
Fog Presentation	11,305	13.73	1.67	14.03	13.53	<0.01
Participants	11,305	2.96	3.15	2.06	3.58	<0.01
Second Call	11,305	0.01	0.08	0.002	0.01	0.02
Anglophone Manager	10,339	0.50	0.50	0.96	0.14	<0.01
Firm characteristics						
Size	11,305	14.67	1.68	14.17	15.01	<0.01
ROA	11,305	0.03	0.11	0.02	0.04	<0.01
# of segments	11,305	1.44	0.56	1.27	1.55	<0.01
Q	11,305	1.60	0.95	1.60	1.60	0.64
Leverage	11,305	0.25	0.18	0.23	0.26	<0.01
Log analysts	11,305	1.26	1.02	1.50	1.10	<0.01
ADR	11,305	0.42	0.49	0.39	0.44	<0.01
SEO	11,305	0.13	0.34	0.12	0.14	0.03
M&A	11,305	0.01	0.11	0.01	0.02	<0.01
Volatility	11,305	0.03	0.01	0.03	0.02	<0.01
Earnings volatility	11,305	0.06	0.36	0.08	0.04	<0.01
Special items	11,305	0.04	0.06	0.05	0.03	<0.01
Neg ret	11,305	0.24	0.43	0.30	0.20	<0.01
Country characteristics						
Market cap	11,305	0.05	0.35	0.02	0.07	<0.01
Market return	11,305	0.11	0.27	0.11	0.11	0.64
Synchronicity	11,305	0.08	0.05	0.04	0.11	<0.01
Zero returns	11,305	0.44	0.15	0.57	0.36	<0.01
Uncertainty avoidance	11,305	57.39	19.82	45.59	65.46	<0.01
Law	11,305	9.05	1.84	9.64	8.65	<0.01

Table 3 Descriptive statistics (Continued)

Panel B: Correlation of linguistic opacity and other variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Non-Plain English		**0.57**	**-0.04**	**-0.04**	**0.30**	**0.35**	**-0.20**	**0.23**	0.01	**-0.08**	0.00	**0.05**	**0.08**	**0.08**	**-0.01**	0.03
(2) Grammar error	**0.53**		**-0.06**	**-0.07**	**0.33**	**0.38**	**-0.21**	**0.05**	**0.02**	**0.04**	**0.02**	-0.01	**-0.07**	**0.07**	**0.04**	**0.04**
(3) IAVOL_Q&A	-0.04	-0.05		**0.28**	-0.00	0.01	-0.01	-0.01	**0.04**	**-0.04**	0.02	**0.05**	**0.06**	0.00	**0.05**	0.01
(4) IAVAR_Q&A	-0.05	-0.06	**0.29**		**-0.03**	0.03	0.02	**0.04**	0.02	**-0.05**	**0.06**	**0.04**	**0.12**	-0.02	**0.04**	-0.01
(5) Language distance	**0.30**	**0.31**	**0.03**	-0.01		**0.88**	**-0.42**	**-0.06**	-0.01	**0.06**	**-0.06**	**0.09**	**-0.03**	**0.09**	**0.09**	**0.03**
(6) Speaking Prof.*(-1)	**0.34**	**0.34**	0.00	0.03	**0.94**		**-0.51**	**-0.11**	-0.01	**0.10**	**-0.07**	**0.13**	**0.05**	**0.13**	**0.10**	**0.04**
(7) Fog press releases	**-0.18**	**-0.19**	-0.01	0.00	**-0.47**	**-0.49**		**0.15**	0.01	**-0.07**	**0.10**	**-0.06**	**-0.02**	**-0.10**	**-0.06**	-0.01
(8) Fog presentation	**0.21**	**0.03**	-0.01	0.01	**-0.10**	**-0.11**	**0.19**		**0.03**	**-0.10**	**0.09**	**-0.03**	-0.01	**-0.03**	**-0.02**	0.00
(9) SUE	0.03	0.06	**0.03**	0.00	**0.04**	**0.04**	0.02	**0.04**		-0.01	**0.25**	-0.01	**-0.03**	-0.01	0.01	**0.04**
(10) # of numbers	**-0.07**	**0.03**	**-0.04**	**-0.04**	**0.03**	0.08	**-0.06**	**-0.10**	**-0.03**		**-0.02**	**-0.05**	**-0.04**	**0.11**	**-0.03**	**0.02**
(11) Dloss	0.01	0.02	0.02	**0.03**	**-0.06**	**-0.07**	**0.11**	**0.09**	**0.34**	**-0.05**		-0.01	**-0.08**	**-0.02**	**0.03**	0.02
(12) Guidance	**0.06**	**0.00**	**0.05**	**0.04**	**0.13**	**0.12**	**-0.06**	**-0.02**	**0.00**	**-0.05**	-0.01		**0.08**	**-0.03**	**0.02**	-0.02
(13) Words	**0.09**	**-0.06**	**0.06**	**0.09**	-0.01	**0.04**	-0.01	-0.01	**-0.10**	0.00	**-0.09**	**0.08**		**0.01**	**-0.06**	**0.00**
(14) Inaudible	**0.10**	**0.12**	0.02	0.02	**0.15**	**0.18**	**-0.14**	**-0.07**	**-0.05**	**0.14**	**-0.06**	**-0.04**	**0.07**		0.00	0.01
(15) Reluctant	**0.02**	0.04	**0.04**	0.01	**0.11**	**0.11**	**-0.07**	-0.02	**0.01**	**-0.03**	0.03	**0.03**	**0.09**	0.02		**0.01**
(16) Unclear	**0.03**	**0.04**	0.00	0.00	**0.03**	**0.05**	-0.01	**0.00**	0.02	0.03	0.00	**-0.01**	**0.07**	0.02	0.03	

Notes: Panel A presents descriptive statistics for our sample for English and non-English-speaking countries. English-speaking countries include Australia, Canada, South Africa, and the U.K. Panel B reports the Pearson (above the diagonal) and Spearman (below the diagonal) correlation coefficients for the variables used in the analysis. Refer to Appendix A for detailed variable definitions. Boldface figures denote significance at the 10% level.

Table 4 The effect of language barriers on linguistic opacity

Model: Non-Plain English (Linguistic Errors)$_{i,t}$
$= \beta_1 \times Language\ Barrier + \sum \beta_k \times Controls_{i,t} + Industry\ FE + Year\ FE + \varepsilon_{i,t.}$

	(1) Non-Plain English		(2) Non-Plain English		(3) Linguistic Errors		(4) Linguistic Errors	
	coeff	*t-stat*	*coeff*	*t-stat*	*coeff*	*t-stat*	*coeff*	*t-stat*
Language distance	0.14**	(2.36)			0.15***	(4.08)		
Speaking proficiency*(-1)			0.16***	(6.29)			0.11***	(6.80)
Conference call characteristics								
Translated	1.38***	(7.96)	1.30***	(8.57)	0.39	(1.38)	0.37	(1.17)
#of numbers (%)	-0.48***	(-7.58)	-0.49***	(-7.38)	-0.08**	(-2.20)	-0.09**	(-2.36)
Inaudible	0.02	(0.93)	0.01	(0.48)	0.01	(0.66)	0.01	(0.28)
Reluctant	-0.33**	(-2.37)	-0.35***	(-2.66)	-0.02	(-0.30)	-0.03	(-0.63)
Unclear	0.30	(1.25)	0.22	(0.93)	0.35**	(2.09)	0.30*	(1.86)
Words	0.48***	(5.47)	0.48***	(5.40)	-0.25***	(-3.85)	-0.26***	(-4.16)
Quarter	0.29***	(3.32)	0.28***	(3.25)	0.12*	(1.68)	0.10	(1.45)
Guidance	0.17**	(2.31)	0.13*	(1.71)	-0.08**	(-2.01)	-0.11***	(-2.74)
Press releases	-0.43	(-1.38)	-0.43	(-1.42)	-0.07	(-0.42)	-0.07	(-0.43)
Fog press releases	0.00	(-0.20)	0.00	(0.27)	-0.01	(-0.84)	0.00	(-0.33)
Fog presentation	-0.08***	(-3.72)	-0.08***	(-3.94)	0.03**	(1.97)	0.03*	(1.93)
Participants	1.38***	(7.96)	1.30***	(8.57)	0.39	(1.38)	0.37	(1.17)
Firm characteristics								
Size	0.04	(0.90)	0.00	(0.05)	0.01	(0.51)	-0.01	(-0.47)
ROA	0.28	(0.49)	0.32	(0.57)	0.22	(0.86)	0.20	(0.81)
# of segments	0.26	(0.89)	0.21	(0.74)	-0.15	(-1.07)	-0.18	(-1.32)
Q	-0.04	(-0.83)	-0.02	(-0.40)	-0.06**	(-2.31)	-0.05*	(-1.81)
Leverage	-0.17	(-0.59)	-0.18	(-0.64)	-0.14	(-0.83)	-0.14	(-0.88)
Log_analysts	-0.41***	(-7.15)	-0.39***	(-6.79)	-0.28***	(-4.52)	-0.25***	(-3.88)
ADR	-0.28**	(-2.38)	-0.25**	(-2.20)	-0.25***	(-3.77)	-0.22***	(-3.46)
SEO	0.01	(0.10)	0.00	(-0.04)	0.05	(0.74)	0.04	(0.58)
M&A	-0.17	(-0.60)	-0.20	(-0.65)	-0.14	(-0.73)	-0.15	(-0.72)
Volatility	18.19***	(4.06)	16.97***	(3.87)	8.10***	(3.31)	6.85***	(2.66)
Earnings volatility	0.09**	(2.04)	0.10**	(2.23)	0.04	(1.42)	0.04	(1.59)
Special items	-0.74	(-0.93)	-0.68	(-0.86)	0.56	(1.33)	0.56	(1.36)
Neg ret	0.07	(0.63)	0.05	(0.45)	0.01	(0.19)	0.00	(-0.01)
Country characteristics								
Market cap	0.48***	(4.16)	0.37***	(3.08)	0.42***	(3.30)	0.34***	(2.64)
Market return	-0.53	(-1.52)	-0.57*	(-1.67)	0.07	(0.30)	0.08	(0.33)
Synchronicity	1.56	(0.75)	-0.20	(-0.10)	1.08	(1.05)	0.61	(0.53)
Zero returns	-2.07***	(-2.91)	-1.21**	(-2.02)	-1.06***	(-3.04)	-0.51	(-1.40)
Law	0.00	(0.03)	-0.01	(-0.17)	0.02	(1.12)	0.01	(0.55)
Uncertainty avoidance	0.02***	(7.00)	0.01***	(3.93)	0.01***	(5.27)	0.01***	(3.39)
# of observations	11,305		11,305		11,305		11,305	
R-square	0.2547		0.2631		0.2396		0.2465	
Year FE	Yes		Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes		Yes	

Notes: This table presents coefficient estimates from the OLS regressions of linguistic opacity on various country-, firm-, and conference-call-level characteristics. The coefficients on the # of numbers are divided by 100 for expositional clarity. All variables are defined in Appendix A. T-statistics are reported in parentheses below the regression coefficients. We cluster standards errors at the firm and year levels. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 5 Validation test of the linguistic opacity measure: Manager-level analysis

Model: Non-Plain English (Linguistic Errors)$_{e,i,t}$
$= \beta_1 \times Anglophone\ Executive_e + \sum \beta_k \times Controls_i + Industry\ FE + Year\ FE + Firm\ FE + \varepsilon_{e,i,t}$

	(1) Non-Plain English	(2) Linguistic Errors
Anglophone Executive	-0.27***	-0.13***
	(-2.27)	(-5.92)
# of observations	10,324	10,324
R-square	0.2780	0.2366
Controls (Table 4)	Yes	Yes
Year FE	Yes	Yes
Industry FE	Yes	Yes
Firm FE	Yes	Yes

Notes: This table uses measures of language barriers (*Language Distance*, *Speaking Proficiency*) at the manager level. The unit of analysis is the individual executive (*e*) participating in the calls of firm *i* in quarter *t*. *Anglophone Executive* is our main variable of interest, which takes a value of one for executives (CEOs, CFOs, or COOs) who are identified as Anglophone and zero otherwise. We consider an executive as Anglophone if she is from an English-speaking country and/or has a degree from an English-speaking country, even if the firm she works for is domiciled in a non-English-speaking country. We code all managers of firms located in English-speaking countries as Anglophone. All other variables are defined in Appendix A. The specification includes firm, year, and industry fixed effects. Standard errors are double clustered at the firm and year levels. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 6 Capital market consequences of linguistic opacity

Model: IAVAR((IAVOL)_Q&A$_{i,t}$ = β_1×Non-Plain English (Linguistic Errors) + $\sum_k \beta_k$ Control$_{i,t}$+ FE+ $\varepsilon_{i,t}$.

	(1) IAVOL_Q&A		(2) IAVOL_Q&A		(3) IAVAR_Q&A		(4) IAVAR_Q&A	
	coeff	*t-stat*	*coeff*	*t-stat*	*coeff*	*t-stat*	*coeff*	*t-stat*
Non-Plain English	-0.02*	(-1.65)			-0.01***	(-2.85)		
Linguistic Errors			-0.02***	(-2.60)			-0.02*	(-1.86)
Conference call characteristics								
Translated	-0.07	(-0.28)	-0.08	(-0.30)	0.26	(0.86)	0.26	(0.86)
# of numbers	0.04	(1.10)	0.04	(1.25)	-0.01	(-0.96)	-0.01	(-0.71)
Inaudible	-0.08***	(-3.08)	-0.08***	(-2.94)	-0.02	(-0.61)	-0.01	(-0.55)
Reluctant	0.07	(1.64)	0.07*	(1.68)	0.02	(0.63)	0.02	(0.66)
Unclear	0.14	(1.44)	0.14	(1.48)	-0.05	(-1.50)	-0.05	(-1.51)
Words	0.14***	(2.99)	0.12***	(2.71)	0.17***	(3.44)	0.15***	(3.48)
Quarter	0.12***	(3.76)	0.12***	(3.64)	-0.04	(-1.24)	-0.04	(-1.29)
Guidance	0.07***	(3.14)	0.07***	(3.01)	0.06	(1.31)	0.05	(1.24)
Press releases	0.06	(0.35)	0.07	(0.39)	0.13*	(1.82)	0.14**	(1.96)
Fog press releases	0.00	(-0.29)	0.00	(-0.32)	-0.01	(-1.51)	-0.01	(-1.59)
Fog presentation	0.02	(1.43)	0.01	(1.06)	0.01**	(2.39)	0.01*	(1.73)
Participants	0.05***	(2.58)	0.06***	(2.86)	0.03**	(2.04)	0.04**	(2.17)
One day return	-15.58	(-1.49)	-15.80	(-1.53)	9.09	(0.92)	8.91	(0.90)
Friday	-0.03	(-0.40)	-0.03	(-0.38)	0.00	(0.04)	0.00	(0.06)
SUE	0.02***	(3.11)	0.02***	(3.08)	0.00	(-0.18)	0.00	(-0.19)
Dloss	-0.08*	(-1.71)	-0.08	(-1.64)	0.05	(0.69)	0.05	(0.74)
Replag	0.00	(0.68)	0.00	(0.68)	0.00	(-1.05)	0.00	(-1.09)
Second call	-0.61***	(-4.27)	-0.63***	(-4.35)	0.23**	(2.20)	0.22**	(2.06)
IAVARpresentation	38.45***	(3.70)	38.67***	(3.73)	8.36	(0.93)	8.54	(0.95)
Firm characteristics								
Size	-0.08***	(-3.82)	-0.08***	(-3.92)	-0.06***	(-4.59)	-0.06***	(-4.46)
ROA	0.56**	(2.24)	0.56**	(2.26)	0.23	(0.88)	0.23	(0.87)
# of segments	0.09	(1.57)	0.09	(1.53)	0.05**	(2.52)	0.05**	(2.49)
Q	0.00	(-0.23)	-0.01	(-0.28)	0.01	(0.55)	0.01	(0.48)
Leverage	-0.16	(-0.85)	-0.16	(-0.86)	-0.07	(-0.63)	-0.07	(-0.67)
log_analysts	0.11**	(2.55)	0.12***	(2.70)	0.09***	(3.09)	0.10***	(3.16)
ADR	0.04	(0.68)	0.04	(0.67)	-0.04	(-1.40)	-0.04	(-1.61)
SEO	0.09**	(2.32)	0.09**	(2.22)	0.09***	(2.61)	0.09**	(2.51)
M&A	0.22	(0.87)	0.22	(0.89)	-0.06	(-0.86)	-0.06	(-0.89)
Volatility	2.05	(0.52)	2.03	(0.52)	4.01***	(3.26)	4.05***	(3.05)
Earnings volatility	-0.30	(-0.67)	-0.30	(-0.66)	-0.17	(-1.05)	-0.18	(-1.07)
Special items	0.71	(1.55)	0.72	(1.57)	0.88***	(3.88)	0.89***	(3.90)
Neg ret	0.02	(0.54)	0.02	(0.53)	-0.02	(-0.57)	-0.02	(-0.60)
Country characteristics								
Market cap	-0.23	(-0.65)	-0.22	(-0.58)	0.21	(0.55)	0.22	(0.56)
Market return	0.14	(0.68)	0.14	(0.66)	-0.09***	(-4.43)	-0.09***	(-3.89)
Synchronicity	1.53**	(2.15)	1.45**	(2.07)	0.99	(1.21)	0.93	(1.16)
Zero returns	0.35*	(1.66)	0.34	(1.62)	0.44***	(3.15)	0.44***	(3.13)
# of observations	4,085		4,085		4,085		4,085	
R-squared	0.1631		0.1628		0.1318		0.1319	
Year FE	Yes		Yes		Yes		Yes	
Industry FE	Yes		Yes		Yes		Yes	
Country FE	Yes		Yes		Yes		Yes	
Time of day FE	Yes		Yes		Yes		Yes	

Notes: This table presents coefficient estimates from the OLS regressions of abnormal volume (*IAVOL_Q&A*) and of abnormal returns variance (*IAVAR_Q&A*) on our linguistic opacity measures. The coefficients on the # of numbers are divided by 100 for expositional clarity. All variables are defined in Appendix A. T-statistics are reported in parentheses below the regression coefficients. We cluster standards errors at the firm and year levels. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 7 Cross-sectional tests of the capital market consequence of linguistic opacity

$$IAVAR((IAVOL)\_Q\&A_{i,t} = \beta_1 \times \text{Linguistic opacity}_{i,t} + \beta_2 \times \text{Linguistic opacity}_{i,t} \times \text{High Language Barrier}_{i,t} + \beta_3 \times \text{High Language Barrier}_{i,t} + \sum_k \beta_k \text{Control}_{i,t} + FE + \varepsilon_{i,t.}$$

Panel A: By firms domiciled in English-speaking vs. non-English-speaking countries

High Language Barrier$_{i,t}$ =1 for the calls of firms in non-English-speaking countries, 0 otherwise.

	Dependent variable			
	IAVOL_Q&A (1)	IAVOL_Q&A (2)	IAVAR_Q&A (3)	IAVAR_Q&A (4)
Measure of linguistic opacity:	Non-plain English	Linguistic errors	Non-plain English	Linguistic errors
Linguistic opacity	0.00	-0.00	-0.00	0.01
	(0.27)	(-0.04)	(-0.12)	(1.25)
Linguistic opacity	-0.03**	-0.03	-0.02***	-0.04**
× High Language Barrier	(-2.00)	(-0.91)	(-3.88)	(-2.43)
High Language Barrier	-	-	-	-
P-value of F-Test [β_1+ β_2=0]	*0.027*	*<0.001*	*0.003*	*0.028*
# of observations	4,085	4,085	4,085	4,085
R-square	0.1641	0.1631	0.1329	0.1337
SE clustering	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Country characteristics	Included	Included	Included	Included
Firm & call characteristics (Table 6)	Included	Included	Included	Included
Country, Year, Industry, time of day FE	Included	Included	Included	Included

Panel B: By Anglophone manager

High Language Barrier$_{i,t}$ =1 for the calls of firms in non-English-speaking countries and without an Anglophone manager, 0 otherwise.

	Dependent variable			
	IAVOL_Q&A (1)	IAVOL_Q&A (2)	IAVAR_Q&A (3)	IAVAR_Q&A (4)
Measure of linguistic opacity:	Non-plain English	Linguistic errors	Non-plain English	Linguistic errors
Linguistic opacity	0.01	0.01	-0.00	0.00
	(0.41)	(0.96)	(-0.41)	(0.15)
Linguistic opacity	-0.04*	-0.02*	-0.02**	-0.03*
× High Language Barrier	(-1.82)	(-1.74)	(-2.14)	(-1.83)
High Language Barrier	0.07	0.04	0.01	-0.01
	(1.01)	(0.53)	(0.41)	(-0.49)
P-value of F-Test [β_1+ β_2=0]	*0.04*	*0.643*	*<0.001*	*0.006*
# of observations	2,894	2,894	2,894	2,894
R-square	0.1863	0.1844	0.1415	0.1418
SE clustering	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Country characteristics	Included	Included	Included	Included
Firm & call characteristics (Table 6)	Included	Included	Included	Included
Country, Year, Industry, time of day FE	Included	Included	Included	Included

Table 7 (Continued)

Panel C: Firms domiciled in non-English-speaking countries – by calls with high vs. low portion of Anglophone analysts participating in the calls

High Language Barrier$_{i,t}$ = 1 for calls where the percentage of Anglophone analysts is higher than the country-industry-year median, 0 otherwise.

	Dependent variable			
	IAVOL_Q&A (1)	IAVOL_Q&A (2)	IAVAR_Q&A (3)	IAVAR_Q&A (4)
Measure of linguistic opacity:	Non-plain English	Linguistic errors	Non-plain English	Linguistic errors
Linguistic opacity	0.00	0.00	-0.02	-0.02
	(0.09)	(0.28)	(-1.59)	(-1.47)
Linguistic opacity	-0.05*	-0.05**	-0.00	-0.01
× High Language Barrier	(-1.83)	(-2.50)	(-0.38)	(-1.12)
High Language Barrier	-0.01	-0.05	0.03	0.02
	(-0.32)	(-1.00)	(0.81)	(0.57)
P-value of F-Test [$\beta_1+\beta_2=0$]	*0.027*	*<0.001*	*0.003*	*0.028*
# of observations	2,357	2,357	2,357	2,357
R-square	0.2078	0.2046	0.1643	0.1647
SE clustering	Firm & Year	Firm & Year	Firm & Year	Firm & Year
Country characteristics	Included	Included	Included	Included
Firm & call characteristics (Table 6)	Included	Included	Included	Included
Country, Year, Industry, time of day FE	Included	Included	Included	Included

Notes: This table presents coefficient estimates from the OLS regressions of abnormal price variance and abnormal trading volume on our linguistic opacity measures for our cross-sectional partitions. We use abnormal volume (*IAVOL_Q&A*) and abnormal returns variance (*IAVAR_Q&A*) to measure the capital market responses. In Panel A, we interact linguistic opacity with *High_Language_Barrier*, an indicator for firms domiciled in non-English-speaking countries (i.e., all countries in our sample except Australia, Canada, South Africa, and the U.K.). We include country fixed effects. Therefore, the coefficient on *High_Language_Barrier* in Panel A is subsumed by these fixed effects and thus dropped out of the regression. In Panel B, we interact linguistic opacity with *High_Language_Barrier*, an indicator for firms that hire at least one Anglophone CEO, CFO, or COO (i.e., an individual who was born and/or educated in an English-speaking country). All firms from English-speaking countries are coded as having an Anglophone manager. In Panel C, we restrict the sample to firms domiciled in non-English-speaking countries. Here, *High_Language_Barrier* is an indicator variable that takes a value of one for calls where the percentage of Anglophone analysts participating in the calls is higher than the country-industry-year median and zero otherwise. All variables are defined in Appendix A. T-statistics are reported in parentheses below the regression coefficients. We cluster standards errors at the firm and year levels. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 8 Sensitivity analysis

Panel A: 3-day window

	(1) AVOL	(2) AVOL	(3) AVAR	(4) AVAR
Non-Plain English	-0.01*		-0.03***	
	(-1.72)		(-9.29)	
Linguistic Errors		-0.01**		-0.03***
		(-1.99)		(-3.58)
# of observations	8,055	8,055	8,055	8,055
R-square	0.1257	0.1257	0.0846	0.0832
Controls (Table 6)	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Time of day FE	No	No	No	No

Panel B: Alternative measures of linguistic opacity (predicted opacity based on a fitted regression model)

	(1) IAVOL_Q&A	(2) IAVOL_Q&A	(3) IAVAR_Q&A	(4) IAVAR_Q&A
Predicted Non-Plain English	-0.19***		-0.05**	
	(-5.11)		(-2.44)	
Predicted Linguistic Errors		-0.26***		-0.07**
		(-4.90)		(-2.51)
# of observations	4,011	4,011	4,011	4,011
R-square	0.1373	0.0957	0.1368	0.0957
Controls (Table 6)	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	No	No	No	No
Time of day FE	Yes	Yes	Yes	Yes

Panel C: Using only the presentation portion of the calls to measure linguistic opacity

	(1) IAVOL_Q&A	(2) IAVOL_Q&A	(3) IAVAR_Q&A	(4) IAVAR_Q&A
Non-Plain English_presentation	0.01		0.00	
	(1.46)		(0.81)	
Linguistic Errors_presentation		0.01		-0.01
		(0.42)		(-0.39)
# of observations	4,085	4,085	4,085	4,085
R-square	0.1625	0.1621	0.1306	0.1306
Controls (Table 6)	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Time of day FE	Yes	Yes	Yes	Yes

Notes: Panel A presents coefficient estimates from regressions of daily measures of information content. Abnormal price variance and trading volume are measured over a three-day window centered on the conference call date. See Appendix B for detailed variable definitions. Panel B presents coefficient estimates from the OLS regressions of abnormal volume (*IAVOL_Q&A*) and abnormal returns variance (*IAVAR_Q&A*) on measures of linguistic opacity stemming from language barriers. To attribute the measures to language barriers, we first regress them on our two language barrier proxies, *Language Distance* and *Speaking Proficiency*, thus obtaining *Predicted Non-Plain English* and *Predicted Linguistic Errors*. All variables are defined in Appendix A. T-statistics are reported in parentheses below the regression coefficients. We cluster standards errors at the firm and year levels. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Panel C replicates Table 6, except that *Non-Plain English* and *Linguistic Errors* are measured during the presentation portion of the call, instead of the Q&A. We exclude the control variable *Fog_Presentation* from the model to avoid artificially introducing multicollinearity.