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Language and Management Forecasts Around the World*

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ABSTRACT

Speakers of weak future-time reference (FTR) languages perceive the future as closer and more imminent. In this study, we examine the important question of whether the FTR properties of languages spoken by investors affect their demand for forward-looking information, thereby influencing corporate management forecast practices in different countries. We predict that investors who speak weak-FTR languages are more concerned about the future prospects of their investments and the ability of company management to respond to future changes, leading to a greater demand for management forecasts from these companies. We find that firms in weak-FTR language countries exhibit a greater propensity for and frequency of issuing management forecasts and that they also issue more long-horizon forecasts, compared to those in strong-FTR language countries. Our results hold after controlling for other country-level cultural factors. Within the same countries, firms with more foreign institutional ownership from weak-FTR countries issue more (long-horizon) management forecasts than their counterparts. Finally, firms from strong-FTR countries significantly increase their issuance of (long-horizon) management forecasts, after cross-listing their stocks in Germany, a weak-FTR country. This is the first study to examine language FTR as an antecedent to voluntary disclosures. We document a linguistic trait as a novel investor environment factor that shapes corporate voluntary disclosures and explains the cross-country variations in management forecast practices.

Keywords: language, linguistic relativity principle, future-time reference, management earnings forecasts, foreign institutional ownership, cross-listing

Langue et prévisions des gestionnaires autour du monde

RÉSUMÉ

Les locuteurs des langues à faible référence temporelle au futur (RTF) perçoivent le futur comme étant plus proche et imminent. Dans cette étude, nous examinons si les propriétés en matière de RTF des langues parlées par les investisseurs ont un effet sur leur demande d'information prospective, qui à son tour influence les pratiques prévisionnelles des gestionnaires d'entreprises dans

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divers pays. Nous prédisons que les investisseurs qui parlent des langues à faible RTF sont davantage préoccupés par les perspectives d'avenir de leurs investissements et la capacité des gestionnaires des entreprises à répondre aux changements à venir, ce qui entraîne une plus grande demande pour les prévisions des gestionnaires de ces entreprises. Nous montrons que les entreprises établies dans un pays où on parle une langue à faible RTF affichent une plus grande propension à publier des prévisions et le font à une plus grande fréquence, et que leurs prévisions sont à plus long terme, par rapport aux entreprises établies dans des pays ou la langue est à forte RTF. Nos résultats demeurent valables avoir pris en compte d'autres facteurs culturels à l'échelle du pays. Dans un même pays, les entreprises ayant un fort actionnariat institutionnel étranger provenant de pays dont la langue est à faible RTF publient davantage de prévisions (à long terme) que les autres. Enfin, les entreprises situées dans des pays dont la langue est à forte RTF augmentent sensiblement la publication de prévisions (à long terme), après avoir inscrit leurs actions en Allemagne, un pays dont la langue est à faible RTF. Cette étude est la première à considérer la RTF des langues comme un antécédent de la communication d'information volontaire. Nous présentons un trait linguistique en tant que nouveau facteur lié aux investisseurs qui influence la communication d'information volontaire par les entreprises et explique les différences d'un pays à l'autre sur le plan des pratiques prévisionnelles des gestionnaires.

Mots-clés : langue, principe de la relativité linguistique, référence temporelle au futur, prévisions des résultats par les gestionnaires, actionnariat institutionnel étranger, inscription à plusieurs bourses

1. Introduction

This study examines the effect of language on management forecast practices around the world. The notion that language influences human cognition and behavior is referred to as the "linguistic relativity principle" or the Sapir-Whorf hypothesis (Whorf 1956, 221). Languages differ in many dimensions, and in this study, we focus on how languages grammatically mark future events, which linguists call "future-time reference" (FTR) (Dahl 2000; Thieroff 2000). On the one hand, languages such as English and French require speakers to explicitly encode a distinction between present and future events. On the other hand, languages such as Chinese and German simply refer to future events in the present tense. The latter are referred to as "futureless" languages (Dahl 2000), "weakly grammaticalized future" languages (Thieroff 2000), or "weak-FTR" languages (Chen 2013). Declerck (1991), among others, argues that the use of the present tense for future events shortens the psychological distance of the future to the speakers, making the future feel closer. Hence, language FTR may affect investors' demands for forward-looking information for valuation purposes or to evaluate managers' ability to respond to future changes and monitor their future-oriented behavior. This demand will, in turn, influence the issuance of management forecasts, if firms issue management forecasts to meet such information demand (Wiedman 2000; Ajinkya et al. 2005; Hirst et al. 2008). In this study, we test the effect of language FTR on corporate management forecast practices across countries.

Applying the linguistic relativity principle to the management forecast setting, we expect investors who speak languages with different FTR properties to have differential demand for information relevant to the future performance of the companies they invest in, for both valuation and monitoring purposes. For valuation purposes, since weak-FTR languages make future payoffs seem closer to their speakers, investors in weak-FTR countries are likely more eager than their strong-FTR counterparts to obtain information about the payoffs of their investments that would

occur at the same future point in time.[1] In addition, Chen (2013) shows that speakers of weak-FTR languages discount future payoffs less and value them more than strong-FTR speakers. In other words, the same amount of shock to future earnings streams will be perceived as having a greater impact on the valuation of the investment by the investors in weak-FTR countries relative to those in strong-FTR countries. Hence, investors in weak-FTR countries have a stronger incentive to obtain information about future earnings for valuation purposes, compared with their counterparts in strong-FTR countries.[2] One of the most effective information channels is to demand managers to reveal their private information about future earnings in the form of management forecasts (e.g., Beyer et al. 2010).[3]

As for monitoring, investors who speak weak-FTR languages care more about managers' ability to anticipate and respond to future changes in firms' economic environments than investors who speak strong-FTR languages because the former view the future as closer. Management forecasts can serve as a public signal of such ability because managers need to have a good understanding of how changing business conditions affect the firm's product demand and operations, and also a strong ability to deal with uncertain events when issuing forecasts (e.g., Trueman 1986; Baik et al. 2011; Lee et al. 2012). In addition, management forecasts reflect the expected outcome of management's future-oriented behavior. Hence, we argue that investors who speak weak-FTR languages also have a higher demand for management earnings forecasts than those who speak strong-FTR languages for the purpose of monitoring and evaluating managerial performance.

Given that weak-FTR speaking investors have a heightened demand for forward-looking information compared to strong-FTR speaking investors due to both valuation and monitoring purposes, we predict that companies in weak-FTR countries respond to the greater investor demand and exhibit a higher propensity and frequency of issuing earnings guidance than their counterparts in strong-FTR countries (Healy et al. 1999; Ajinkya et al. 2005). In a similar vein, relative to investors in strong-FTR countries, investors in weak-FTR countries are more interested in knowing about the earnings to be reported further in the future and are also keener to assess managers' ability to deal with uncertainties in the longer horizon. We, therefore, further predict that firms in weak-FTR countries will issue more long-horizon forecasts than firms in strong-FTR countries to satisfy investors' higher demand for long-horizon forecasts.

We conduct empirical analyses using 139,049 firm-year observations from 36 countries during the sample period of 2004–2014 to examine the association between language FTR and firms' management forecast practices. Consistent with our conjectures, the results show that firms in weak-FTR countries are more likely to issue management forecasts and issue those forecasts more frequently. Conditional on a sample of 43,934 firm-year observations with at least one management forecast, we find that firms in weak-FTR countries issue more long-horizon forecasts, defined as annual forecasts issued before the beginning of the fourth quarter, than those in strong-FTR countries.[4] In our analyses, we control for a large number of country-level, institution-

1. As an intuitive example, if both a weak-FTR and a strong-FTR language speaker are traveling on the same day next week, the weak-FTR language speaker will feel the trip as more imminent and will hence prepare ahead of time, including checking the weather forecasts earlier and more frequently than the strong-FTR language speaker.
2. Given that the value of an investment is a function of future payoffs, both investors in weak-FTR and strong-FTR countries would value the future payoffs of their investments; therefore, both would demand information about the future payoffs. However, we argue that the extent to which they demand such information differs due to their differential perception of the imminence and valuation impact of the future payoffs.
3. Since different languages are used across countries, it is also more challenging to conduct a cross-country analysis of the other forms of voluntary disclosures, especially qualitative disclosures in interim financial reports. Recent textual analysis research on annual reports across countries examines only English-language disclosures (see, e.g., Lang and Stice-Lawrence 2015).
4. We obtain consistent untabulated results using the full sample of 139,049 firm-year observations to examine the effect of language FTR on the issuance of long-horizon management forecasts. We limit our analysis of the language FTR effect on the issuance of long-horizon forecasts to the firm-year observations with at least one

specific, and firm-specific factors, as well as industry and year fixed effects. Our results suggest that language FTR can explain the heterogeneity of management forecast practices across countries. We also obtain consistent results after including measures of cross-country cultural differences from Hofstede (2001) and the societal trust measure from Guan et al. (2020) as additional controls in the regression models. However, our results potentially suffer from the typical omitted variable problem because we cannot identify the language effect separately from the other country-level effects, given that language is also a fixed country-level characteristic.

To mitigate the correlated omitted variable problem, we explore two settings that can identify within-country variations in languages spoken by investors. First, we investigate the role of foreign institutional investors (FIIs) from countries with a different language FTR property in influencing firms' management forecast practices. We find that the ownership by FIIs from weak-FTR countries is positively and significantly correlated with a firm's propensity and frequency of issuing management forecasts and the horizon of the management forecasts issued. In contrast, we do not find similar results for ownership by FIIs from strong-FTR countries. Second, we examine foreign firms whose shares are traded in the stock market of Germany, a weak-FTR country, to identify how exposure to weak-FTR-speaking investors affects management forecast behavior. Using a difference-in-differences (DiD) analysis, we find that firms from strong-FTR countries significantly increase the frequency of management forecasts and issue significantly more long-horizon management forecasts after their shares are traded in the stock exchanges in Germany, relative to firms cross-listed from weak-FTR countries. Since these two tests vary only in the languages spoken by investors, their findings provide more direct evidence that language FTR affects the issuance of management forecasts by influencing investors' demand for forward-looking information.

We conduct a series of robustness checks. First, we use two alternative measures of language FTR constructed by Chen (2013). Second, US firms make up a large percentage of the sample; hence, we exclude them from the sample to verify that they do not drive the results. Third, we remove firms from Belgium, Hong Kong, Singapore, and Switzerland, where both strong- and weak-FTR languages are spoken by a large population. Fourth, we use country-mean regressions to avoid the potential undue influence of one or more countries in our sample. Finally, we address the potential coverage bias of Capital IQ, our data source for management forecasts, by checking our results using four subsamples.[5] Our results are robust to these sensitivity analyses.

This study makes four contributions to the literature. First, Chen (2013) introduces the linguistic relativity principle to economics and shows that heterogeneity in FTR properties explains several economic behaviors across individuals around the world. A few recent studies have applied the argument of Chen (2013) to examine the effect of language FTR on corporate behaviors, such as corporate social responsibility practices and R&D investments (Liang et al. 2018), precautionary cash holdings (Chen et al. 2017), CEO compensation (Ellahie et al. 2017), earnings management (Kim et al. 2017), and investment efficiency (Kim et al. 2020). Different from the existing studies that link the FTR property of the languages spoken by managers to various corporate policies, our paper focuses on how language FTR affects investors' demand for forward-looking information and, in turn, corporate management forecast practices. Our paper thus complements these recent studies by demonstrating that language plays a significant role in

forecast issued (i.e., issuing sample) to avoid the concern about the potential bias caused by the Capital IQ coverage. In addition, doing so allows us to examine firms' choice between long-horizon and short-horizon forecasts, given their decision to issue management forecasts.

5. The first subsample drops any observations with zero analyst following or zero institutional ownership. The second drops all firm-year observations from a country where no management forecasts are listed in Capital IQ for any firm from the country in that year. The third includes only firm-year observations after that firm's first appearance in the database. The last subsample drops firm-year observations without any issuance of management forecasts.

explaining management forecast practices around the world because investors who speak different languages have different demands for forward-looking information.

Second, this study contributes to the strand of research examining the effect of forecast antecedents, especially investor environment, on corporate voluntary disclosures in the form of management forecasts (Wiedman 2000; Hirst et al. 2008). Specifically, prior studies have shown that corporate voluntary disclosures are affected by a company's legal and regulatory environments (Johnson et al. 2001; Baginski et al. 2002; Bailey et al. 2003; Heflin et al. 2003; Wang 2007), as well as by its analyst and investor environments (Healy et al. 1999; Ajinkya et al. 2005). We add to this literature by documenting evidence consistent with a linguistic trait as another investor environment factor that influences corporate voluntary disclosures.

Third, this study adds to a small number of studies investigating cross-country variations in management forecast practices. Baginski et al. (2002) find that Canadian firms issue more frequent management earnings forecasts than US firms because Canada is a less litigious country. Shi et al. (2012) examine firms cross-listed in the United States and show that factors such as the firms' home-country legal institutions, the US listing type, product market internationalization, and ownership structure affect these firms' management forecast behavior. Radhakrishnan et al. (2012) document that litigious environment, political economy, and the quality of mandatory reporting explain cross-country variations in management forecasts. Li and Yang (2016) find a significant increase in the propensity and frequency of management earnings forecasts in countries that have mandatorily adopted IFRS. Hung et al. (2018) show that political connections affect the issuance of management forecasts across countries. We contribute to this line of literature by showing that a linguistic trait exhibits power in explaining cross-country variations in management forecast practices over and above other institutional factors.

Last, our study contributes to a broader literature examining the effect of culture on economics and corporate decisions (e.g., Guiso et al. 2006; Fernandez and Fogli 2009; Luttmer and Singhal 2011; Fernandez, 2010; Kanagaretnam et al. 2018; Dyck et al. 2019; Pan et al. 2020). In the context of corporate decisions, prior studies show that societal culture, investor cultural background, and the cultural heritage of CEOs can shape various corporate decisions. For example, Ellahie et al. (2017) document that both the linguistic origin of CEOs' ethnicities and CEOs' inherited religious culture affects their compensation structure. Kanagaretnam et al. (2018) find that societal trust is negatively associated with corporate tax avoidance. Dyck et al. (2019) show that institutional investors transplant their social norms regarding environmental and social issues around the world. Pan et al. (2020) find that the cultural heritage of CEOs affects their attitude toward uncertainty and, in turn, their corporate acquisition decisions. Consistent with societal trust fostering voluntary disclosures, Guan et al. (2020) document that firms in high-trust countries are more likely to issue earnings forecasts and issue forecasts more frequently than those in low-trust countries. Our study provides evidence that language as a distinctive institutional factor affects corporate disclosure of forward-looking information.[6]

The rest of the paper is organized as follows. Section 2 reviews background research and develops a testable hypothesis. Section 3 describes sample construction, model specification, and variable definitions. Section 4 reports the key findings and additional evidence. Section 5 concludes this article.

6. Prior studies have used different approaches to examine the effect of culture or cultural heritage on economic or corporate policies. Some studies use the epidemiological approach to investigate the effect of cultural heritage on corporate decisions within a single country (e.g., Fernandez and Fogli 2009; Pan et al. 2020), whereas others examine the effect of cultural variations in a cross-country setting (e.g., Guiso et al. 2006; Guan et al. 2020). Ellahie et al. (2017) employ both approaches in examining the effect of cultural heritage on executive compensation. In this study, we examine the effect of language FTR in a cross-country setting because we focus on how variations in language FTR among investors can explain the management forecast practices in different countries.

2. Background and hypothesis development

Influence of language

The idea that linguistic differences have an influence on human cognition and behavior was advanced by linguistic researchers as the "linguistic relativity principle" or the Sapir-Whorf hypothesis (Whorf 1956). The principle posits that insofar as languages differ, their speakers should differ in the way of perceiving, analyzing, and acting in objectively similar situations (Boroditsky 2011). Similarly, Slobin (1987, 1996) proposed the "thinking-for-speaking" hypothesis, which states that the linguistic requirements of languages affect how speakers organize their thinking and force their speakers to attend to and encode different aspects of their experience by making them grammatically obligatory. As a result, such variations in language-specific requirements affect speakers' cognitive representations of the events or situations being described (Papafragou et al. 2008). Research in linguistics, psychology, and cognitive science has long documented evidence on the role of language in shaping individuals' habitual thought and nonlinguistic behavior in many dimensions, such as color, number, and time (e.g., Kay and Kempton 1984; Sera et al. 1994; Gordon 2004; Casasanto 2008; Fausey and Boroditsky 2010; Boroditsky 2011).[7]

Languages differ widely in whether or not they grammatically mark future events, which linguists call "FTR" (Dahl 2000; Thieroff 2000). For example, English and French speakers are required to explicitly encode a distinction between present and future events, whereas Chinese and German speakers can simply refer to the future in the present tense.[8] Dahl (2000, 325) develops a criterion to define languages that do not require "obligatory use [of grammaticalized future-time reference] in (main clause) prediction-based contexts" as "futureless" languages. According to linguistic researchers, the use of the present tense for future events is the result of a "shift of temporal perspective" (e.g., Declerck 1991). By shifting a future situation to the present, futureless languages shorten the psychological distance of the future to their speakers, making the future feel more vivid and imminent (Dahl 2000; Thieroff 2000).

Chen (2013) introduces the linguistic relativity principle to economics. He adopts the classification criterion developed by Dahl (2000) but refers to "futureless" languages (e.g., Chinese and German) as "weak-FTR" languages and nonfutureless languages (e.g., English and French) as "strong-FTR" languages. He proposes a linguistic-savings hypothesis, stating that language FTR affects individual future-oriented behaviors for two reasons. First, strong-FTR languages make the future feel more distant to their speakers, whereas weak-FTR languages make the future feel more imminent. As weak-FTR speakers perceive the future as being closer, they are naturally more concerned about the future and will discount future payoffs less than strong-FTR speakers. Hence, weak-FTR speakers will prefer to save/invest more than their strong-FTR counterparts. Second, obligatory FTR makes strong-FTR speakers hold more precise beliefs about the timing of future payoffs than do weak-FTR speakers because it forces strong-FTR language speakers to attend to the distinction between the present and future every time they speak, in a way that weak-FTR languages do not. Weak-FTR speakers will therefore value future payoffs more and save more than strong-FTR speakers. Consistent with this hypothesis, Chen (2013) finds that individuals from countries with weak-FTR languages engage in more future-oriented behaviors, such as saving more, smoking less, practicing safer sex, and remaining less obese.

7. For example, Kay and Kempton (1984) show that the psychological distance between green and blue colors is shorter for the Tarahumara speakers of Mexico than English speakers because the Tarahumara language does not have separate words for "blue" and "green." As another example, Gordon (2004) documents that the Piraha, who live in the lowland Amazonia region of Brazil, cannot easily enumerate exact quantities when set sizes exceed two or three items because quantities beyond two are not counted but are simply referred to as "many" in their language.

8. Specifically, English speakers use a future marker like "will" or "going to" when referring to future events, and French speakers use separate future forms of verbs to do so (e.g., "fera" is the future form of "fait").

A few recent studies have applied Chen's linguistic-savings theory to examine corporate behaviors. Chen et al. (2017) show that weak-FTR language firms have higher precautionary cash holdings because managers perceive adverse credit market events as more imminent. Ellahie et al. (2017) document that the linguistic origin of CEOs' ethnicities affects their preferences over variable versus fixed pay. Kim et al. (2017) show that managers of firms in weak-FTR countries are less likely to engage in earnings management because they view the negative consequence of earnings management to be more imminent. Liang et al. (2018) find that weak-FTR languages foster more future-oriented corporate actions, particularly in corporate social responsibility practices and R&D investments. Kim et al. (2020) provide evidence that language FTR also relates to cross-country variation in investment efficiency. Particularly, they argue that since weak-FTR language speakers apply a lower discount rate in evaluating future cash flows, firms located in countries with weak-FTR language exhibit lower underinvestment problems.

Hypothesis development: Influence of language on management forecasts

Prior literature on voluntary disclosures suggests that the forecast environment affects firms' management forecast behavior. The forecast environment includes legal and regulatory environments, as well as analyst and investor environments (Wiedman 2000; Hirst et al. 2008).[9] The analyst and investor environments influence management forecasts because analysts and investors seek disclosures of forward-looking information for monitoring and valuation purposes (e.g., Healy and Palepu 2001; Ajinkya et al. 2005; Seybert and Yang 2012; Boone and White 2015). Managers have the incentive to cater to investors' demand for information because firms can be rewarded in the capital market with higher stock liquidity and lower cost of capital by making disclosures to reduce the information asymmetry between them and investors (e.g., Verrecchia 1983; Hughes 1986; Trueman 1986; Healy et al. 1999; Ajinkya et al. 2005). Hence, when investors have a greater demand for forward-looking information, managers are likely to issue more forecasts to fulfill investors' information demand.[10]

In this study, we consider a linguistic trait as an investor environmental factor that drives investors' demand for forward-looking information and examine whether it affects management forecast behavior. According to the linguistic relativity principle, speakers of weak-FTR languages perceive the future as closer and more imminent. Hence, we predict that investors from weak-FTR countries will be more eager than investors from strong-FTR countries to acquire information about future payoffs/prospects occurring at the same future point in time, for both valuation and monitoring purposes.

For valuation purposes, Chen (2013) shows that weak-FTR speakers (i) discount future payoffs less than strong-FTR speakers because they perceive the future as closer and (ii) value future payoffs more because they hold less precise beliefs about the timing of future payoffs than do their strong-FTR counterparts. As an example, consider a world in which all companies start without the practice of providing management earnings forecasts. Because investors in weak-FTR countries perceive future earnings announced at the same point of time as more imminent and

9. For example, management forecasts increase during IPOs (e.g., Clarkson et al. 1992) and subsequent to an exogenous increase in institutional ownership (Boone and White 2015). Johnson et al. (2001) find that firms issued more management forecasts after the 1996 Private Securities Litigation Reform Act due to reduced legal exposure. Other studies show that management forecast behavior changed after the passage of Regulation Fair Disclosure (Reg FD) in 2000 (Bailey et al. 2003; Heflin et al. 2003; Wang 2007). In addition, prior studies show that managers voluntarily disclose more information when the information is perceived as more credible and thus more likely to be used by investors (e.g., Einhorn 2007; Ball et al. 2012).

10. In an international setting, Li and Yang (2016) document a significant increase in the issuance of management earnings forecasts in countries that have mandatorily adopted IFRS. They argue that IFRS adoption increases capital market demand for voluntary disclosures, thereby driving managers to increase management forecasts.

discount them to a lesser degree, the information about future earnings streams can cause a larger reaction from investors in weak-FTR countries than those in strong-FTR countries.[11] In other words, the information about future earnings is relatively more useful to investors in weak-FTR countries in terms of valuation. Thus, they are willing to expend greater efforts to acquire forward-looking information. As managers possess private information about the firm's future earnings that outsiders do not have, investors in weak-FTR countries will demand that managers provide more forward-looking information about firm performance.

For monitoring purposes, language FTR affects management forecast practices because investors in weak-FTR countries are expected to demand more management forecasts than their counterparts in strong-FTR countries to monitor managers and assess their ability to respond to future uncertainties. Since weak-FTR speakers view the future as more imminent, they care more about managers' ability to anticipate and respond to future changes in firms' economic environment. Trueman (1986) argues that management forecasts can serve as a public signal of such ability, given the forward-looking nature of management forecasts. In order to issue credible forecasts of future earnings, managers need to have a good understanding of how changing business conditions affect the firm's product demand and operations, as well as a strong ability to deal with uncertain events (Lee et al. 2012). Prior studies show that the quality of management forecasts is related to managerial ability (Baik et al. 2011), CEO turnover (Lee et al. 2012), and the quality of corporate acquisition and capital expenditure decisions (Goodman et al. 2014). Therefore, investors who speak weak-FTR languages are more likely to rely on management forecasts to assess managers' ability to deal with future uncertainty and monitor managers' future-oriented behavior, resulting in a higher demand for management forecasts for firms in weak-FTR countries.

In response to the higher investor demand for information in weak-FTR countries, firms in those countries will exhibit a higher propensity and frequency of issuing earnings guidance than their counterparts in strong-FTR countries. Similarly, because investors in weak-FTR countries consider the same long-horizon future as more imminent than those in strong-FTR countries, they naturally want to know more about earnings to be announced in a longer horizon compared to their counterparts in strong-FTR countries. Meanwhile, investors in weak-FTR countries are also more concerned about managers' ability to deal with uncertainties in the longer horizon compared to those in strong-FTR countries. As a result, we expect firms in weak-FTR countries will also issue more long-horizon forecasts than those in strong-FTR countries. Note that we do not argue that investors have to demand that managers directly issue management forecasts. When investors have a demand for forward-looking information, managers have incentives to provide such information for capital market benefits. Indeed, prior studies show that the issuance of management forecasts is associated with higher stock liquidity and lower cost of capital (e.g., Beyer et al. 2010; Balakrishnan et al. 2014). However, such benefits can be achieved only if the information is demanded and used by investors, thereby inducing managers to issue management forecasts (e.g., Jennings 1987; Ball et al. 2012; Li and Yang 2016). Managers in weak-FTR countries implicitly understand that their investors have a greater demand for forward-looking information and expect disclosures of such information to be beneficial to the firms. As a result, firms in weak-FTR countries exhibit a higher tendency and frequency in issuing management forecasts and also issue more long-horizon management forecasts.[12]

11. Note that the issuance of an earnings forecast does not simply change the expectation about the earnings being forecasted. It also changes expectations on all future earnings. The discount factor would not only affect the present value of the forecasted earnings but also have an impact on the discounted values of expected earnings in all future periods. Thus, the differential discount factors could lead to significant differences between investors in weak-FTR versus strong-FTR countries in the valuation impact of the earnings forecasts.

12. When investors have higher bargaining power over managers, they are able to exert influence on managers directly to change firms' disclosure policy. In such a situation, language FTR could have a stronger effect on corporate disclosure. We utilize the enactment of merger and acquisition (M&A) laws, lowering the legal barriers to M&A

Based on the above discussions, we state our two hypotheses (in alternative form) as follows:

HYPOTHESIS 1. *All else being equal, firms in countries with weak-FTR languages exhibit a higher propensity and frequency in issuing management earnings forecasts compared to those in countries with strong-FTR languages.*

HYPOTHESIS 2. *All else being equal, forecasting firms in countries with weak-FTR languages issue more long-horizon management earnings forecasts than their counterparts in countries with strong-FTR languages.*

3. Research design

Model and variable definitions

To test the hypotheses, we examine the effect of language FTR on three aspects of management forecasts: propensity (*MF_PROP*), frequency (*MF_FREQ*), and long-horizon forecasts (*MF_LongHorizon*). *MF_PROP* is an indicator variable that equals one if a firm issues at least one management forecast in a given year and zero otherwise. *MF_FREQ* is the total number of management forecasts issued by a firm in a given year. If a firm does not issue any forecast in a given year, we set *MF_FREQ* to zero. *MF_LongHorizon* is measured as the number of annual forecasts that are issued before the beginning of the fourth quarter by a firm in a given year.[13] If a firm does not issue any annual forecast prior to the beginning of the fourth quarter, we set the value of *MF_LongHorizon* to zero. For the empirical analysis of the effect of language FTR on *MF_LongHorizon*, we focus on an issuing sample (the sample of firm-years with the issuance of at least one management forecast) for two reasons. First, by focusing on the issuing sample, we are able to further examine firms' choice between long- and short-horizon forecasts, given their decision to issue a forecast. Second, we can, to some extent, mitigate the concern about coverage bias of the Capital IQ database by focusing on the issuing sample.

Following prior studies (e.g., Li and Yang 2016), we specify the regression model as follows:

$$MF_{ijt} = a + bWeak\_FTR_{jt} + \Sigma c_n Controls_{nt} + Year + Industry + \epsilon_{ijt}, \quad (1)$$

where *MF* is either *MF_PROP*, *MF_FREQ*, or *MF_LongHorizon*. We estimate equation (1) using a logit model when the dependent variable is the indicator variable *MF_PROP*, and an ORDERED logit model when the dependent variable is the count variable *MF_FREQ* or *MF_LongHorizon*.[14]

activities in many countries in the last few decades (Lel and Miller 2015), as a shock that increases investors' bargaining power over managers. An active corporate control market brought on by the new M&A laws is expected to discipline managerial behavior and increase the relative bargaining power of investors (Jensen 1986; Lel and Miller 2015; Khurana and Wang 2019). Untabulated results show that the positive association between weak-FTR language property and management forecasts is more pronounced in the period after the enactment of the M&A laws.

13. We identify long-horizon forecasts based on annual rather than quarterly forecasts for three major reasons. First, many firms bundle annual and quarterly earnings forecasts together when issuing forecasts. Compared to quarterly earnings forecasts, annual earnings forecasts are more likely to be long-horizon. Second, some countries only require semiannual reporting, and hence, their firms typically do not issue quarterly forecasts. By focusing on annual forecasts, we can make more meaningful comparisons across different countries. Third, the forecast horizon data are not readily available from the Capital IQ database. Capital IQ provides only the company name, GVKEY, issuance date, a headline column (in text format), and a description (in text format) containing details about the forecasts. Refer to the Appendix for details on the construction of this measure.

14. When the dependent variable is *MF_FREQ* or *MF_LongHorizon*, we obtain similar results (untabulated) if we apply the Poisson model.

Weak_FTR is our main test variable, and it measures whether or not the dominant language in a firm's country is a weak-FTR language. Following Chen (2013), *Weak_FTR* is an indicator variable that equals one if the dominant language of the country where the firm is headquartered is a weak-FTR language and zero otherwise. The dominant language is defined as the official language or the language the majority of people speak in that country. We then classify the dominant language in each country into a weak-FTR language or a strong-FTR language.[15] We expect b to be positive if *Weak_FTR* has a positive effect on the issuance of (long-horizon) management forecasts.

Based on the extant literature, we identify and control for a wide range of country, firm, and industry characteristics that may influence firms' management forecast practices ($Controls_n$). Definitions for all variables used in our analyses are provided in the Appendix. To control for the effect of law enforcement on management forecasts, we include two variables from prior studies: the law and order index (*Law*) from the International Country Risk Guide and the legal origin (*Origin*) indicating common- or code-law countries.[16] We also include the antidirector index (*AD*) from Djankov et al. (2008) in our regressions to control for the effect of investor protection on management forecasts. Since investors' demand for voluntary disclosure may also be influenced by economic and stock market development in a country, we include in our regressions the logarithm of GDP (*LGDP*) and the logarithm of GDP per capita (*LGDPC*) as proxies for economic development, and the total market value of listed shares divided by GDP (*Stkmkt*) as a proxy for stock market development.

As an overall measure of corporate transparency (Kasznik and Lev 1995), we control for firm size (*Size*), which is measured as the natural logarithm of a firm's market value. As a control for the firm's information environment (Lang and Lundholm 1993, 1996), we also include the natural logarithm of one plus the number of analysts following a firm each year (*Analyst*). Given that the frequency of management forecasts is highly correlated with the frequency of financial reporting, we include an indicator variable (*Interim*) to capture whether a firm issues quarterly financial reports. We measure a firm's growth opportunities by its market-to-book ratio (*MB*), its profitability by return on assets (*ROA*) and an indicator for negative earnings (*Loss*), and its information uncertainty by earnings volatility (*EarnVol*). We control for these factors because investors demand more voluntary disclosures from firms when facing greater uncertainty or information asymmetry. Meanwhile, managers are less likely to issue earnings forecasts when earnings are more difficult to predict. We also include the firm's leverage ratio (*LEV*) and institutional ownership (*InstOwn*) to control for the information demand from debtholders and institutional investors, respectively (Ajinkya et al. 2005; Boone and White 2015). Since firms with higher external financing needs tend to issue more voluntary disclosures (Dhaliwal et al. 2011), we also include an indicator variable (*Equity*) to capture firms' external financing needs: *Equity* equals one if a firm issues equity during a year and zero otherwise.

Prior studies suggest that industry-specific factors such as litigation concern and business environment affect firms' voluntary disclosures (Rogers and Van Buskirk 2009). We thus include industry indicators based on the 2-digit SIC codes in all our regressions as additional controls. Finally, we include year fixed effects in all our regressions to control for possible time trends of management forecasts during our sample period. We also adjust the standard errors for heteroskedasticity and clustering by country×year (Petersen 2009). Finally, we winsorize all continuous variables at their respective 1st and 99th percentiles to reduce the influence of extreme values.

15. Our sample is larger than that in Chen (2013). For the countries covered in Chen (2013), we follow Chen (2013) to define the dominant language. For the remaining countries, we follow Lewis (2009) and the Ethnologue database to define the dominant language.

16. Although *Origin* is a country-level indicator variable that is time-invariant, there are weak- and strong-FTR countries across both common and code law countries. Therefore, *Weak_FTR* is not subsumed by *Origin*.

Sample construction

We start our sample construction with management forecast data from the S&P Capital IQ–Compustat database (CIQ hereafter). Specifically, we obtain from CIQ a comprehensive sample of management forecasts issued by firms around the world during the period 2004–2014. In the Key Developments data set under "Corporate Guidance," CIQ provides the text of performance forecasts issued by firms starting from 2003.[17] These management forecast data are extracted for firms in about 100 countries and regions from a variety of sources (e.g., regulatory filings, newspapers, subscriptions, and announcements of transactions, etc.). Following prior literature, we focus on forecasts of several different earnings measures, including *EBITDA* (operating earnings before interest, income taxes, depreciation, and amortization), *OPINC* (operating income before income taxes), *IBTAX* (income before income taxes), *IBXIDO* (income before extraordinary items and discontinued operations), and *NI* (net income). Firms publicly listed in Japan are excluded from our sample because they are required by law to issue management forecasts (Kato et al. 2009).

We collect country-level data from various sources. The main variable of our interest is language FTR. Following Chen (2013), we collect data on the dominant language in each country and then classify each language as a weak- or strong-FTR language. We also refer to the Ethnologue database (Lewis 2009) and CIA FactSet database (Stulz and Williamson 2003) to collect the dominant language data for countries that are not in Chen's sample (2013). We further require countries in our sample to have data for the following country-level variables: the revised antidirector index from Djankov et al. (2008), the law and order index from International Country Risk Guide, and the annual GDP and annual market value of all listed firms from the World Bank. As a result, firms in China are excluded from our sample due to missing data on the antidirector index and the law and order index.[18]

We extract all firm-level financial data from Compustat Global, analyst following data from I/B/E/S, and foreign institutional ownership data from FactSet. To ensure that each country has a sufficient number of observations, we exclude countries with fewer than 100 observations during our sample period. The resultant sample consists of 139,825 firm-years from 36 countries. In this sample, a small number of firms are primarily listed in a foreign country with a different language FTR property (391 firm-years) or have missing information on primary listing countries (385 firm-years). We exclude these firms from the sample. Finally, we obtain a sample of 139,049 firm-year observations for *MF_PROP* and *MF_FREQ*. To test the effect of language FTR on *MF_LongHorizon*, we focus on the sample of 43,934 firm-year observations with the issuance of at least one management forecast.

4. Empirical results

Summary statistics

Table 1 presents the distribution of our sample observations and the means of the propensity and frequency of management forecasts and the frequency of long-horizon forecasts across different countries. In the full sample for testing *MF_PROP* and *MF_FREQ*, the total number of observations in a given country ranges from 359 for Portugal to 34,872 for the United States. It is worth noting that the United States and several other countries, such as India, Australia, Canada, and the United Kingdom, have the largest numbers of observations in our sample.[19] In a robustness check, we estimate a country-mean regression to show that our findings are not driven by firms from these countries that are highly represented in our sample.

17. We start our sample period from 2004 because the database coverage for 2003 is very limited.
18. Untabulated results are similar if we include firms from China in our sample and estimate equation (1) without controlling for the antidirector index and the law and order index.
19. India has a large number of observations in our sample due to a dramatic increase of listed firms during our sample period.

TABLE 1
Sample distribution by country

	Country	# of obs	# of firms	% of obs issue MF	Mean of *MF_Freq*	Mean of *MF_LongHorizon*
Weak-FTR countries						
1	Austria	571	82	58.1	1.4	1.2
2	Belgium	823	112	39.7	0.8	0.9
3	Brazil	1,707	283	12.3	0.2	0.7
4	Germany	5,176	718	51.4	1.5	1.4
5	Hong Kong	7,427	999	30.4	0.4	0.1
6	Indonesia	2,024	324	12.7	0.2	0.6
7	Malaysia	7,194	977	17.3	0.2	0.6
8	Netherlands	1,018	136	54.5	1.2	0.8
9	Norway	1,164	190	25.5	0.5	0.6
10	Singapore	4,604	669	22.8	0.4	0.4
11	Switzerland	1,660	209	45.8	0.9	0.9
	Overall	33,368	4,699	33.7	0.7	0.7
Strong-FTR countries						
12	Argentina	462	68	2.4	0.0	0.3
13	Australia	10,942	1,815	26.4	0.5	0.7
14	Canada	10,215	2,044	24.6	0.6	1.0
15	Chile	967	140	2.7	0.0	0.7
16	Egypt	302	104	5.0	0.1	0.4
17	France	4,888	681	31.4	0.7	0.9
18	Greece	1,523	224	8.5	0.1	0.6
19	India	11,373	2,408	4.2	0.1	0.5
20	Ireland	367	63	45.2	1.2	1.2
21	Israel	1,388	308	14.7	0.4	0.8
22	Italy	1,835	255	33.0	0.6	0.8
23	Jordan	499	110	0.4	0.0	1.0
24	Mexico	711	91	11.8	0.2	0.5
25	New Zealand	610	121	47.0	0.9	0.9
26	Pakistan	713	185	3.6	0.0	0.3
27	Peru	463	75	2.2	0.0	0.8
28	Philippines	1,021	159	15.5	0.3	0.9
29	Portugal	359	47	25.3	0.4	0.5
30	South Korea	5,969	1,257	4.6	0.1	0.3
31	Spain	937	131	28.7	0.5	0.6
32	Sri Lanka	1,065	186	0.7	0.0	0.6
33	Thailand	3,545	450	17.3	0.3	0.6
34	Turkey	1,340	245	4.6	0.1	0.7
35	United Kingdom	9,315	1,597	35.0	0.6	0.6
36	United States	34,872	5,545	58.1	2.0	1.3
	Overall	105,681	18,309	18.1	0.4	0.7

Notes: This table presents the country distribution of firm-year observations in our sample. All variables are defined in the Appendix.

Following Chen (2013) and Lewis (2009), we classify the countries in our sample into 11 weak-FTR countries and 25 strong-FTR countries. In the full sample, about 24% of our observations are from the 11 weak-FTR countries, and 76% are from the 25 strong-FTR ones. For weak-FTR countries, about 33.7% of the firm-year observations contain at least one management

TABLE 2
Summary statistics on regression variables

	N	Mean	SD	p10	p25	p50	p75	p90
MF_PROP	139,049	0.316	0.465	0.000	0.000	0.000	1.000	1.000
MF_FREQ	139,049	0.835	1.502	0.000	0.000	0.000	1.000	4.000
MF_LongHorizon	43,934	0.989	0.953	0.000	0.000	1.000	2.000	2.000
Weak_FTR	139,049	0.240	0.427	0.000	0.000	0.000	0.000	1.000
Origin	139,049	0.745	0.436	0.000	0.000	1.000	1.000	1.000
Law	139,049	0.784	0.142	0.667	0.750	0.833	0.833	0.917
AD	139,049	0.653	0.148	0.500	0.500	0.667	0.833	0.833
Stkmkt	139,049	1.473	2.080	0.424	0.669	1.008	1.362	1.603
LGDP	139,049	14.349	1.538	12.298	13.043	14.344	16.323	16.521
LGDPC	139,049	10.062	1.180	7.865	9.927	10.622	10.787	10.878
Size	139,049	4.857	2.286	2.062	3.200	4.646	6.380	7.971
MB	139,049	3.036	8.732	0.449	0.809	1.490	2.765	5.203
LEV	139,049	0.194	0.180	0.000	0.014	0.163	0.319	0.453
ROA	139,049	−0.025	0.224	−0.206	−0.030	0.029	0.070	0.121
Loss	139,049	0.339	0.473	0.000	0.000	0.000	1.000	1.000
Analyst	139,049	4.502	8.072	0.000	0.000	0.000	6.000	15.000
InstOwn	139,049	0.146	0.265	0.000	0.000	0.002	0.156	0.601
EarnVol	139,049	0.145	3.763	0.009	0.018	0.039	0.094	0.234
Equity	139,049	0.115	0.319	0.000	0.000	0.000	0.000	1.000
Interim	139,049	0.941	0.235	1.000	1.000	1.000	1.000	1.000

Notes: This table presents the summary statistics of main variables used in the main regression models. All variables are as defined in the Appendix.

forecast, compared with 18.1% for strong-FTR countries.[20] The mean of the frequency of management forecast issuances (*MF_FREQ*) is 0.7 for weak-FTR countries and 0.4 for strong-FTR countries each year in our sample period. We also report the mean of the frequency of long-horizon forecasts for the issuing sample where at least one management forecast is issued for the firm-year. We find that in this sample, firms in both weak-FTR and strong-FTR countries on average issue 0.7 long-horizon forecasts each year. Therefore, based upon the descriptive statistics at the country level, we observe some pattern that firms in weak-FTR countries are more likely to issue management forecasts and issue management forecasts more frequently.

Table 2 provides the summary statistics for the dependent and independent variables used in our regression analyses. About 31.6% of the firm-year observations in our sample contain at least one management forecast (*MF_PROP*), and the average frequencies of total (*MF_FREQ*) and long-horizon (*MF_LongHorizon*) management forecasts are about 0.835 and 0.989 per year, respectively. These statistics are generally consistent with prior studies on international management forecasts (Tsang et al. 2019). The descriptive statistics for the other variables are also comparable to those reported in related prior studies (Li and Yang 2016; Tsang et al. 2019; Guan et al. 2020). Specifically, the mean (median) of the law and order index (*Law*) is 0.784 (0.833), the antidirector index (*AD*) is 0.653 (0.667), the ratio of market value of all listed firms to GDP (*Stkmkt*) is 1.473 (1.008), the logarithm of GDP (*LGDP*) is 14.349 (14.344), the logarithm of GDP per capita (*LGDPC*) is 10.062 (10.622), the logarithm of market value (*Size*) is 4.857 (4.646), the market-to-book ratio (*MB*) is 3.036 (1.490), the leverage ratio (*LEV*) is 19.4%

20. In our sample, the percentage of firm-years that has at least one management forecast in each country is largely consistent with prior studies (e.g., Li and Yang 2016; Cao et al. 2017), except for several countries that have fewer observations.

(16.3%), the return on assets (*ROA*) is −0.025 (0.029), the number of analysts following (*Analyst*) is 4.502 (0), the institutional ownership (*InstOwn*) is 14.6% (0.2%), and the earnings volatility (*EarnVol*) is 0.145 (0.039). In addition, 74.5% of the firm-year observations are from countries with a common-law legal origin, 33.9% report losses, 11.5% issue equity in a given year, and 94.1% provide quarterly reporting.

Language FTR and management forecasts

Panel A of Table 3 summarizes the estimation results of equation (1). Columns (1), (2), and (3) show results using forecast propensity (*MF_PROP*), forecast frequency (*MF_FREQ*), and frequency of long-horizon forecasts (*MF_LongHorizon*) as the dependent variables, respectively. The positive and significant coefficient on *Weak_FTR* reported in column (1) suggests that firms in countries with weak-FTR languages are more likely to issue management forecasts. Similarly, we document a significant and positive coefficient on *Weak_FTR* in column (2), where the dependent variable is the frequency of management forecasts. In column (3), we also find a significantly positive coefficient on *Weak_FTR* with the frequency of long-horizon forecasts as the dependent variable.[21] These findings are consistent with the hypothesis that investors in countries that speak weak-FTR languages are more future-oriented and thus have a higher demand for managerial disclosures of forward-looking information than those who speak strong-FTR languages. As such, firms in weak-FTR countries cater to the demand of their investors and increase their propensity and frequency of issuing management forecasts and also exhibit higher frequency in issuing long-horizon forecasts.[22]

The effect of weak-FTR language on the issuance of management forecasts is also economically significant. Based on the marginal effect on *Weak_FTR*, firms domiciled in weak-FTR countries are 17% more likely to issue management forecasts than firms in strong-FTR countries.[23]

As for the control variables, we find a positive and significant coefficient on *Law* in both columns (2) and (3), suggesting that firms in countries with better business protections issue more management forecasts. The coefficient on *Origin* is also positive and significant, which is in line with the finding of Li and Yang (2016) that firms in common-law countries issue more (long-horizon) management forecasts than those in code-law countries. Consistent with Radhakrishnan et al. (2012), we find that firms in countries with a greater *AD* are less likely to issue management forecasts, suggesting that investors demand that firms issue more forecasts when shareholders' rights are not well protected. We further find that firms with larger institutional ownership (*InstOwn*) are more likely to issue management forecasts and issue more long-horizon forecasts, suggesting that institutional investors demand more corporate transparency. Moreover, large firms (*Size*), profitable firms (*ROA*), highly leveraged firms (*LEV*), firms with greater analyst following (*Analyst*), and firms that provide quarterly reporting (*Interim*) issue more management forecasts. On the other hand, firms with greater growth opportunities, as measured by the market-to-book

21. The 95% confidence intervals for the coefficients on *Weak_FTR* range from 0.777 to 1.290 for *MF_PROP*, from 0.836 to 1.322 for *MF_FREQ*, and from 0.560 to 0.937 for *MF_LongHorizon*.

22. In the main analysis, we choose country×year clustering to have enough clusters to avoid the estimation bias (Petersen 2009), while trying to account for clustering at the country level. Untabulated results are robust to the choice of double-clustering by firm and year or country and year. The *t*-values of the coefficients on *Weak_FTR* in our main tests are 2.75, 3.06, and 3.34, with *MF_PROP*, *MF_FREQ*, and *MF_LongHorizon* as the dependent variables, respectively, for double-clustering by firm and year. The *t*-values of the coefficients on *Weak_FTR* are 7.40, 7.85, and 12.41, with *MF_PROP*, *MF_FREQ*, and *MF_LongHorizon* as the dependent variables, respectively, when we cluster by country and year.

23. Marginal effects, generated by Stata, express how the predicted probability of a binary outcome changes with a change in an explanatory variable. For example, the marginal effect of weak-FTR is measured as the difference in the predicted likelihood of management forecast issuance between firms in weak-FTR countries and strong-FTR countries, holding all other explanatory variables at their sample means.

TABLE 3
The effect of FTR on management forecasts

Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*
Weak_FTR	0.881***	0.965***	0.754***
	(6.67)	(7.76)	(7.96)
Origin	1.074***	1.142***	0.471***
	(6.89)	(7.93)	(5.78)
Law	0.517	0.802*	1.126***
	(1.05)	(1.69)	(2.82)
AD	−1.946***	−2.369***	−2.470***
	(−4.85)	(−6.70)	(−8.57)
Stkmkt	−0.035	−0.042*	−0.230***
	(−1.33)	(−1.95)	(−7.77)
LGDP	0.147***	0.231***	0.256***
	(3.66)	(5.38)	(7.99)
LGDPC	0.518***	0.440***	−0.120*
	(6.45)	(5.67)	(−1.83)
Size	0.312***	0.342***	0.177***
	(18.64)	(21.29)	(12.96)
MB	−0.032***	−0.033***	−0.002
	(−9.52)	(−10.24)	(−0.93)
LEV	0.721***	0.656***	0.573***
	(8.76)	(10.34)	(7.81)
ROA	0.624***	0.682***	0.342***
	(7.03)	(7.36)	(2.89)
Loss	−0.059	−0.076**	−0.320***
	(−1.42)	(−2.00)	(−6.95)
Analyst	0.041***	0.027***	0.001
	(12.29)	(8.57)	(0.25)
InstOwn	0.652***	0.907***	0.174*
	(4.31)	(7.45)	(1.92)
EarnVol	−0.079**	−0.105***	−0.478***
	(−2.30)	(−2.62)	(−5.50)
Equity	0.048	0.062**	0.078**
	(1.59)	(2.14)	(2.06)
Interim	0.717***	0.735***	0.290**
	(5.48)	(6.00)	(2.11)
Year fixed effects	Included	Included	Included
Industry fixed effects	Included	Included	Included
Observations	139,049	139,049	43,934
Pseudo R^2	0.31	0.21	0.10

Notes: This table reports the estimation results of the effect of language FTR on management forecasts as specified in equation (1). The dependent variable is management forecast propensity (*MF_PROP*) in column (1), management forecast frequency (*MF_FREQ*) in column (2), and long-horizon management forecast frequency (*MF_LongHorizon)* in column (3). In the parentheses below coefficient estimates, we report the robust *t*-statistics based on standard errors adjusted for heteroskedasticity and country×year clustering. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. All variables are as defined in the Appendix.

ratio (*MB*), issue fewer management forecasts. These results are generally consistent with findings documented in prior studies.

Since language FTR could be correlated with other country-level cultural factors that can potentially confound our results, in the next analysis, we include the societal trust measure used in Guan et al. (2020) based on the World Values Survey and the four dimensions of cultural differences across countries from Hofstede (2001), including uncertainty avoidance (*UAI*), masculinity (*MAS*), individualism (*IDV*), and power distance (*PDI*), as additional controls in equation (1).[24] We report the summary statistics of the five country-level cultural factors in panel A of Table 4 and their correlations in panel B of Table 4. Panel A shows that the mean (median) of *Trust* is 0.400 (0.511), *PDI* is 0.488 (0.400), *IDV* is 0.706 (0.800), *MAS* is 0.554 (0.620), *UAI* is 0.537 (0.460). As shown in the top (bottom) portion of panel B, the magnitudes of the Spearman (Pearson) correlations between *Weak_FTR* and the other cultural factors range from 0.003 to 0.249 (0.016 to 0.249). In addition, we find much stronger correlations among the other five cultural factors as the Spearman correlations range from 0.061 to 0.701, and the Pearson correlations range from 0.273 to 0.702. These cultural factors are also highly correlated with the other country-level control variables, such as *LGDP* and *LGDPC*. In panel C, we report the estimated results of including the five cultural factors in equation (1). The results show that the coefficients on *Weak_FTR* remain positive and significant after controlling for those five cultural differences across countries, suggesting that the effect of language on management forecasts is incremental to the effects of the cultural factors. Consistent with Guan et al. (2020) that firms listed in countries with a higher level of societal trust issue more management forecasts, we find a significantly positive coefficient on *Trust* across all three columns (1) to (3). We also find that individualism and masculinity load positively and significantly in columns (1) and (2), while uncertainty avoidance loads positively and significantly in all three columns. These results suggest that other cultural factors could also affect firms' voluntary disclosure practices.

In order to compare the effect of language on management forecast practices with the effects of other cultural variables, we create five dummy variables (*TRUST_High*, *PDI_High*, *IDV_High*, *MAS_High*, and *UAI_High*) based on the median values of the corresponding cultural variables and reestimate the regressions by replacing the five continuous cultural variables with the five dummy variables.[25] We report the marginal effects of *Weak_FTR* and other cultural variables in predicting *MF_PROP* in column (1), panel D of Table 4. Our results show that when the value changes from zero to one, *Weak_FTR* can lead to a comparable change in the propensity of issuing management forecasts as the other cultural factors. For *MF_FREQ* and *MF_LongHorizon*, we estimate OLS regressions so that the estimates of the coefficients indicate the economic impact of *Weak_FTR* and the five cultural factors on the frequency of issuing (long-horizon) management forecasts. The results of *MF_FREQ* and *MF_LongHorizon*, reported in columns (2) and (3) of panel D, show that *Weak_FTR* has a larger economic magnitude than the five cultural factors in predicting the frequency of (long-horizon) management forecasts.[26]

Within-country variations in languages spoken by investors

In the previous section, we document a positive and significant relation between weak-FTR and the propensity and frequency of management forecasts and the frequency of long-horizon management forecasts. We argue mainly that the effect of language FTR on management forecast

24. We thank Geert Hofstede for making the data available on his website: http://geerthofstede.com/research-and-vsm/dimension-data-matrix/.

25. These dummy variables are defined as one if the value is greater than the median value of the corresponding cultural variable and zero otherwise.

26. We find that the correlations between the five cultural factors defined as dummy variables have weaker but still very strong correlations among each other. Given such strong correlations among these cultural factors, we caution against drawing strong inferences from the economic magnitude comparison results.

TABLE 4
The effects of FTR and other country-level cultural factors on management forecasts

Panel A: Summary statistics of the five cultural variables

	N	Mean	SD	p10	p25	p50	p75	p90
Trust	92,267	0.400	0.135	0.233	0.289	0.511	0.511	0.531
PDI	92,267	0.488	0.160	0.350	0.390	0.400	0.640	0.770
IDV	92,267	0.706	0.254	0.200	0.480	0.800	0.910	0.910
MAS	92,267	0.554	0.109	0.390	0.520	0.620	0.620	0.660
UAI	92,267	0.537	0.172	0.350	0.460	0.460	0.640	0.850

Panel B: The Pearson (bottom) and Spearman (top) correlations among all country-level variables ($N = 92{,}267$)

	Weak_FTR	*Origin*	*Law*	*AD*	*Stkmkt*	*LGDP*	*LGDPC*	*Trust*	*PDI*	*IDV*	*MAS*	*UAI*
Weak_FTR		**−0.407**	**0.015**	**0.025**	**−0.260**	**−0.221**	**0.038**	**−0.081**	**0.003**	**−0.188**	**−0.166**	**0.249**
Origin	**−0.218**		**0.161**	**0.021**	**0.446**	**0.411**	**0.269**	**0.339**	**−0.375**	**0.515**	**0.514**	**−0.872**
Law	**−0.075**	**0.198**		**−0.192**	**0.409**	**0.176**	**0.656**	**0.606**	**−0.637**	**0.618**	**0.174**	**−0.276**
AD	**0.297**	**0.262**	**−0.133**		**−0.363**	**−0.532**	**−0.589**	**−0.426**	**0.390**	**−0.447**	**−0.221**	**−0.167**
Stkmkt	**0.434**	**0.224**	**0.149**	**0.290**		**0.514**	**0.516**	**0.097**	**−0.386**	**0.504**	**0.240**	**−0.388**
LGDP	**−0.472**	**0.194**	**0.310**	**−0.488**	**−0.270**		**0.695**	**0.530**	**−0.350**	**0.748**	**0.621**	**−0.470**
LGDPC	−0.001	**0.024**	**0.741**	**−0.402**	**0.136**	**0.389**		**0.576**	**−0.793**	**0.672**	**0.207**	0.005
Trust	**−0.249**	**0.496**	**0.749**	**−0.445**	**0.549**	**0.375**	**0.719**		**−0.636**	**0.639**	**0.198**	**−0.061**
PDI	**0.016**	**−0.386**	**−0.760**	**0.117**	**−0.291**	**−0.192**	**−0.592**	**−0.691**		**−0.506**	**−0.410**	**0.203**
IDV	**−0.122**	**0.572**	**0.428**	**−0.620**	**0.619**	**0.874**	**0.766**	**0.702**	**−0.683**		**0.701**	**−0.427**
MAS	**−0.249**	**0.458**	**0.060**	**−0.303**	**0.211**	**0.640**	**0.376**	**0.273**	**−0.371**	**0.665**		**−0.676**
UAI	**0.227**	**−0.736**	**0.102**	**−0.278**	**−0.173**	**−0.426**	**−0.057**	**−0.518**	**0.335**	**−0.600**	**−0.581**	

Panel C: Controlling for the five cultural variables

Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*
Weak_FTR	0.492***	0.581***	0.477***
	(2.60)	(3.58)	(3.65)
Trust	4.115***	4.082***	2.445***
	(3.69)	(4.10)	(3.72)
PDI	0.069	−0.501	−0.912
	(0.07)	(−0.58)	(−1.61)

(The table is continued on the next page.)

TABLE 4 (continued)

Panel C: Controlling for the five cultural variables

Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*
IDV	3.026***	2.781***	0.715
	(3.01)	(3.07)	(1.50)
MAS	2.115***	1.658***	0.250
	(3.58)	(3.17)	(0.80)
UAI	2.742***	3.041***	3.316***
	(3.82)	(4.59)	(6.02)
Origin	0.810	0.793*	0.832***
	(1.53)	(1.69)	(3.33)
Law	−1.399*	−1.009	0.630
	(−1.82)	(−1.46)	(1.56)
AD	0.333	−0.183	−1.286***
	(0.41)	(−0.25)	(−2.69)
Stkmkt	−0.283	−0.092	−0.022
	(−0.83)	(−0.33)	(−0.16)
LGDP	−0.016	0.093	0.214***
	(−0.22)	(1.41)	(4.91)
LGDPC	0.305	0.127	−0.280**
	(1.30)	(0.59)	(−2.20)
Size	0.383***	0.399***	0.187***
	(22.97)	(27.52)	(11.32)
MB	−0.024***	−0.025***	0.000
	(−6.37)	(−7.40)	(0.08)
LEV	0.847***	0.670***	0.640***
	(9.85)	(11.33)	(8.37)
ROA	0.621***	0.676***	0.436***
	(5.66)	(5.67)	(3.15)
Loss	−0.046	−0.071**	−0.310***
	(−1.49)	(−2.23)	(−5.66)
Analyst	0.041***	0.020***	−0.003
	(10.09)	(5.87)	(−1.08)
InstOwn	0.700***	0.961***	0.294***
	(5.39)	(12.26)	(3.80)
EarnVol	−0.073	−0.114**	−0.437***
	(−1.49)	(−2.00)	(−4.51)
Equity	0.014	0.033	0.098**
	(0.38)	(0.93)	(2.20)

(The table is continued on the next page.)

TABLE 4 (continued)

Panel C: Controlling for the five cultural variables

Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*
Interim	0.429***	0.390***	0.071
	(4.64)	(4.09)	(0.33)
Year fixed effects	Included	Included	Included
Industry fixed effects	Included	Included	Included
Observations	92,267	92,267	31,236
Pseudo R^2	0.37	0.24	0.09

Panel D: Comparisons on the economic magnitudes of language FTR and other cultural variables

Dependent variable	(1) *MF_PROP* (*Logistic*)	(2) *MF_FREQ* (*OLS*)	(3) *MF_LongHorizon* (*OLS*)
Weak_FTR	0.085	0.287	0.295
Trust_High	0.152	0.074	−0.159
PDI_High	0.155	0.017	0.229
IDV_High	0.163	−0.061	−0.062
MAS_High	−0.039	−0.052	−0.075
UAI_High	0.127	0.031	0.024
Observations	92,267	92,267	31,236

Notes: This table reports the estimation results of the effect of language FTR on management forecasts after controlling for five other country-level cultural factors, including the measure of societal trust based on the World Values Survey and the four cultural variables from Hofstede (2001), including uncertainty avoidance (*UAI*), masculinity (*MAS*), individualism (*IDV*), and power distance (*PDI*). Panel A reports the summary statistics of the five cultural factors. Panel B reports the correlations between the country-level factors in equation (1) and the five additional cultural factors. We bold the correlation coefficients that are significant with a *p*-value equal to or less than 0.05. Panel C reports the estimation results of equation (1) after controlling for societal trust and the four dimensions of cultural differences across countries from Hofstede (2001), and panel D reports the economic magnitudes of language FTR and the five cultural variables. In panel C, the dependent variable is management forecast propensity (*MF_PROP*) in column (1), management forecast frequency (*MF_FREQ*) in column (2), and long-horizon management forecast frequency (*MF_LongHorizon)* in column (3). Estimated constants are untabulated. In the parentheses below coefficient estimates, we report the robust *t*-statistics based on standard errors adjusted for heteroskedasticity and country×year clustering. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. In panel D, societal trust and the four continuous cultural factors are transformed into dummy variables based on their median values (*Trust_High*, *PDI_High*, *IDV_High*, *MAS_High*, and *UAI_High*). In panel D, we use logit regression in column (1) and OLS regressions in columns (2) and (3). All other variables are as defined in the Appendix.

issuance is driven by a greater demand for forward-looking information from investors who speak weak-FTR languages. However, the documented relation between language FTR and management forecasts could also be driven by the effect of language FTR on managers' own incentive to issue management forecasts. In this section, we explore two settings that allow us to identify within-country variations in the languages spoken by investors to show further evidence that language FTR affects management forecast issuance through influencing investors' demand for forward-looking information. First, we consider FIIs from countries with different language FTR properties to explore how variations in investors' language FTR properties influence firms' management forecasts within each country. Second, we focus on foreign firms with shares traded in the German stock exchanges to examine how the change in the language FTR properties of investors affects management forecast behavior. In addition, similar to other cross-country studies, our main findings suffer from the common concern of omitted variables because it is difficult to control for all the factors that may be correlated with both language FTR and firms' issuance of management forecasts. These two within-country analyses with the inclusion of country fixed effects or even firm fixed effects can help mitigate the concern over unobserved country-level omitted variables driving the documented relation between language FTR and management forecasts.

FIIs and the relation between FTR and management forecasts

We first examine the impact of FIIs speaking different languages with different FTR properties on a firm's management forecast behavior. According to the hypotheses, investors who speak weak-FTR languages are more future-oriented and thus demand more disclosures of forward-looking information compared to those who speak strong-FTR languages. We expect, therefore, that FIIs who speak weak-FTR languages will demand that firms issue more management forecasts, particularly management forecasts with long horizons, compared to those who speak strong-FTR languages. To test this prediction formally, we replace *Weak_FTR* with *FIO_Weak_FTR* and *FIO_Strong_FTR*, and then estimate the regression model of equation (1) after controlling for country fixed effects. The inclusion of country fixed effects in the regressions can alleviate the concern that our main findings are driven by some unobservable country-level omitted variables. Because we control for country fixed effects in this analysis, we drop the three country-level variables (*Law*, *Origin*, and *AD*) that have no variations over time in the regressions. We define *FIO_Weak_FTR* (*FIO_Strong_FTR*) as the aggregated percentage of foreign institutional ownership from weak-FTR (strong-FTR) countries for a given firm in a given year. We obtain the foreign institutional ownership data from the FactSet database.[27] Although foreign institutional ownership is quite small (about 2% and 5% for the mean and 1% and 2% for the median of *FIO_Weak_FTR* and *FIO_Strong_FTR*, respectively) in our sample, it is comparable to that in prior studies (e.g., Bena et al. 2017; Fang et al. 2015). Although institutional investors (domestic and foreign) are minority shareholders, they tend to be the most influential group in terms of their share of trading and shareholder activism.[28]

Panel A of Table 5 reports the regression results. The estimated coefficients on *FIO_Weak_FTR* in columns (1), (2), and (3) are positive and significant, whereas those on *FIO_Strong_FTR* are insignificant in columns (2) and (3). While the coefficient on *FIO_Strong_FTR* is marginally significant in column (1), its magnitude is much smaller than that of the coefficient on *FIO_Weak_FTR*, with the difference in the two coefficients statistically significant at the 1%

27. To control for the possible coverage bias of the FactSet database, we keep only firms with nonzero institutional ownership. Untabulated results are robust if we add back firms with zero institutional ownership in our sample.

28. For example, Fang et al. (2015) show that US institutional ownership affects the global convergence of financial reporting practices for emerging market firms. In their sample, the mean and 3rd quartile of US institutional ownership is only 1% and 0.3%, respectively. Bena et al. (2017) show that greater foreign institutional ownership induces long-term investment in tangible, intangible, human capital, and innovation output. In their sample, foreign institutional ownership has a mean of 2.7% and a median of 0.1% for publicly listed firms in 30 countries, as of 2009.

TABLE 5
Effects of foreign institutional ownership from weak- and strong-FTR countries on management forecasts

Panel A: The level analysis

Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*
FIO_Weak_FTR	3.213***	2.512***	3.684***
	(6.27)	(6.07)	(3.96)
FIO_Strong_FTR	0.390*	−0.004	0.177
	(1.77)	(−0.02)	(0.64)
Stkmkt	0.133	0.117	0.107
	(1.56)	(1.52)	(0.73)
LGDP	5.548***	3.734*	−4.599**
	(2.87)	(1.87)	(−2.04)
LGDPC	−6.768***	−4.796**	3.745
	(−3.21)	(−2.22)	(1.57)
Size	0.236***	0.281***	0.175***
	(15.26)	(16.23)	(7.71)
MB	−0.020***	−0.023***	−0.002
	(−3.74)	(−3.99)	(−0.63)
LEV	0.952***	0.901***	0.583***
	(8.84)	(10.30)	(5.12)
ROA	0.632***	0.662***	0.189
	(4.17)	(4.68)	(0.99)
Loss	−0.047	−0.049	−0.249***
	(−0.91)	(−1.08)	(−3.49)
Analyst	0.035***	0.026***	0.000
	(12.27)	(8.49)	(0.12)
InstOwn	0.985***	1.363***	0.381**
	(11.61)	(12.72)	(2.26)
EarnVol	−0.113	−0.141	−0.525***
	(−1.17)	(−1.17)	(−3.16)
Equity	0.070	0.089**	0.022
	(1.62)	(2.19)	(0.35)
Interim	0.409***	0.418***	0.082
	(3.60)	(3.79)	(0.44)
Year fixed effects	Included	Included	Included
Industry fixed effects	Included	Included	Included
Country fixed effects	Included	Included	Included
Observations	46,682	46,682	15,785
Pseudo R^2	0.27	0.19	0.10

Panel B: The changes analysis

	(1) Δ*MF_PROP*	(2) Δ*MF_FREQ*	(3) Δ*MF_LongHorizon*
Δ*FIO_Weak_FTR*	2.821*	2.939**	−0.535
	(1.77)	(2.43)	(−0.38)
Δ*FIO_Strong_FTR*	0.102	0.932	−0.495
	(0.19)	(1.53)	(−0.86)
Δ*Stkmkt*	0.020	−0.034	0.118***
	(0.38)	(−0.41)	(4.81)

(The table is continued on the next page.)

TABLE 5 (continued)

Panel B: The changes analysis

	(1) ΔMF_PROP	(2) ΔMF_FREQ	(3) ΔMF_LongHorizon
Δ*LGDP*	1.073	−3.836	1.579
	(0.17)	(−0.52)	(0.31)
Δ*LGDPC*	−1.098	4.413	−2.902
	(−0.18)	(0.59)	(−0.58)
Δ*Size*	0.159***	0.150***	0.141***
	(4.59)	(4.37)	(3.84)
Δ*MB*	−0.019***	−0.019**	−0.006
	(−2.72)	(−2.44)	(−0.70)
Δ*LEV*	0.209	0.264	−0.264
	(1.13)	(1.23)	(−1.10)
Δ*ROA*	−0.038	−0.165*	0.033
	(−0.32)	(−1.69)	(0.20)
Δ*Loss*	−0.046	−0.015	−0.151***
	(−1.19)	(−0.35)	(−4.12)
Δ*Analyst*	0.024***	0.041***	0.010
	(3.45)	(6.33)	(1.55)
Δ*InstOwn*	−0.062	0.360	0.408*
	(−0.30)	(1.33)	(1.95)
Δ*EarnVol*	−0.510*	−0.335	0.093
	(−1.71)	(−1.20)	(0.16)
Δ*Equity*	0.012	0.049	0.043
	(0.41)	(1.41)	(1.16)
Δ*Interim*	−0.012	−0.225	0.250**
	(−0.11)	(−1.35)	(2.05)
Year fixed effects	Included	Included	Included
Industry fixed effects	Included	Included	Included
Country fixed effects	Included	Included	Included
Observations	39,018	39,018	14,247
Pseudo R^2	0.01	0.07	0.01

Notes: This table presents the results of estimating the effect of foreign institutional ownership from weak- and strong-FTR countries on management forecasts. Panel A reports the results of the level analysis, and panel B reports the results of the changes analysis. The dependent variable is management forecast propensity (*MF_PROP*) in column (1), management forecast frequency (*MF_FREQ*) in column (2), and long-horizon management forecast frequency (*MF_LongHorizon)* in column (3). *FIO_Weak_FTR* (*FIO_Strong_FTR*) is defined as the aggregated percentage of foreign institutional ownership from weak-FTR (strong-FTR) countries for a given firm in a given year. Estimated constants are untabulated. In the parentheses below coefficient estimates, we report the robust *t*-statistics based on standard errors adjusted for heteroskedasticity and country×year clustering. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. All other variables are defined in the Appendix.

level. This finding is consistent with our expectation that firms with more FIIs from weak-FTR countries exhibit a higher propensity and frequency of issuing management forecasts as well as a higher frequency of issuing long-horizon management forecasts. In contrast, FIIs who speak strong-FTR languages have a limited impact on firms' management forecast practices. We note that the results could be driven by the possibility that FIIs from weak-FTR countries choose to

invest in firms that issue more management forecasts rather than exert an influence on firms' disclosure decisions. If the latter is true, it is still consistent with our argument that investors that speak weak-FTR languages demand more forward-looking information and hence prefer to invest in firms that are forthcoming with forward-looking disclosures.

To further control for the effect of time-invariant confounding factors, we also estimate a changes analysis by regressing the change of management forecast propensity and frequency and the change of the frequency of long-horizon management forecasts on the change of *FIO_Weak_FTR*, *FIO_Strong_FTR*, and the changes of other control variables. We find consistent results that the change in management forecast behavior is overall positively and significantly related to the change in the ownership of FIIs from weak-FTR countries except for the change in the issuance of long-horizon forecasts, but not to the change in the ownership of FIIs from strong-FTR countries. The results are tabulated in panel B of Table 5. We also conduct the analysis using the sample of firms from strong-FTR countries only. In untabulated results, we find that foreign institutional ownership from weak-FTR countries has an even stronger effect on increasing management forecasts for this sample of firms, whereas there is still no significant effect for foreign institutional ownership from strong-FTR countries.

Overall, the results suggest that the ownership by FIIs from weak-FTR countries is associated with more disclosure of forward-looking information. We argue that they either demand that firms issue more forward-looking information or choose to invest in firms with more disclosure of forward-looking information, due to the influence of the FTR property in their languages.[29]

Foreign firms with shares traded in German stock markets and the relation between FTR and management forecasts

We next perform a DiD analysis to examine whether there is any change in management forecast behavior after foreign firms from strong-FTR countries have their shares traded on German stock exchanges, compared to those from weak-FTR countries. Since Germany is a weak-FTR country, foreign firms from strong-FTR countries will experience a change in the FTR property of the language spoken by their investors after their shares are traded in Germany, whereas this is not true for firms from weak-FTR countries. We focus on Germany only, because there are very few foreign firms with shares traded in other weak-FTR countries. When firms from strong-FTR countries have their shares traded in Germany, we expect that German investors, who speak a weak-FTR language, will demand more forward-looking information from these firms. Consequently, we expect to observe an increase in the propensity and frequency of management forecasts as well as the frequency of long-horizon management forecasts after their shares are traded in Germany for firms from strong-FTR countries, compared to those from other weak-FTR countries.

We implement the analysis by including *Strong_FTR*, *TR_Post*, and the interaction term *Strong_FTR*×*TR_Post* in equation (1). *Strong_FTR* is an indicator variable that equals one if a firm is from a strong-FTR country and zero otherwise (i.e., *Strong_FTR* = 1 − *Weak_FTR*). We use *Strong_FTR* instead of *Weak_FTR* in this test to make it easy to interpret the results. *TR_Post* is an indicator variable that is equal to one if a foreign firm has its shares traded in Germany in a given year and zero otherwise.[30] To remove the potential confounding effect of firm-level unobservable time-invariant omitted variables, we also include the firm fixed effects of those

29. It is also possible that foreign institutional investors make their investment decisions based on the language spoken by the firm's executives. To a certain extent, our changes analysis mitigates this concern (assuming that FIIs do not lead to CEO turnover) because we show that the increase in foreign institutional ownership from weak-FTR countries is associated with an increase in management forecast issuance.

30. We apply a broad definition of cross-listing to obtain a larger sample. Specifically, we include both cross-listing and cross-trading firms. We obtain the data from the Capital IQ database.

TABLE 6
Changes in management forecast issuances for foreign firms with shares traded in Germany, a weak-FTR country

Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*
TR_Post	0.108**	0.094	−0.150
	(2.05)	(1.06)	(−1.50)
Strong_FTR×TR_Post	−0.014	0.316**	0.274**
	(−0.22)	(2.42)	(2.45)
Stkmkt	0.025	0.024	−0.025
	(1.49)	(0.93)	(−1.56)
LGDP	2.377***	6.093***	4.679***
	(7.71)	(6.11)	(5.97)
LGDPC	−2.563***	−6.696***	−5.104***
	(−7.35)	(−5.99)	(−5.85)
Size	0.028***	0.080***	0.050***
	(8.90)	(6.77)	(4.39)
MB	−0.001***	−0.003***	−0.002
	(−4.50)	(−4.23)	(−1.56)
LEV	0.063***	0.145***	0.034
	(4.62)	(3.88)	(0.71)
ROA	0.025**	0.138***	0.120***
	(2.51)	(3.83)	(2.84)
Loss	−0.009	−0.047**	−0.102***
	(−1.52)	(−2.44)	(−6.16)
Analyst	0.004***	0.019***	0.005***
	(3.99)	(6.65)	(4.62)
InstOwn	−0.034	−0.277**	−0.087
	(−1.12)	(−1.98)	(−1.42)
EarnVol	−0.002	−0.002	−0.029
	(−1.15)	(−0.83)	(−1.16)
Equity	−0.005	−0.009	0.005
	(−1.22)	(−1.08)	(0.38)
Interim	0.026	−0.007	−0.013
	(1.47)	(−0.15)	(−0.22)
Year fixed effects	Included	Included	Included
Firm fixed effects	Included	Included	Included
Observations	134,644	134,644	41,635
Pseudo R^2	0.53	0.71	0.47

Notes: This table presents the results of estimating the effect of FTR on management forecasts for foreign firms with shares traded in Germany. The dependent variable is management forecast propensity (*MF_PROP*) in column (1), management forecast frequency (*MF_FREQ*) in column (2), and long-horizon management forecast frequency (*MF_LongHorizon)* in column (3). *Strong_FTR* is an indicator variable that equals one if a firm is from a strong-FTR country and zero otherwise. *TR_Post* is an indicator variable that is equal to one if a foreign firm has shares traded in Germany in a given year and zero otherwise. Estimated constants are untabulated. In the parentheses below coefficient estimates, we report the robust *t*-statistics based on standard errors adjusted for heteroskedasticity and country×year clustering. ** and *** denote significance at the 0.05 and 0.01 levels, respectively. All other variables are defined in the Appendix.

foreign firms in our regression in addition to the year fixed effects.[31] In this analysis, we drop the German firms from our sample, resulting in a sample of 134,644 observations.[32]

Table 6 reports the regression results. We observe a positive and significant coefficient on the interaction term *Strong_FTR×TR_Post* in columns (2) to (3). These findings suggest that, relative to firms from weak-FTR countries, firms from strong-FTR countries experience an increase in the frequency of management forecasts and the issuance of long-horizon forecasts after their shares are traded in the stock exchanges in Germany. In addition, the combined coefficients on *TR_Post* and *Strong_FTR×TR_Post* are 0.410 in column (2) and 0.124 in column (3), respectively, which are both statistically significant, suggesting that firms from strong-FTR countries increase their (long-horizon) management forecasts after having their shares traded by German investors, who have a larger demand for forward-looking information. For *MF_PROP* in column (1), we find an insignificant coefficient on *Strong_FTR×TR_Post*, whereas there is a significant and positive coefficient on *TR_Post*. This result seems to suggest that cross-listing on the stock exchanges in Germany has an effect of increasing the tendency of management forecast issuance for firms from both weak-FTR and strong-FTR countries.[33] Since this analysis identifies a change in the FTR properties of languages spoken by investors but not managers, the result suggests that language FTR affects management forecasts through its impact on investors' demand for forward-looking information. The DiD design with the controlling of firm fixed effects can, to a large extent, mitigate the correlated omitted variable concern.[34]

Overall, the findings of these two analyses provide some direct evidence that language FTR affects firms' management forecast practices through its impact on investors' demand for the disclosure of forward-looking information and, at the same time, alleviate the omitted variable concern, although they may not completely eliminate the issue of country-level omitted variables.

Robustness tests

We perform multiple robustness tests. First, we use *Verb_Ratio* and *Sentence_Ratio* as alternative measures of the FTR property of a language. Chen (2013) constructs these two FTR measures by collecting full-sentence weather forecasts from websites in 39 languages. *Verb_Ratio* is measured as the number of verbs that are grammatically future-marked, divided by the total number of future-referring verbs. *Sentence_Ratio* is similarly defined as the number of sentences that contain a grammatical future marker divided by the total number of sentences regarding future weather. The larger the value of *Verb_Ratio* and *Sentence_Ratio*, the stronger the FTR of a language. Hence, we use 1 − *Verb_Ratio* and 1 − *Sentence_Ratio* as two alternative measures of *Weak_FTR*. The results

31. Since we control for firm fixed effects, we do not include the indicator variable *Strong_FTR* in the regression. If we run the regression without firm fixed effects, we obtain a negative and significant coefficient on *Strong_FTR*, which supports our main argument that firms in strong-FTR countries are less likely to issue management forecasts and, if they do, issue less frequently.

32. In this sample, there are 5,155 observations of foreign firms with shares traded on the stock exchanges in Germany in a given year, with 4,212 of them from strong-FTR countries and the rest from weak-FTR countries.

33. Since Germany is a high-trust country, firms from low-trust countries may experience a change in their management forecast behavior when cross-listed in Germany due to the effect of societal trust. We thus define a dummy variable, which takes a value of one if the home country of the cross-listed firm is a low-trust country defined based on median societal trust level (*Trust_Low*), and include this variable and its interaction term with *TR_Post* in the regressions. We obtain similar untabulated results.

34. We also conduct a changes analysis to examine the change in the disclosure behavior of firms cross-listed on the stock exchanges in Germany around the year of cross-listing using three-year averages in the period prior to the cross-listing and the period after the cross-listing (German is a weak-FTR language). We find consistent results that after their shares are traded on the stock exchanges in Germany, firms from strong-FTR countries exhibit a significantly greater increase in management forecast propensity and frequency compared to firms from weak-FTR countries. However, we do not find significant results for long-horizon management forecasts in the changes analysis, which may be due to the sample size being too small. For brevity, we do not tabulate these results.

TABLE 7
Robustness tests: Alternative language FTR measures

	Weak_FTR = 1 – Verb_Ratio			*Weak_FTR = 1 – Sentence_Ratio*		
Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*	(4) *MF_PROP*	(5) *MF_FREQ*	(6) *MF_LongHorizon*
Weak_FTR	1.218***	1.272***	0.959***	1.340***	1.358***	0.970***
	(6.37)	(7.51)	(7.24)	(7.15)	(8.18)	(7.41)
Origin	1.672***	1.449***	0.317***	1.737***	1.509***	0.366***
	(8.14)	(7.81)	(3.05)	(8.38)	(8.16)	(3.52)
Law	1.624**	1.787**	2.512***	1.835**	1.956***	2.540***
	(1.97)	(2.32)	(4.41)	(2.34)	(2.66)	(4.55)
AD	−1.584***	−1.946***	−1.904***	−1.642***	−1.996***	−1.976***
	(−4.65)	(−6.04)	(−7.03)	(−4.89)	(−6.30)	(−7.30)
Stkmkt	−0.863***	−0.603**	−0.360**	−0.754***	−0.503*	−0.325*
	(−2.90)	(−2.22)	(−2.05)	(−2.69)	(−1.96)	(−1.88)
LGDP	0.094	0.202**	0.382***	0.103	0.211***	0.390***
	(1.06)	(2.34)	(7.06)	(1.22)	(2.59)	(7.44)
LGDPC	0.859***	0.715***	−0.282	0.735***	0.604**	−0.325*
	(3.04)	(2.79)	(−1.56)	(2.79)	(2.52)	(−1.86)
Size	0.367***	0.380***	0.187***	0.367***	0.380***	0.187***
	(19.96)	(24.04)	(12.29)	(20.22)	(24.33)	(12.37)
MB	−0.028***	−0.029***	−0.002	−0.028***	−0.030***	−0.002
	(−6.67)	(−7.80)	(−0.72)	(−6.84)	(−7.91)	(−0.73)
LEV	0.994***	0.820***	0.714***	1.012***	0.833***	0.716***
	(11.06)	(12.77)	(10.69)	(11.23)	(12.90)	(10.73)
ROA	0.687***	0.721***	0.411***	0.683***	0.718***	0.408***
	(6.45)	(6.40)	(3.26)	(6.40)	(6.37)	(3.24)
Loss	−0.167***	−0.173***	−0.323***	−0.164***	−0.171***	−0.322***
	(−4.30)	(−4.85)	(−6.36)	(−4.23)	(−4.77)	(−6.32)
Analyst	0.046***	0.023***	0.000	0.046***	0.023***	0.000
	(10.62)	(6.79)	(0.13)	(10.74)	(6.77)	(0.09)

(The table is continued on the next page.)

TABLE 7 (continued)

	Weak_FTR = 1 – Verb_Ratio			*Weak_FTR = 1 – Sentence_Ratio*		
Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*	(4) *MF_PROP*	(5) *MF_FREQ*	(6) *MF_LongHorizon*
InstOwn	0.366**	0.709***	0.102	0.386**	0.734***	0.112
	(2.08)	(5.83)	(1.08)	(2.27)	(6.43)	(1.21)
EarnVol	−0.153***	−0.181***	−0.445***	−0.154***	−0.181***	−0.443***
	(−2.59)	(−2.83)	(−4.87)	(−2.58)	(−2.82)	(−4.85)
Equity	0.052	0.072**	0.088**	0.051	0.071**	0.088**
	(1.48)	(2.17)	(2.00)	(1.44)	(2.13)	(2.00)
Interim	0.591***	0.583***	0.086	0.635***	0.623***	0.099
	(3.76)	(3.70)	(0.44)	(4.11)	(4.00)	(0.52)
Year fixed effects	Included	Included	Included	Included	Included	Included
Industry fixed effects	Included	Included	Included	Included	Included	Included
Observations	85,167	85,167	33,874	85,167	85,167	33,874
Pseudo R^2	0.33	0.21	0.08	0.34	0.21	0.08

Notes: This table reports regression results for robustness tests using alternative language FTR measures. The dependent variable is management forecast propensity (*MF_PROP*) in columns (1) and (4), management forecast frequency (*MF_FREQ*) in columns (2) and (5), and long-horizon management forecast frequency (*MF_LongHorizon)* in columns (3) and (6). Estimated constants are untabulated. In the parentheses below coefficient estimates, we report the robust *t*-statistics based on standard errors adjusted for heteroskedasticity and country×year clustering. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. All variables are defined in the Appendix.

TABLE 8
Robustness tests: subsample analyses and country-mean regressions

	Exclude US firms			Exclude firms from Belgium, Hong Kong, Singapore, and Switzerland			Country mean		
Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*	(4) *MF_PROP*	(5) *MF_FREQ*	(6) *MF_LongHorizon*	(7) *MF_PROP*	(8) *MF_FREQ*	(9) *MF_LongHorizon*
Weak_FTR	1.055***	1.177***	0.759***	1.254***	1.297***	0.932***	0.096***	0.255***	0.114**
	(8.37)	(9.00)	(6.67)	(7.62)	(8.61)	(6.89)	(2.93)	(2.76)	(2.41)
Origin	1.543***	1.584***	0.451***	1.643***	1.574***	0.519***	0.167***	0.512***	0.188***
	(7.48)	(7.79)	(4.14)	(8.04)	(8.46)	(5.66)	(3.84)	(3.48)	(2.92)
Law	0.054	0.401	1.064***	0.332	0.459	0.619	0.056	0.237**	0.133**
	(0.11)	(0.81)	(2.63)	(0.64)	(0.91)	(1.51)	(1.60)	(2.26)	(2.43)
AD	−3.438***	−3.775***	−2.604***	−2.015***	−2.464***	−2.313***	−0.349***	−1.220***	−0.566***
	(−6.37)	(−7.13)	(−6.96)	(−5.30)	(−7.28)	(−7.94)	(−3.24)	(−3.31)	(−3.08)
Stkmkt	−0.000	−0.013	−0.238***	−0.550**	−0.355*	−0.062	−0.010	−0.049*	−0.038***
	(−0.01)	(−0.55)	(−8.34)	(−2.26)	(−1.70)	(−0.48)	(−1.15)	(−1.93)	(−2.89)
LGDP	0.398***	0.463***	0.278***	0.101*	0.168***	0.203***	0.001	0.067	0.028
	(6.64)	(7.21)	(4.53)	(1.83)	(3.19)	(6.12)	(0.04)	(0.98)	(0.81)
LGDPC	0.506***	0.468***	−0.107	0.637***	0.539***	−0.042	−0.012	−0.108	−0.063
	(6.19)	(5.57)	(−1.52)	(7.32)	(6.59)	(−0.64)	(−0.46)	(−1.34)	(−1.52)
Size	0.272***	0.292***	0.144***	0.354***	0.376***	0.180***	0.035*	0.125**	0.040
	(17.50)	(19.30)	(11.18)	(21.66)	(26.20)	(12.80)	(1.81)	(2.36)	(1.54)
MB	−0.030***	−0.032***	−0.003	−0.033***	−0.034***	−0.003*	−0.002**	−0.006**	−0.001
	(−6.79)	(−7.03)	(−1.29)	(−8.61)	(−9.42)	(−1.68)	(−2.11)	(−2.65)	(−1.26)
LEV	0.623***	0.613***	0.249**	0.843***	0.714***	0.573***	−0.748***	−2.189***	−1.298***
	(6.46)	(6.34)	(2.47)	(10.07)	(11.55)	(7.60)	(−2.96)	(−2.97)	(−3.38)
ROA	0.645***	0.642***	0.018	0.690***	0.729***	0.329***	−0.599	−1.007	−0.512
	(4.87)	(4.80)	(0.13)	(7.13)	(7.09)	(2.73)	(−1.35)	(−0.82)	(−0.94)
Loss	−0.068	−0.050	−0.196***	−0.148***	−0.153***	−0.290***	−0.189**	−0.332	−0.181
	(−1.19)	(−0.90)	(−4.16)	(−4.42)	(−4.92)	(−5.92)	(−2.28)	(−1.41)	(−1.26)
Analyst	0.041***	0.040***	0.013***	0.047***	0.027***	−0.001	0.033***	0.054***	0.027***
	(12.33)	(14.77)	(4.75)	(12.54)	(8.14)	(−0.35)	(4.30)	(2.74)	(2.80)

(The table is continued on the next page.)

TABLE 8 (continued)

	Exclude US firms			Exclude firms from Belgium, Hong Kong, Singapore, and Switzerland			Country mean		
Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*	(4) *MF_PROP*	(5) *MF_FREQ*	(6) *MF_LongHorizon*	(7) *MF_PROP*	(8) *MF_FREQ*	(9) *MF_LongHorizon*
InstOwn	0.528**	0.565**	−0.149	0.389**	0.707***	0.241***	−0.072	0.258	−0.136
	(2.03)	(2.30)	(−0.81)	(2.31)	(6.03)	(2.90)	(−0.47)	(0.55)	(−0.62)
EarnVol	−0.102**	−0.109**	−0.387***	−0.133***	−0.167***	−0.508***	−0.277	−0.632	−0.560*
	(−2.36)	(−2.37)	(−2.83)	(−2.75)	(−3.09)	(−5.38)	(−1.20)	(−1.08)	(−1.83)
Equity	0.041	0.051	0.073	0.029	0.044	0.071*	−0.156*	−0.551**	−0.287***
	(1.16)	(1.50)	(1.60)	(0.92)	(1.43)	(1.78)	(−1.69)	(−2.21)	(−2.73)
Interim	0.855***	0.901***	0.380***	0.656***	0.672***	0.365**	0.136	0.422**	0.117
	(6.25)	(6.89)	(2.81)	(5.42)	(5.79)	(2.43)	(1.65)	(2.39)	(1.12)
Year fixed effects	Included	Included	Included	Included	Included	Included	Included	Included	Included
Industry fixed effects	Included	Included	Included	Included	Included	Included	Not Included	Not Included	Not Included
Observations	104,177	104,177	23,657	117,341	117,341	38,297	386	386	356
Pseudo R^2	0.24	0.17	0.10	0.35	0.23	0.08	0.67	0.67	0.62

Notes: This table reports regression results for the robustness tests to address the imbalanced country distribution. The dependent variable is management forecast propensity (*MF_PROP*) in columns (1), (4), and (7); management forecast frequency (*MF_FREQ*) in columns (2), (5), and (8); and long-horizon management forecast frequency (*MF_LongHorizon)* in columns (3), (6), and (9). Estimated constants are untabulated. In the parentheses below coefficient estimates, we report the robust *t*-statistics based on standard errors adjusted for heteroskedasticity and country×year clustering. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. All variables are defined in the Appendix.

TABLE 9
Robustness tests: Coverage bias of Capital IQ

	Keep firm-years with nonzero analyst following or institutional ownership			Keep country-years with MF			Keep firm-years after the first year a firm issues MF			Keep firm-years with MF
Dependent variable	(1) *MF_PROP*	(2) *MF_FREQ*	(3) *MF_LongHorizon*	(4) *MF_PROP*	(5) *MF_FREQ*	(6) *MF_LongHorizon*	(7) *MF_PROP*	*(8)* *MF_FREQ*	*(9)* *MF_LongHorizon*	*(10)* *MF_FREQ*
Weak_FTR	0.639***	0.753***	0.853***	0.864***	0.951***	0.754***	0.535***	0.731***	0.860***	0.653***
	(4.36)	(5.33)	(7.12)	(6.50)	(7.57)	(7.96)	(4.91)	(6.70)	(8.50)	(5.39)
Origin	0.734***	0.835***	0.500***	1.074***	1.143***	0.471***	0.756***	0.922***	0.493***	0.866***
	(4.90)	(6.24)	(5.62)	(6.89)	(7.93)	(5.78)	(6.57)	(9.11)	(6.18)	(8.41)
Law	0.654	0.930*	1.101**	0.483	0.767	1.126***	0.871	1.288**	1.243***	1.578***
	(1.11)	(1.66)	(2.51)	(0.98)	(1.61)	(2.82)	(1.57)	(2.43)	(2.63)	(3.36)
AD	−2.138***	−2.537***	−2.379***	−2.041***	−2.450***	−2.470***	−1.380***	−2.200***	−2.417***	−3.210***
	(−5.39)	(−6.68)	(−6.32)	(−4.92)	(−6.75)	(−8.57)	(−4.00)	(−6.99)	(−7.36)	(−8.95)
Stkmkt	−0.139***	−0.139***	−0.208***	−0.034	−0.041*	−0.230***	−0.008	−0.019	−0.253***	−0.041**
	(−4.06)	(−4.25)	(−5.68)	(−1.30)	(−1.92)	(−7.77)	(−0.53)	(−1.43)	(−9.41)	(−2.47)
LGDP	0.123**	0.222***	0.242***	0.137***	0.222***	0.256***	0.174***	0.317***	0.301***	0.343***
	(2.30)	(4.03)	(6.41)	(3.31)	(5.05)	(7.99)	(4.17)	(7.10)	(8.86)	(8.33)
LGDPC	0.364***	0.273***	−0.105	0.513***	0.437***	−0.120*	0.391***	0.266***	−0.134*	0.001
	(3.89)	(3.07)	(−1.45)	(6.33)	(5.58)	(−1.83)	(4.58)	(3.14)	(−1.65)	(0.01)
Size	0.123***	0.165***	0.165***	0.311***	0.342***	0.177***	0.252***	0.285***	0.186***	0.243***
	(7.41)	(10.69)	(9.05)	(18.55)	(21.20)	(12.96)	(11.92)	(14.73)	(12.09)	(16.58)
MB	−0.019***	−0.021***	−0.000	−0.032***	−0.033***	−0.002	−0.025***	−0.024***	0.002	−0.016***
	(−4.26)	(−4.93)	(−0.06)	(−9.51)	(−10.23)	(−0.93)	(−6.90)	(−7.14)	(0.51)	(−5.84)
LEV	0.869***	0.711***	0.749***	0.713***	0.650***	0.573***	0.383***	0.308***	0.653***	0.117**
	(9.06)	(9.00)	(7.53)	(8.66)	(10.23)	(7.81)	(3.32)	(4.17)	(8.03)	(2.23)
ROA	0.882***	0.940***	0.493***	0.625***	0.683***	0.342***	0.464***	0.489***	0.298**	0.383***
	(5.48)	(5.63)	(3.22)	(7.03)	(7.36)	(2.89)	(4.72)	(5.91)	(2.11)	(4.06)
Loss	−0.131***	−0.156***	−0.327***	−0.059	−0.076**	−0.320***	−0.100*	−0.101**	−0.314***	−0.045
	(−3.70)	(−4.31)	(−5.35)	(−1.42)	(−2.00)	(−6.95)	(−1.96)	(−2.23)	(−5.75)	(−0.95)
Analyst	0.043***	0.031***	−0.002	0.041***	0.027***	0.001	0.020***	0.011***	−0.002	0.007***
	(12.62)	(10.53)	(−0.66)	(12.26)	(8.56)	(0.25)	(5.78)	(3.90)	(−0.60)	(2.73)

(The table is continued on the next page.)

TABLE 9 (continued)

	Keep firm-years with nonzero analyst following or institutional ownership			Keep country-years with MF			Keep firm-years after the first year a firm issues MF			Keep firm-years with MF
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	*(8)*	*(9)*	*(10)*
Dependent variable	*MF_PROP*	*MF_FREQ*	*MF_LongHorizon*	*MF_PROP*	*MF_FREQ*	*MF_LongHorizon*	*MF_PROP*	*MF_FREQ*	*MF_LongHorizon*	*MF_FREQ*
InstOwn	0.819***	1.028***	0.248**	0.657***	0.910***	0.174*	0.494***	0.635***	0.087	0.641***
	(5.25)	(8.75)	(2.06)	(4.35)	(7.45)	(1.92)	(2.64)	(5.69)	(0.94)	(9.85)
EarnVol	−0.099*	−0.169**	−0.603***	−0.078**	−0.104***	−0.478***	−0.117**	−0.165***	−0.640***	−0.250***
	(−1.67)	(−2.17)	(−5.04)	(−2.29)	(−2.61)	(−5.50)	(−2.18)	(−2.68)	(−6.02)	(−3.01)
Equity	−0.033	−0.002	0.136***	0.048	0.062**	0.078**	0.091**	0.110***	0.074*	0.049
	(−0.72)	(−0.05)	(2.95)	(1.59)	(2.14)	(2.06)	(2.01)	(2.87)	(1.82)	(1.24)
Interim	0.632***	0.676***	0.261	0.717***	0.734***	0.290**	0.891***	0.978***	1.061***	0.840***
	(5.08)	(5.41)	(1.35)	(6.02)	(6.24)	(1.87)	(6.07)	(6.30)	(5.93)	(7.50)
Year fixed effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Industry fixed effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Observations	49,636	49,636	24,630	137,651	137,651	43,934	50,655	50,655	32,988	43,934
Pseudo R^2	0.22	0.15	0.08	0.30	0.21	0.10	0.19	0.13	0.10	0.13

Notes: This table reports regression results for the robustness tests to address the potential coverage bias of Capital IQ. The dependent variable is management forecast propensity (*MF_PROP*) in columns (1), (4), and (7); management forecast frequency (*MF_FREQ*) in columns (2), (5), (8), and (10); and long-horizon management forecast frequency (*MF_LongHorizon)* in columns (3), (6), and (9). In the parentheses below coefficient estimates, we report the robust *t*-statistics based on standard errors adjusted for heteroskedasticity and country×year clustering. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively. All variables are defined in the Appendix.

reported in Table 7 show positive and significant coefficients on *Weak_FTR* across all columns, confirming the main results reported in Table 3.

Second, the number of US firms is disproportionally large in our sample. To alleviate the concern that our results are driven by observations from the United States, we eliminate all US firms and reestimate our main regressions. We continue to document a positive and significant coefficient on *Weak_FTR* as shown in Table 8, columns (1) to (3).

Third, in Belgium, Hong Kong, Singapore, and Switzerland, both strong- and weak-FTR languages are widely used languages.[35] We follow Chen (2013) and Lewis (2009) to classify these four countries as weak-FTR countries based on their most dominant language. However, since both weak- and strong-FTR languages are widely spoken within the same country, it is unclear how language FTR affects the management forecast behavior in these countries. We thus reestimate our main regressions by excluding firms in these countries from the sample and obtain robust results as reported in columns (4) to (6) of Table 8.[36] We also conduct within-country analyses using the two multilingual countries, Belgium and Switzerland, to examine whether firms located in strong-FTR versus weak-FTR regions within the same country exhibit any significant differences in their management forecast behavior, but do not find any evidence. One possible reason is that firms located in different regions of multilingual countries may have investors from all over the country, not just investors located in their own regions, which reduces the effect of the regional language attribute on investor demand for management forecasts.[37]

Fourth, we reestimate equation (1) at the country level. Given the unbalanced representations of different countries in our sample, the country-level analysis allows us to treat each country-year as one observation, regardless of how many firms a country has in a given year. We report the regression results in columns (7) to (9) of Table 8. Despite a much smaller sample size, we continue to document a positive and significant coefficient on *Weak_FTR*.

Last, we address the potential coverage bias of Capital IQ by checking our results using different subsamples by excluding firms or countries that are not likely to be covered by Capital IQ. If the variation in Capital IQ coverage correlates with language FTR, this can bias our results.[38] Thus, we conduct a battery of robust checks to ensure that our results are not driven by the coverage bias of Capital IQ. We first drop any observation with zero analyst following or zero institutional ownership. Next, we remove observations from a country-year with no management forecasts in Capital IQ. In another subsample, we include firm-year observations only after that

35. Belgium has three official languages, including Dutch, French, and German, among which Dutch and German are weak-FTR languages, and French is a strong-FTR language. Hong Kong has two official languages: Chinese (weak-FTR) and English (strong-FTR). Singapore has as many as four official languages, with two of them (Malay and Chinese) being weak-FTR languages and the other two (English and Tamil) being strong-FTR languages. Switzerland has four official languages, including German, French, Italian, and Romansh, among which German is a weak-FTR language.

36. In an untabulated analysis, we define *Multi* as an indicator variable that equals one for firms domiciled in these four countries, and zero otherwise, and add the interaction term *Weak_FTR*×*Multi* to our main regression models. We obtain a negative and significant coefficient on the interaction term with any of the three management forecast variables as the dependent variable, suggesting that the weak-FTR attribute in the official languages of these four countries has a weaker effect on increasing management forecast issuance.

37. Although we are able to replicate the significant results documented by Chen et al. (2017) and Kim et al. (2017) using firms located in different language FTR regions within Switzerland, our study is different from theirs mainly because we examine the disclosure of forward-looking information, which is driven primarily by investor demand. In contrast, the cash holding policies (Chen et al. 2017) and the tax planning policies (Kim et al. 2017) are largely determined by managers' own preferences. To the extent that firms located in different language regions are more likely to recruit managers from their local region, it is more likely to find significant results using different language regions within the same countries to examine the language effect on corporate policies mainly driven by managers' own preferences.

38. The Capital IQ coverage issue is more likely to bias against our findings because many of our sample firms are from English-speaking countries (e.g., United States, United Kingdom, Canada), which are strong-FTR countries and have high Capital IQ coverage.

firm's first appearance in the database. We also use a subsample of firm-year observations with the issuance of at least one management forecast to examine the effect of language FTR on forecast frequency. All the results discussed above continue to hold as reported in Table 9.[39]

5. Conclusions

Does language shape thought? Whorf (1956) proposes that the characteristics of each language foster a way of perceiving, analyzing, and acting in the world. Chen (2013) shows that individuals who speak weak-FTR languages engage in more future-oriented economic behaviors than speakers of strong-FTR languages do. We examine how language heterogeneity in FTR affects investors' demand for corporate disclosures of forward-looking information. Because investors who speak weak-FTR languages are more future-oriented, they naturally want to know more about the future performance of the firms they invest in. Furthermore, investors in weak-FTR countries have a higher demand for management forecasts to monitor managers' future-oriented decisions and assess their ability to respond to future changes in business and economic environments. By the same token, we also expect investors in weak-FTR countries to have a greater demand for longer-horizon management forecasts compared to those in strong-FTR countries. Our main empirical results are supportive of these conjectures.

Besides the primary finding, we provide additional evidence to help alleviate the omitted variable concern, a limitation inherent in all cross-country studies. Although we show the robustness of our results to controlling for a large number of country-level cultural factors, our results could still be confounded by unobservable country-level factors, given we are not able to control for country fixed effects. Therefore, we conduct several additional analyses, including (i) country-mean regressions, (ii) examining the effect of within-country variations in language FTR measured by foreign institutional ownership from weak- and strong-FTR countries, and (iii) DiD analysis focusing on the change in management forecast behavior of foreign firms after having their shares traded in German stock market. We obtain consistent results that help alleviate the omitted variable concern and provide reassuring evidence for our conjecture that the language spoken by investors affects their demand for forward-looking information and, in turn, affects corporate disclosures of forward-looking information.

Our paper augments several recent studies (Chen et al. 2017; Kim et al. 2017, 2020; Liang et al. 2018) to expand our understanding of how language affects cross-country differences in corporate behaviors. We admit that it is impossible to fully disentangle the effect of a country-level language property from the effects of other country-level institutional factors in a cross-country research design like ours. We thus caution readers against drawing strong causal inferences from our results.

39. We obtain largely robust results for all the specifications discussed in this section when we control for societal trust and the four country-level cultural factors from Hofstede (2001) in the regressions. Our analyses based on institutional ownership from weak-FTR versus strong-FTR countries also yield robust results for most of the specifications discussed here. For the analyses based on firms cross-listed in Germany, the results are robust except for the specifications of (i) keeping only firm-years with nonzero analyst following or institutional ownership and (ii) keeping firm-years after the first year a firm issues management forecasts, which could be due to the relatively small sample size of these analyses. For brevity, the results discussed above are not tabulated.

Appendix 1: Variable definitions

Variable	Definition
Management forecast variables	
MF_PROP	An indicator variable equal to one if the firm issues a forecast in a given year and zero otherwise
MF_FREQ	The total number of management forecasts issued by a firm in a given year
MF_LongHorizon	Long-horizon forecasts, measured as the number of annual forecasts that are issued before the beginning of fourth quarter by a firm in a given year[40]
Country-level variables	
Weak_FTR	An indicator variable equal to one if a country has weak FTR and zero otherwise
Origin	An indicator variable equal to one if a country is a common-law country and zero otherwise
Law	Law and order, which assesses both the strength and impartiality of the legal system and the popular observance of the law (Source: International Country Risk Guide)
AD	Antidirector index, which equals to the sum of six subindices at the country level that assess the possibility of proxy voting by mail, blocking shares before a shareholder meeting, cumulative voting, oppressed minority, preemptive rights, and the percentage of share capital required to call an extraordinary shareholder meeting (Country level, time invariant) (Source: Djankov et al. 2008)
Stkmkt	Ratio of market value of all listed firms to GDP of a country
LGDP	The log of a country's GDP in millions of US dollars
LGDPC	The log of a country's GDP per capita in US dollars
Trust	A variable calculated from the responses to the World Values Survey question: "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" We recode the responses to this question to one if a survey participant reports that most people can be trusted, and zero otherwise, and then calculate the mean of the responses in each country-year. Higher index values correspond to higher trust (Source: World Values Survey)
PDI	Measure of power distance from Hofstede (2001)
IDV	Measure of individualism from Hofstede (2001)
MAS	Measure of masculinity score from Hofstede (2001)
UAI	Measure of uncertainty avoidance from Hofstede (2001)
Firm-level variables	
Size	The log of a firm's market value in millions of US dollars
MB	Ratio of market value to book value of common equity
LEV	Ratio of total debt to total assets
ROA	Ratio of earnings before extraordinary items to total assets
Loss	An indicator variable equal to one if the firm reports losses in a given year and zero otherwise
Analyst	Total number of analysts following a firm (from I/B/E/S)
InstOwn	Percentage of shares (end-of-year) held by all types of institutional investors (from FactSet)
EarnVol	Volatility of earnings, which is defined as the standard deviation of income before extraordinary items scaled by total assets in the past five years
Equity	An indicator variable equal to one if the firm issues equity during the year and zero otherwise
Interim	An indicator variable equal to one if the firm has quarterly reporting in the year and zero otherwise

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