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Jaehyeon Kim

Yongtae Kim

Santa Clara University, y1kim@scu.edu

Jian Zhou

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Languages and Earnings Management

Jaehyeon Kim^a, Yongtae Kim^{b,*}, and Jian Zhou^a

^a *Shidler College of Business, University of Hawaii at Manoa, Honolulu, HI 96822*

^b *Leavey School of Business, Santa Clara University, Santa Clara, CA 95053*

Abstract

We predict that managers of firms in countries where languages do not require speakers to grammatically mark future events perceive future consequences of earnings management to be more imminent, and therefore, they are less likely to engage in earnings management. Using data from 38 countries where languages differ on how they encode time, we find that accrual-based earnings management and real earnings management are less prevalent where there is weaker time disassociation in the language. Our analysis based on the birthplace information of U.S. firms' CEOs confirms the relation between languages and earnings management. Our study is the first to examine the relation between the grammatical structure of languages and financial reporting characteristics, and it extends the literature on the effect of informal institutions on corporate actions.

JEL Classification: D83, M41, Z10

Keywords: institutions, languages, earnings management, accrual-based earnings management, real earnings management

* Corresponding author. Tel.: + 1-408-554-4667; fax: + 1-408-554-2331.

E-mail address: y1kim@scu.edu (Y. Kim).

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Languages and Earnings Management

1. Introduction

In this paper, we investigate how languages are associated with earnings management in different countries. Languages differ in the way they encode time.¹ Following the linguistics literature, we separate languages into two types based on the way they encode time: strong future-time reference (FTR) languages, such as English, and weak FTR languages, such as German. Strong FTR languages require speakers to mark the timing of events in a distinct way, whereas weak FTR languages do not. In a weak FTR language, future events are talked about in the present tense. This may lead these speakers to perceive future events to be relatively less distant. According to Dahl (2000) and Thieroff (2000), marking future events mandatorily through future tense, for example, by using the verb “will” in English, reduces a person’s concern about the future, because it increases the psychological distance from and reduces the psychological importance of the future.

Consistent with this argument, Chen (2013) finds that when the grammatical structure of a language disassociates the future from the present, speakers of the language also disassociate the future from the present in their behavior. Specifically, Chen (2013) shows that people whose language does not require them to grammatically mark future events (weak FTR languages) save more than those whose language requires them to grammatically mark future events (strong FTR languages). He also shows that people speaking weak FTR languages engage in more future-oriented behavior, such as more exercise and less smoking, than those speaking strong FTR

¹ The following example is from Chen (2013). “For example, a German speaker predicting rain can naturally do so in the present tense, saying: *Morgen regnet es* which translates to ‘It rains tomorrow’. In contrast, English would require the use of a future marker like ‘will’ or ‘is going to’, as in: ‘It will rain tomorrow’.” German is denoted as a weak future-time reference (FTR) language, because it does not require speakers to encode a distinction between present and future events.

languages. Given that weak FTR languages reduce psychological distance from the future (Dahl, 2000; Thieroff, 2000), managers in countries with weak FTR languages are likely to perceive future consequences of earnings management, such as possible restatements, enforcement actions, litigations, and dismissals, to be more imminent. Thus, we argue that firms in countries with weak FTR languages are likely to engage in less earnings management than firms in countries with strong FTR languages.

Using a large sample of firms from 38 countries, we examine whether accrual-based and real earnings management are more or less prevalent in countries with weak FTR languages than in countries with strong FTR languages. After controlling for various properties of formal institutions (legal origin, economic growth, ownership concentration, and creditor rights) and country-specific cultural characteristics (uncertainty avoidance, masculinity, individualism, and power distance), we show that firms associated with weak FTR languages engage in less accrual-based and real earnings management than firms in countries with strong FTR languages. Through country-level regressions, we also show that weak FTR languages are associated with more extensive external equity markets and less earnings management aggregated at the country level.

Although we control for various country-specific characteristics, our regressions are fundamentally cross-country and may omit important differences between countries not captured by these controls. To further isolate linguistic effects from confounds that vary on the country level, such as taxes, institutions, and capital markets, we also conduct a within-country analysis based on the birthplace information of U.S. firms' CEOs. We code the languages by foreign-born CEOs' countries of origin. Because we focus on U.S. firms only, we are able to control for the effects of formal institutions which differ across countries. Fernández (2011) suggests that when individuals emigrate from their native country to a new country, their cultural beliefs and values

travel with them, but their external economic and institutional environments are left behind. We find that CEOs born in countries with weak FTR languages engage in less earnings management than CEOs born in countries with strong FTR languages, confirming our results in cross-country regressions.

Our results are robust to excluding U.S. firms and to excluding firms in Belgium and Singapore, where a significant percentage of population uses different languages. Our results are also robust when we replace a dichotomous classification of FTR in languages with continuous measures based on a word-frequency analysis of online texts. Additional controls for cross-country differences in insider trading restrictions and compliance between financial and tax reporting do not change the tenor of the results. We further find that the negative relation between weak FTR languages and accrual-based earnings management is less pronounced for firms that issue American Depository Receipts (ADRs), suggesting that international exposure attenuates the relation between languages and earnings management.

Linguistically induced bias in time perception and lower precision of beliefs about time can lead weak FTR speakers to apply lower discount rates (Chen, 2013), making future cash flows and earnings relatively more valuable to weak FTR speakers than to strong FTR speakers. Under this scenario, weak FTR speakers are less likely to undertake income-increasing earnings management that shifts earnings from the future to the present, but could engage in more earnings management that shifts earnings from present to future periods. Concerns about the future negative consequences of earnings management, however, encourage weak FTR speakers to avoid both income-creasing and income-decreasing earnings management. Our evidence shows that both income-increasing and income-decreasing earnings management are negatively associated with weak FTR languages, suggesting that concerns about future negative consequences of earnings

management dominate the discount rate effect.

Our study makes several important contributions to the literature. First, we contribute to the emerging literature that examines the effects of informal institutions on corporate behavior. Although studies that examine the effects of formal institutions on corporate policies are abundant, evidence on the effects of informal institutions, such as culture, values, and religion, is relatively scarce. Prior studies that investigate the effects of informal institutions focus on religion (e.g., McGuire et al., 2012) and culture (e.g., Han et al., 2010). Our study is the first to show the systematic relation between languages and earnings management.

Second, our study is the first to combine accounting and the grammatical structure of languages, more specifically, how languages mark time, and attempt to build a link between languages and cross-country variances in earnings management. A few recent studies examine the relation between linguistic complexity and disclosure. Lundholm et al. (2014), for example, find that foreign firms listed on U.S. stock exchanges write clearer text in the Management Discussion and Analysis section of their 10-Ks and write more readable text in their earnings press releases than do comparable U.S. firms. Brochet et al. (2016) find a negative relation between linguistic opacity and the investor reaction to conference calls. While these studies focus on how linguistic complexity associates managerial choice of and investors' reactions to disclosure, we add to the literature by examining how the grammatical structure of languages relates to financial reporting characteristics.

Finally, by identifying an important non-market factor that is significantly associated with both accrual-based and real earnings management, we also contribute to the earnings management literature. We show that linguistically induced bias influences earnings management practice across countries.

The remainder of the paper is organized as follows. Section 2 provides the literature review and hypothesis development. Section 3 discusses the data and research design. We present the results in Section 4. Section 5 concludes the paper.

2. Literature review and hypothesis development

Compared with other creatures, human beings at birth are not properly equipped for survival. During their first ten to twelve years, however, they begin to learn how to live, absorbing necessary information from their environment through language (Hofstede et al., 2010). Language is an element that influences human beings earlier than any other societal elements, such as religion, culture, and formal institutions. Given this, language could have a considerable effect on human behavior.

Languages differ as to *how* they mark future events. English marks the future with either “will” or “be going to.” Kalaallisut (West Greenlandic) has at least 28 distinct constructions to mark future time. In contrast, Finnish rarely distinguishes between present and future time. Languages also differ as to *when* they mark future events. Jakobson and Halle (1956) note that “languages differ essentially in what they *must* convey and not in what they *may* convey.” Weak future time reference (FTR) and strong FTR are differentiated by the obligatory marking of future events (Thieroff, 2000). Germanic languages, except for English, make grammatical FTR optional in making predictions. According to Comrie (1985), in English, sentences describing future events without FTR can be used only for planned/scheduled/habitual events or for events with law-like properties of the world, whereas in German, sentences describing future events without FTR are common.

The linguistic relativity principle, or the Sapir–Whorf hypothesis, is the idea that differences in the way languages encode cultural and cognitive categories affect the way people

think, so that speakers of different languages will tend to think and behave differently depending on the languages they use (Whorf, 1956). Chen (2013) shows that speakers of weak FTR languages tend to engage in more future-oriented behavior. Such speakers tend to save more, exercise more, and smoke less than those who speak strong FTR languages. In a controlled intertemporal choice experiment using German-speaking and Italian-speaking primary school children in a northern Italian city in which half of the inhabitants speak German, and the other half speak Italian, Sutter et al. (2015) find strong differences in the intertemporal choices of the two groups of children. More specifically, weak FTR German-speaking primary school children are about 46% more likely than strong FTR Italian-speaking children to delay gratification. These differences persist even when they control for personal characteristics and family background, which provides further support for Chen (2013).

Although Chen (2013) and Sutter et al. (2015) show the effect of FTR languages on individuals' economic behavior, little evidence exists on the relation between languages and corporate policies. Liang et al. (2014) find that firms in countries with weak FTR languages show a higher level of corporate social responsibility than those with strong FTR languages. Chen et al. (2015) hypothesize that speaking about future events in the present tense leads firms to perceive future events of relevance for corporate behavior, such as adverse credit market conditions, to be less distant. Consistent with this argument, they find that firms in weak-FTR language countries have higher cash holdings for reasons not attributable to industry, firm, or country characteristics.²

Given that speakers of weak FTR languages show more future-oriented behavior (Chen, 2013; Liang et al., 2014; Chen et al., 2015; Sutter et al., 2015), we predict that firms in countries with weak FTR languages are likely to engage in less earnings management than firms in countries

² Ellahie et al. (2016) find that FTR also influences preferences regarding monetary rewards. Specifically, they document that top executives whose linguistic origin has strong FTR prefer variable pay.

with strong FTR languages. Weak FTR speakers would care more about future consequences of earnings management, compared to strong FTR speakers. Dhal (2000) and Thieroff (2000) suggest that weak FTR language reduces psychological distance from the future.

Earnings management often leads to negative future consequences in the form of restatements, enforcement actions, litigations, and/or dismissals of executives. Earnings management is likely to be subject to the regulatory enforcement, such as accounting and auditing enforcement releases (AAER) or restatements. Managers misstating earnings are also likely to encounter legal troubles. Karpoff et al. (2008) find that 93% of the responsible individuals in AAER firms leave the firms by the end of the enforcement period and suffer serious legal penalties and monetary losses. Desai et al. (2006) report that restatement firms have higher management turnover and that the management of restatement firms experiences difficulties in finding subsequent employment. Palmrose and Scholz (2004) demonstrate that 38% of restatement firms are subject to litigation against not only the company, but also the management, directors, and auditors.

Compared to strong FTR speakers, weak FTR speakers are likely to perceive future negative consequences of earnings management to be more imminent, as their languages do not sharply disassociate the future from the present, and therefore, they are likely to engage in less earnings management. Thus, we expect a negative relation between weak FTR languages and accrual-based earnings management. We state our first hypothesis in an alternative form:

H1: Firms in countries with weak FTR languages engage in less accrual-based earnings management than those in countries with strong FTR languages.

Managers exercise discretion not only via their choice of accounting estimates and methods; i.e., accrual-based earnings management, but also through operational decisions (real earnings management). Survey evidence in Graham et al. (2005) suggests that managers prefer real earnings

management to accrual-based earnings management, because auditors or regulators cannot challenge real economic actions to meet earnings targets. Cohen et al. (2008) and Cohen and Zarowin (2010) note that real earnings management is less likely to draw auditors' or regulators' scrutiny than accrual-based earnings management. Roychowdhury (2006), however, suggests that firm value can diminish through manipulation of real activities, because earnings management through sub-optimal operating decisions can have a negative impact on future cash flows. Cohen and Zarowin (2010) find that the impact of real earnings management on subsequent operating performance is more severe than the impact of accrual-based earnings management in the seasoned equity offering context.

Given that the negative impact of real earnings management in the current period is deferred into the future periods and speakers of weak FTR languages are associated with more future-oriented behavior (Chen, 2013; Liang et al., 2014; Chen et al., 2015; Sutter et al., 2015), we predict that firms in countries with weak FTR languages are likely to engage in less real earnings management. Our second hypothesis, stated in an alternative form, is as follows:

H2: Firms in countries with weak FTR languages engage in less real earnings management than those in countries with strong FTR languages.

3. Data and research design

3.1. Sample and data

We obtain data on FTR of each language from the European Science Foundation's Typology of Languages in Europe (EUROTYP) project (Chen, 2013). Future-time reference is a focal area of the EUROTYP Theme Group on Tense and Aspect, which studies the typological and areal distribution of grammaticalized FTR. Chen (2013) notes that the EUROTYP project is the most extensive typological program to study the cross-linguistic grammaticalization of FTR.

Weak-FTR languages are those that do not require the marking of future-time in prediction-based contexts, and strong-FTR languages are those that require the marking of future time in all but a small set of circumstances. Appendix A shows the distribution of weak and strong FTR languages across countries. In our sensitivity analysis, we also employ online-text based coding of FTR used in Chen (2013). Chen (2013) constructs two measures of FTR in each language based on a word-frequency analysis of text of weather forecasts retrieved from the web. The sentence ratio (verb ratio) is calculated as the number of sentences (verbs) that are grammatically future-marked, divided by the total number of sentences (verbs) regarding weather forecasts.

We collect firm-level financial data from Compustat North America and Compustat Global over the 2002-2011 period. The sample represents all firms covered by Compustat North America and Compustat Global with the necessary data for the empirical analyses. We require firm-year observations to have the necessary data to calculate abnormal accruals, abnormal operating cash flows, and firm-level control variables. We exclude firms in the financial industry and firms in a country with fewer than 50 firm-year observations. We obtain country-level variables that represent formal institutions and national culture from La Porta et al. (1998), World Bank, Hofstede (2001), Denis and Xu (2013), and Blaylock et al. (2015).

Table 1 reports the sample distribution by country. The final sample consists of 132,909 firm-year observations across 38 countries. The US has the most firm-year observations, with 30,133 observations (about 22.67% of the sample). Japan, India, and Taiwan provide the next three largest numbers of sample observations, with 20,871, 13,390, and 8,036, respectively. Colombia has the fewest observations, with 98.

Insert Table 1 Here

3.2. Research design

To obtain an empirical measure of accrual-based earnings management, we employ the performance-adjusted discretionary accruals model, following Kothari et al. (2005). To estimate the discretionary component of accruals for any given set of country–year observations, we first estimate the following model using ordinary least squares (OLS) for the sample firms at time t for each country:³

$$\frac{TACC_{i,t}}{TA_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{TA_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{TA_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{TA_{i,t-1}} + \beta_4 \frac{NI_{i,t}}{TA_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

TACC: total accruals, equal to net income minus operating cash flows

TA: total assets

ΔREV : change in sales

ΔREC : change in accounts receivable

PPE: property, plant, and equipment

NI: net income

The residual from this model is discretionary accruals (*DA*). We use the absolute value of discretionary accruals (*ABSDA*) for our main analyses, as earnings management can involve either income-increasing or income-decreasing accruals (Klein, 2002). Considering the possibility that FTR languages have an asymmetric effect on accrual-based earnings management, however, we also examine income-increasing and income-decreasing discretionary accruals separately, by dividing the sample into firms with positive discretionary accruals and those with negative discretionary accruals.

To test H1, we estimate the following regression:

$$ABSDA_{i,t} = \alpha_0 + \alpha_1 Weak\ FTR + \alpha_2 CONTROL_{i,t} + \eta_1 D_{industry} + \eta_2 D_{year} + \varepsilon_{i,t} \quad (2)$$

where *ABSDA* is the absolute value of discretionary accruals and *Weak FTR* is an indicator variable equal to one for countries with weak FTR languages, and zero otherwise.

We include various country- and firm-level control variables to isolate linguistic effects

³ The underlying assumption of the cross-country design is that partitioning the data based on country allows for inter-country heterogeneity and intra-country homogeneity in fundamental performance.

from confounding factors that may affect earnings management. We control for legal origin (*Common Law*), because common law countries exhibit a higher level of shareholder protection and greater shareholder protection may deter earnings management (Leuz et al., 2003). We also control for creditor rights (*Creditor Right*) for a similar reason. Shleifer and Vishny (1986) show that active monitoring arising from ownership concentration deters managers from indulging in value-destroying activities. Thus, we control for ownership concentration (*Ownership Concentration*). We include GDP growth (*GDP Growth*) in the model to control for the effect of macroeconomic conditions on earnings management. In addition to formal institutions that represent law, regulations, and market conditions, because Han et al. (2010) show that national culture affects earnings management, we also control for various dimensions of national culture, such as uncertainty avoidance (*Uncertainty Avoidance*), masculinity (*Masculinity*), individualism (*Individualism*), and power distance (*Power Distance*).

We also include firm-level control variables that are known to be related to earnings management. Specifically, we control for the natural logarithm of total assets (*Size*), because large firms tend to engage in less earnings management as a large number of investors and analysts monitor larger firms more closely (Lobo and Zhou, 2001). We control for leverage (*Leverage*), because DeFond and Jiambalvo (1994) and Sweeney (1994) show that companies tend to manage earnings to avoid debt covenant violations. We include cash flows from operations deflated by sales (*CFO*), because Becker et al. (1998) show that operating cash flows are negatively associated with discretionary accruals. To control for the potential effect of financial performance (McNichols, 2000; Kothari et al., 2005), we include return on assets (*ROA*) and an indicator for loss firms (*Loss*). Finally, we include industry and year fixed effects to control for heterogeneity across industries and time. We provide variable definitions in Appendix B.

Following prior research (Roychowdhury, 2006; Cohen et al., 2008; Cohen and Zarowin, 2010; McGuire et al. 2012), we use abnormal cash flows to proxy for real earnings management. As in other studies, we decompose the operating cash flows into normal and abnormal portions by estimating the following equation for each country and year:⁴

$$\frac{CFO_{i,t}}{Assets_{i,t-1}} = \gamma_0 + \gamma_1 \frac{1}{Assets_{i,t-1}} + \gamma_2 \frac{Sales_{i,t}}{Assets_{i,t-1}} + \gamma_3 \frac{\Delta Sales_{i,t}}{Assets_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

CFO: cash flows from operations

Assets: total assets

Sales: sales

$\Delta Sales$: change in sales

The residual from this regression is abnormal cash flows from operations (*RCFO*). Acceleration of the timing of sales and/or generation of additional unsustainable sales through increased price discounts or more lenient credit terms will lead to lower current-period operating cash flows, resulting in abnormally lower operating cash flows. Instead, managers may reduce discretionary expenditures such as R&D, advertising, and maintenance to increase current period earnings. Reductions of discretionary expenditures will lower cash outflows, resulting in abnormally higher operating cash flows. Regardless of the direction, a deviation from optimal operating decisions will lead to negative future consequences. Considering both negative and positive deviations from the predicted level of operating cash flows, we use the absolute value of abnormal cash flows from operations in our main analysis. We also examine negative and positive deviations separately by dividing the sample into firms with negative abnormal cash flows from operations and those with positive abnormal cash flows from operations.

To test H2, we estimate the following regression:

⁴ Our results using regressions of accrual-based earnings management and real earnings management estimated at the country-industry-year level are qualitatively the same as those tabulated.

$$ABSRCFO_{i,t} = \lambda_0 + \lambda_1 Weak FTR + \lambda_2 CONTROL_{i,t} + \theta_1 D_{industry} + \theta_2 D_{year} + \varepsilon_{i,t} \quad (4)$$

where *ABSRCFO* is the absolute value of abnormal cash flows from operations and *Weak FTR* is an indicator variable equal to one for countries with weak FTR languages, and zero otherwise. Control variables are defined earlier.

3.3. Descriptive statistics

Table 2 reports the descriptive statistics for the dependent and independent variables. We winsorize all continuous variables at the top and bottom 1% of their distributions to mitigate the influence of outliers. The mean and median of the absolute value of discretionary accruals (*ABSDA*) are 0.0808 and 0.0478, respectively, which are comparable to those reported in prior studies (e.g., Xie 2001; Han et al. 2010). The mean and median of the absolute value of abnormal cash flows from operations (*ABSRCFO*) are 0.1035 and 0.0610, respectively. The mean of *Weak FTR* is 0.4184, suggesting that 41.84% of firm-year observations are from countries with weak FTR languages. 61% of firm year observations are from common law countries. The mean (median) ownership concentration is 27% (20%). As to firm-level variables, the mean and median firm size are 7.1437 and 7.0658, respectively. The average leverage ratio is 61%. The mean values of operating cash flows and return on assets are negative, while their median values are positive. About 28% of firm-year observations experience losses.

Insert Table 2 Here

Table 3 shows the Pearson correlations among the dependent and independent variables. Most correlations are significant at the 1% level. The correlation between the absolute value of discretionary accruals (*ABSDA*) and *Weak FTR* is -0.1116, which provides preliminary support for H1 that firms in weak FTR countries engage in less accrual-based earning management. The absolute value of discretionary accruals (*ABSDA*) is positively correlated with *Common Law*,

Ownership Concentration, GDP Growth, and Individualism. ABSDA is negatively associated with *Creditor Right, Uncertainty Avoidance, Masculinity, and Power Distance*. As far as the firm-level variables are concerned, *Size, CFO, and ROA* are negatively correlated with *ABSDA*, and *Leverage* and *Loss* are positively correlated with *ABSDA*.

The correlation between *ABSRCFO* and *Weak FTR* is -0.1688, which provides preliminary support for H2 that firms in weak FTR countries engage in less real earnings management. *ABSRCFO* is positively correlated with *Common Law, Ownership Concentration, GDP Growth, Individualism, Leverage, and Loss* and negatively associated with *Creditor Right, Uncertainty Avoidance, Masculinity, Power Distance, Size, CFO, and ROA*.

Insert Table 3 Here

4. Empirical results

4.1. FTR of languages and earnings management

Table 4 presents the result from estimating equation (2), which links accrual-based earnings management and the FTR of languages, as well as the result from estimating equation (4), which links real earnings management and the FTR of languages. We cluster standard errors by country in these regressions and other cross-country regressions. In the first column, where the dependent variable is the absolute value of discretionary accruals (*ABSDA*), *Weak FTR* is negatively related to *ABSDA* at the 1% significance level, suggesting that firms in countries with weak FTR languages engage in less accrual-based earnings management than those in countries with strong FTR languages. This result supports H1. Considering that the sample mean of *ABSDA* is 8.1% of total assets, the coefficient of -0.0195 translates into a 24.1% decrease in the absolute value of discretionary accruals for firms in countries with weak FTR languages, which is economically

significant. Among the control variables, ownership concentration is significantly negatively related to the absolute value of discretionary accruals, which is consistent with Shleifer and Vishny's (1986) finding that greater ownership concentration in firms often prevents managers from indulging in value-destroying activities due to active monitoring by these investors. *ABSDA* is positively associated with *GDP Growth* at the 1% significance level. Firms in countries characterized as having higher levels of uncertainty avoidance, individualism, or power distance engage in less earnings management, while firms in countries with higher levels of masculinity engage in more earnings management. As far as the firm-level control variables are concerned, firms with larger size, lower leverage, higher cash flows, and greater profitability manage earnings less through discretionary accruals, which is consistent with findings in prior studies.⁵

In the second column, where the dependent variable is the absolute value of abnormal cash flows from operations (*ABSRCFO*), we find that *Weak FTR* is negatively related to *ABSRCFO* at the 1% significance level.⁶ This result is consistent with H2 that firms in countries with weak FTR languages engage in less real earnings management than those in countries with strong FTR languages. The difference in *ABSRCFO* between firms in countries with weak and strong FTR languages is about 2% of total assets, which is economically meaningful, given that the sample mean of *ABSRCFO* is 10.4% of total assets. *ABSRCFO* is negatively associated with *Uncertainty Avoidance*, *Individualism*, *Power Distance*, *Size*, *CFO*, *ROA* and *Loss*, and positively associated with *Leverage*. In summary, the results in Table 4 suggest that firms in countries with weak FTR languages manage earnings less through accruals and real operating activities than firms in countries

⁵ We check for potential multicollinearity issues in our regressions. The largest Variance Inflation Factor is 6.18 in our regressions, well below the commonly accepted threshold level of 10 for severe multicollinearity.

⁶ The number of firm-year observations used for the analysis of abnormal cash flows from operations is slightly larger than that used for the analysis of discretionary accruals, due to different data restrictions for calculating earnings management proxies.

with strong FTR languages.

Insert Table 4 Here

4.2. Reconciliation with country-level evidence in prior studies

In this section, we examine whether our results are robust to country-level regressions similar to those in Leuz et al. (2003) and La Porta et al. (1997). Leuz et al. (2003) calculate an aggregate measure of earnings management in each country by averaging ranks across four earnings management measures: (1) the median ratio of the firm-level standard deviations of operating income and operating cash flow, both scaled by lagged total assets; (2) the Spearman correlation between the change in accruals and the change in cash flow from operations, both scaled by lagged total assets; (3) the median ratio of the absolute value of accruals and the absolute value of the cash flow from operations; and (4) the number of “small profits” divided by the number of “small losses” for each country. They find that the aggregate earnings management measure is negatively associated with the Anti-director Rights Index and legal enforcement. We regress the aggregate earnings management measure on weak FTR and other country-level controls, including various formal and informal institutions, as in Table 4. We also control for the Anti-director Rights Index and legal enforcement. The number of countries included in this analysis is 28, for which aggregate earnings management measures are available from Leuz et al. (2003). The results are reported in the first column of Table 5. As shown, the coefficient on *Weak FTR* is negative and statistically significant, consistent with the results in Table 4. That is, weak FTR languages are associated with a lower level of earnings management.⁷

⁷ We also control for anti-director rights and legal enforcement in our firm-level regressions. In untabulated results, the negative relation between weak FTR languages and earnings management remains significant, even with additional controls for anti-director rights and legal enforcement. We do not include anti-director rights and legal enforcement in our main regressions because a high correlation between the Anti-director Index and the common law indicator (0.66) leads to multicollinearity concerns.

Insert Table 5 Here

Our findings suggest that firms in countries with strong FTR languages, such as the US, are on average more short-term oriented and engage in more earnings management than firms in countries with weak FTR languages. An attentive reader may ask how the results reconcile with the fact that English-speaking countries, such as the US and the UK, have more highly valued firms and that these firms exhibit much better performance than those in other countries.⁸ Holmstrom and Kaplan (2003), for example, find that the U.S. economy and stock market perform well, both on an absolute basis and relative to other countries, over the past two decades.

La Porta et al. (1997) examine the relation between each country's capital market size and the character of legal rules and enforcement. They show that the capital market is larger in countries with stronger investor protection. Our results suggest that weak FTR is associated with less earnings management. More transparent financial reporting should lead to a more active external equity market. Although anecdotal evidence suggests that English-speaking countries (e.g., the US and the UK) have larger capital markets and weak FTR countries (e.g., Germany) have relatively smaller equity markets, not all countries with strong FTR languages have extensive equity markets. Leveraging on the country-level regressions, as in La Porta et al. (1997), we examine the relation between external market capitalization of equity and FTR languages. Specifically, we regress the ratio of externally held market capitalization to gross national product (GNP) for 1994, obtained from La Porta et al. (1997), on *Weak FTR* and country-level controls. The second column of Table 5 reports the results. We find that the coefficient on *Weak FTR* is positive and statistically significant at the 5% level, suggesting that after controlling for other

⁸ We thank the editor for directing our attention to this issue.

country-level formal and informal institutions, weak FTR languages are positively associated with external equity market development.⁹

4.3. Evidence based on the U.S. firm CEOs' birthplace information

Although we include various country- and firm-level controls, our regressions are fundamentally cross-country and may omit differences among countries not captured by these controls. To further isolate linguistic effects from confounds that vary on the country level, such as taxes, capital markets, and other institutions, we implement a within-country analysis based on the birthplace data of U.S. firms' CEOs. Fernández (2011) suggests that when individuals emigrate from their native country to a new country, they leave their economic and institutional environment behind. Thus, by focusing on foreign-born U.S. firms' CEOs, we can isolate the effect of language from the effect of institutions in the CEOs' home countries. We search the CEOs from each of the U.S. S&P 1,500 firms from Marquis Who's Who and code the languages by foreign-born CEOs' countries of origin. Not all CEOs disclose their birthplace information in Marquis Who's Who, and we lose a significant number of observations for this analysis. The final sample includes 4,781 firm-year observations (4,812 observations for the analysis of abnormal cash flows from operations) from 744 unique firms with CEOs born in 37 different countries.¹⁰

Table 6 presents the results. We include controls for CEO's gender (*Female* indicator) and age (*Age*), in addition to firm-level controls. Standard errors are clustered by country of birth. The

⁹ In an alternative specification, we include a set of controls from Table IV of La Porta et al. (1997) in place of the formal and informal institutions used in Table 5. The coefficient on *Weak FTR* remains significantly positive in untabulated results.

¹⁰ We also collect data on CEO changes in our sample. Of 4,781 firm-year observations, 363 firm-year observations are associated with CEO changes. We drop firm-years if the birthplace information of the departing CEO or the incoming CEO is not available from Marquis Who's Who, which leaves 172 firm-year observations. Of 172 firm-year observations, 162 observations involve changes of CEOs from a strong FTR speaker to a strong FTR speaker, 5 involve changes of CEOs from strong to weak FTR speakers, and the remaining 5 involve changes of CEOs from weak to strong FTR speakers. The number of changes from strong to weak FTR speakers and the number of changes from weak to strong FTR speakers are too small to expect meaningful results from an analysis of CEO changes.

first column presents the result for accrual-based earnings management, and the second column presents the result for real earnings management. We find that both accrual-based earnings management and real earnings management are negatively associated with weak FTR languages, confirming the cross-country results in Table 4. Thus, the results in Table 6 further support our evidence that weak FTR speakers engage in less earnings management than strong FTR speakers.

Insert Table 6 Here

4.4. Sensitivity Analysis

In this section, we provide several robustness checks of our results by considering alternative samples, alternative proxies for FTR languages, additional controls, and the effect of international exposure on the relation between FTR languages and earnings management. Panel A of Table 7 reports the results based on alternative samples. The US accounts for the largest number of observations, with 30,133 observations and 22.67% of the sample. To ensure that our results are not driven by U.S. firms, we exclude them from the sample and re-estimate the regressions. The results in the first two columns of Panel A are qualitatively the same as those in Table 4, suggesting that our results are not driven by U.S. firms.

Belgium has three official languages: Dutch, French, and German. As a first language, Dutch (weak FTR) is spoken by about 55% of the population, French (strong FTR) is spoken by about 36% of the population, and German (weak FTR) is spoken by about 0.4% of the population. Singapore has four official languages: Malay (weak FTR), Chinese (weak FTR), Tamil (strong FTR), and English (strong FTR). In each of these countries, the effect of FTR language on earnings management is unclear, because both weak and strong FTR languages are spoken within the same country.¹¹ Thus, we estimate regressions excluding Belgian and Singaporean firms from the sample

¹¹ In our main analyses, Belgium is classified as a weak FTR country because Dutch is the most dominant language; Singapore is classified as a weak FTR country because Chinese is spoken by the largest percentage of its residents.

and report the results in the last two columns of Panel A. We find that the coefficients on *Weak FTR* are negative and significant in both regressions, confirming that firms in countries with weak FTR languages engage in less accrual-based and real earnings management. The coefficients on *Weak FTR* are larger in magnitude than the coefficients in Table 4, suggesting that excluding Belgian and Singaporean firms further clarifies the relation between FTR languages and earnings management. Thus, we exclude Belgian and Singaporean firms in subsequent sensitivity analyses.

Our results so far are based on *Weak FTR*, which is an indicator variable. In Panel B of Table 7, we present the results with continuous measures of FTR strength based on word-frequency analysis of text retrieved from the web. Chen (2013) calculates the sentence ratio (verb ratio) as the number of sentences (verbs) that are grammatically future-marked, divided by the total number of sentences (verbs) in online texts of weather forecasts. We multiply the sentence ratio and the verb ratio by -1 so that a greater value represents weaker FTR. The first (last) four columns of Panel B reports the results based on the sentence ratio (verb ratio). We find that the coefficient on *Sentence Ratio* is negative and significant only in the discretionary accruals regression, while the coefficient on *Sentence Ratio* is negative but insignificant at conventional levels in the real earnings management regression. We further interact *Sentence Ratio* with *Weak FTR* and find that the coefficient on the interaction term is negative and statistically significant in both the discretionary accruals regression and the real earnings management regression. The sums of the coefficient on *Sentence Ratio* and the coefficient on the interaction term are significant at conventional levels. The negative coefficients on the interaction term suggest that the effect of *Sentence Ratio* on earnings management is more pronounced among weak FTR countries.

The results with *Verb Ratio* are similar. We find that the coefficient on *Verb Ratio* is negative and significant in the discretionary accruals regression, while the coefficient on *Verb Ratio* is negative

but insignificant at conventional levels in the real earnings management regression. We further interact *Verb Ratio* with *Weak FTR* and find that the coefficient on the interaction term is negative and statistically significant in both regressions. The sums of the coefficient on *Verb Ratio* and the coefficient on the interaction term are significant at conventional levels in both regressions. The negative coefficient on the interaction term suggests that the effect of *Verb Ratio* on earnings management is more pronounced among weak FTR countries. Overall, the results in Panel B suggest that our results are robust to alternative measures of FTR languages.¹²

Although we include numerous country- and firm-level controls, other factors, such as insider trading restrictions and compliance between financial and tax reporting, may influence the relation between FTR languages and earnings management. We obtain data on insider trading restrictions in each country from Denis and Xu (2013) and book-tax conformity measures from Blaylock et al. (2015). Panel C presents the results when we control for insider trading restrictions (*Insider Trading Restriction*) and book-tax conformity (*Book-Tax Conformity*). Inclusion of *Insider Trading Restriction* and *Book-Tax Conformity* reduces the number of observations to 111,785 firm-years from 25 countries. The results in Panel C show that the negative relation between weak FTR languages and earnings management is robust to additional controls.

In Panel D, we examine the effect of international exposure on the association between national languages and accrual-based/real earnings management to gain further insights into the role of languages. More specifically, we examine whether exposure to English, a strong FTR language, weakens the negative relation between weak FTR languages and earnings management. We include in the regressions an indicator variable for a foreign firm's common or ordinary shares being traded as *ADRs* and the interaction of *Weak FTR* and *ADR* and report the results in Panel D. In the first column,

¹² The results are similar if we use normalized decile ranks of *Sentence Ratio* and *Verb Ratio*.

where the dependent variable is accrual-based earnings management, the coefficient on *Weak FTR* is negative and significant at the 1% level. The coefficient on the interaction term is positive and significant at the 5% level. In the second column, where real earnings management is the dependent variable, the coefficient on *Weak FTR* is negative and significant at the 1% level, but the coefficient on the interaction term, although it is positive, is statistically insignificant. The positive coefficient on the interaction term in the first column suggests that the negative relation between weak FTR language and accrual-based earnings management is weaker when firms are exposed to an English-speaking environment, consistent with our prediction.¹³

Insert Table 7 Here

4.5. *Additional Analyses*

4.5.1. *Analyses based on signs of accrual-based and real earnings management*

Chen (2013) suggests that a linguistically induced bias in time perception and the precision of beliefs about time lead to differences in economic behavior between weak and strong FTR speakers. Weak FTR speakers perceive future events to be less distant, leading to a lower discount rate. Weak FTR speakers also hold less precise beliefs about the timing of future events, leading to beliefs that are in line with more dispersed distributions. Both lower discount rates and more dispersed distributions lead to a higher present value of future cash flows and earnings. In accrual-based earnings management, managers make inter-temporal choices. Managers make income-increasing accruals at the expense of future earnings. Income-decreasing accruals shift current earnings to future periods. If weak FTR speakers' biased time perception and weaker precision

¹³ The results are qualitatively the same if we exclude U.S. firms from the sample. The results in Table 7, Panel D should be interpreted with caution. At the conceptual level, an ADR firm would behave differently only if it is from a weak FTR country. If it is from a strong FTR country, exposure to another strong FTR language would not have a significant effect. In fact, the insignificant coefficient on ADR in the accrual-based earnings management regression in the first column is consistent with this argument. We thank the referee for this insight.

about time lead to higher present values of future cash flows and earnings, these speakers are less likely to shift earnings from the future to the present, because future earnings are more valuable to them than to strong FTR speakers, suggesting that weak FTR speakers are less likely to make income-increasing accrual decisions than strong FTR speakers. According to this argument, weak FTR speakers may engage in more earnings management that shifts earnings from present to future periods. That is, weak FTR speakers may engage in less income-increasing earnings management, but more income-decreasing earnings management. As discussed earlier, however, weak FTR speakers might feel that the negative future consequences of earnings management are more imminent. Furthermore, if weak FTR speakers do not sharply disassociate the future from the present, they are less likely to be motivated to shift earnings between future and present periods to begin with. Thus, weak FTR speakers may avoid not only income-increasing earnings management but also income-decreasing earnings management.

To test the opposite predictions about the effect of weak FTR languages on income-decreasing earnings management, following Cohen et al. (2008) and Kim et al. (2012), we estimate equation (2) for firms with income-increasing discretionary accruals and those with income-decreasing accruals separately. The results are reported in Panel A of Table 8. The first two columns of Panel A report the results for firm-year observations with positive and negative discretionary accruals, respectively. Because the dependent variable is still the absolute value of discretionary accruals, the negative coefficient on *Weak FTR* in the first (second) column suggests that firms in countries with weak FTR languages engage in less income-increasing (income-decreasing) earnings management through accruals. We find that the coefficient on *Weak FTR* is negative and significant at the 1% level in both columns 1 and 2. Thus, the results suggest that firms in countries with weak FTR languages engage in less income-increasing and income-

decreasing earnings management than those in countries with strong FTR languages.

In the next two columns of Panel A, we report the results for the firm-year observations with positive and negative abnormal cash flows from operations separately. As discussed earlier, generating additional unsustainable sales through increased price discounts or more lenient credit terms leads to abnormally low current-period operating cash flows, while reducing discretionary expenditures results in abnormally high operating cash flows. The third and the fourth columns of Panel A report the results of estimating equation (4) for firm-year observations with negative abnormal operating cash flows and those with positive abnormal operating cash flows, respectively. The dependent variable is *ABSRCFO* in both regressions, and therefore, the negative coefficient on *Weak FTR* in the third (fourth) column suggests that firms in countries with weak FTR languages engage in less real earnings management through price discounts or more lenient credit terms (through reducing discretionary expenditures). We find that the coefficient on *Weak FTR* is negative and significant at the 1% level in both regressions.

In an alternative research design, we estimate multinomial logistic regressions to test the likelihood that firms in countries with weak FTR languages might be in the extreme *DA* or *RCFO* quartiles. This specification considers simultaneously, but separately, the likelihood of positive and negative discretionary accruals (abnormal cash flows from operations). Firm-year observations in the middle two quartiles are classified as the benchmark group. We estimate a model predicting the likelihood that a firm will be in the top quartile *DA* (*RCFO*) group and a model predicting the likelihood that a firm will be in the bottom quartile *DA* (*RCFO*) group. The results are reported in Table 8, Panel B. As shown in the first (third) column, firms in countries with weak FTR languages are less likely than those in countries with strong FTR languages to be in the top *DA* (*RCFO*) quartile group. Weak FTR firms are also less likely to be in the bottom *DA* (*RCFO*) quartile group.

These results are consistent with those in Panel A and suggest that weak FTR speakers avoid not only income-increasing earnings management but also income-decreasing earnings management. It appears that concerns about future negative consequences arising from earnings management dominate the effect of differential discount rates that weak and strong FTR speakers apply to future earnings and cash flows.

Insert Table 8 Here

4.5.2. *Timely recognition of economic losses*

Although this paper focuses mainly on the relation between FTR in languages and earnings management, we also consider the implications of FTR in languages for accounting conservatism, an important attribute of accounting information. We expect weak FTR speakers to accelerate their recognition of economic losses more, because they perceive negative consequences of delaying losses to be more imminent. To test this prediction, we adopt Ball and Shivakumar's (2005) framework and regress changes in earnings in year t (ΔNI_t) on changes in earnings in year $t-1$ (ΔNI_{t-1}), an indicator for the negative changes in earnings in year $t-1$ ($D\Delta NI_{t-1}$), and the interaction of changes in earnings and the indicator for the negative earnings changes ($\Delta NI_{t-1} * D\Delta NI_{t-1}$). In this framework, timely recognition of gains and losses is reflected in the reversal of income increases and decreases due to the transitory nature of economic income (Ball and Shivakumar 2005). A negative coefficient on the interaction term, $\Delta NI_{t-1} * D\Delta NI_{t-1}$, suggests that economic losses are recognized in a timelier fashion than gains. We interact all variables (i.e., ΔNI_{t-1} , $D\Delta NI_{t-1}$, and $\Delta NI_{t-1} * D\Delta NI_{t-1}$) with *Weak FTR*, as well as the country- and firm-level controls. If weak FTR speakers recognize economic losses timelier than strong FTR speakers, then the coefficient on the triple interaction term, *Weak FTR** $\Delta NI_{t-1} * D\Delta NI_{t-1}$, will be significantly negative.

Table 9 reports the results. The first column reports the results without *Weak FTR* and

control variables. The second column presents the results with control variables as well as their interactions with ΔNI_{t-1} , $D\Delta NI_{t-1}$, and $\Delta NI_{t-1} * D\Delta NI_{t-1}$, but without *Weak FTR*. In both columns the coefficient on $\Delta NI_{t-1} * D\Delta NI_{t-1}$ is negative and significant, confirming accounting conservatism in our sample. The third column of Table 9 reports the results from the analysis that examines the effect of *Weak FTR* on accounting conservatism. As predicted, the coefficient on the triple interaction is negative and significant at the 5% level, whereas the coefficient on $\Delta NI_{t-1} * D\Delta NI_{t-1}$ is negative but statistically insignificant. The sum of the coefficient on $\Delta NI_{t-1} * D\Delta NI_{t-1}$ and the coefficient on the triple interaction term, $Weak\ FTR * \Delta NI_{t-1} * D\Delta NI_{t-1}$, is negative and significant. Thus the results suggest that firms in countries with weak FTR languages recognize economic losses in a timelier manner than those in countries with strong FTR languages. Conditional conservatism limits managers' incentives and ability to overstate financial statements (Watts 2003). Thus, the positive relation between weak FTR languages and timely recognition of economic losses is consistent with the negative relation between weak FTR languages and income-increasing earnings management.¹⁴ We hastily add, however, that our analysis of accounting conservatism is exploratory and therefore the results should be interpreted with caution.

Insert Table 9 Here

5. Conclusion

Prior studies that examine cross-country variations in earnings management focus on legal institutions (Leuz et al., 2003) and informal institutions, such as culture (Han et al., 2010).

¹⁴ Because conditional conservatism does not necessarily mean income-decreasing earnings management, the results in Table 9 are not inconsistent with the negative relation between weak FTR languages and income-decreasing earnings management. While income-decreasing earnings management leads to potential restatements, reputation loss, and less-than-optimal operating decisions, timely loss recognition does not necessarily result in negative future consequences.

Although language is an element that influences human beings earlier than other elements, such as culture, religion, and formal institutions, and therefore have considerable effects on human behavior (Hofstede et al., 2010), not much is known as to how language relates to financial reporting characteristics of firms across countries.

Languages differ in how they encode time. In strong future time reference (FTR) languages, sentences describing future events without FTR are rare. In contrast, weak FTR languages make grammatical future-time reference optional. The Sapir–Whorf hypothesis posits that languages influence individuals' thought and behavior. Therefore, languages are likely to impact earnings management, through its influence on managers' behavior and decision-making. Given that weak FTR languages reduce individuals' psychological distance from the future (Dhal, 2000; Thieroff, 2000), we hypothesize that managers in countries with weak FTR languages perceive future negative consequences of earnings management to be more imminent, and therefore engage in less earnings management than managers in countries with strong FTR languages.

This study finds that the way in which languages encode time is significantly associated with both accrual-based and real earnings management. More specifically, we show that firms associated with weak FTR languages engage in less accrual-based and real earnings management than firms associated with strong FTR languages. To further isolate linguistic effects from confounds that vary on the country level, we conduct a within-country analysis based on the birthplace information of U.S. firms' CEOs, and find that CEOs born in countries with weak FTR languages engage in less earnings management. Our results are robust to alternative samples, alternative proxies for FTR languages, and additional controls. We also find some evidence that international exposure attenuates the relation between FTR languages and earnings management.

In addition, we find that the effect of FTR languages on earnings management extends to accounting conservatism.

Our study contributes to the nascent literature on languages and corporate behavior by showing that languages can influence earnings management. Earnings management is an important corporate behavior that is widespread among corporations (Graham et al., 2005). Our study identifies an important factor that explains cross-sectional variation of earnings management. Our study also makes contributions to the literature that examines the effects of informal institutions on corporate behavior. Although prior studies examine the effects of culture and religion, our study is the first to show the systematic relation between the grammatical structure of languages and earnings management.

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Appendix A. FTR languages

	Country Code	Country Name	FTR	Official Language
1	ARG	Argentina	Strong	Spanish
2	AUS	Australia	Strong	English
3	AUT	Austria	Weak	German
4	BEL	Belgium	Weak	Dutch
5	BRA	Brazil	Weak	Portuguese
6	CAD	Canada	Strong	English
7	CHL	Chile	Strong	Spanish
8	COL	Colombia	Strong	Spanish
9	DEU	Germany	Weak	German
10	DNK	Denmark	Weak	Danish
11	EGY	Egypt	Strong	Arabic
12	FIN	Finland	Weak	Finnish
13	FRA	France	Strong	French
14	GBR	United Kingdom	Strong	English
15	GRC	Greece	Strong	Greek
16	HKG	Hong Kong	Weak	Cantonese
17	IDN	Indonesia	Weak	Indonesian
18	IND	India	Strong	Hindi
19	IRL	Ireland	Strong	English
20	ISR	Israel	Strong	Hebrew
21	ITA	Italy	Strong	Italian
22	JPN	Japan	Weak	Japanese
23	KOR	South Korea	Strong	Korean
24	MEX	Mexico	Strong	Spanish
25	MYS	Malaysia	Weak	Malaysian
26	NLD	Netherlands	Weak	Dutch
27	NOR	Norway	Weak	Norwegian
28	NZL	New Zealand	Strong	English
29	PAK	Pakistan	Strong	Urdu
30	PER	Peru	Strong	Spanish
31	PHL	Philippines	Strong	Tagalog
32	PRT	Portugal	Strong	Portuguese,
33	SGP	Singapore	Weak	Mandarin
34	SWE	Sweden	Weak	Swedish
35	THA	Thailand	Strong	Thai
36	TUR	Turkey	Strong	Turkish
37	TWN	Taiwan	Weak	Mandarin
38	USA	United States of America	Strong	English

Appendix B. Variable definitions

Variable	Source	Definition
Dependent variables		
ABSDA		Absolute value of discretionary accruals (DA) estimated following Kothari et al. (2005)
ABSRCFO		Absolute value of abnormal cash flows from operations (RCFO)
Country-level variables		
Weak FTR	Chen (2013)	Indicator variable equal to one if a language does not differentiate the present and the future obligatorily, and zero otherwise
Common Law	La Porta et al. (1998)	Indicator variable equal to one for common-law countries and zero, otherwise
Ownership Concentration	La Porta et al. (1998)	Ownership concentration measured as the average percentage of common shares owned by the three largest shareholders in the 10 largest nonfinancial, privately owned domestic firms
Creditor Right	La Porta et al. (1998)	Index aggregating different creditor rights
GDP Growth	World Bank	GDP growth rate
Uncertainty Avoidance	Hofstede (2001)	Uncertainty avoidance score from Hofstede (2001)
Masculinity	Hofstede (2001)	Masculinity score from Hofstede (2001)
Individualism	Hofstede (2001)	Individualism score from Hofstede (2001)
Power Distance	Hofstede (2001)	Power distance score from Hofstede (2001)
Additional country-level variables		
Sentence Ratio	Chen (2013)	Sentence ratio from Chen (2013) * (-1)
Verb Ratio	Chen (2013)	Verb ratio from Chen (2013) * (-1)
Insider Trading Restriction	Denis and Xu (2013)	Insider trading restriction
Book-Tax Conformity	Blaylock et al. (2015)	Book tax conformity
Firm-level variables		
Size	Compustat	Natural logarithm of total assets
Leverage	Compustat	Total liabilities deflated by total assets
CFO	Compustat	Cash flows from operation deflated by revenue
ROA	Compustat	Net income deflated by total assets
Loss	Compustat	Indicator variable equal to one if the net income is negative and zero, otherwise

Table 1
Sample by country

This table presents the sample distribution by country.

Country	N	Country	N
Argentina	257	Malaysia	5,279
Australia	6554	Mexico	446
Austria	365	Netherlands	612
Belgium	477	New Zealand	534
Brazil	1113	Norway	782
Canada	4167	Pakistan	1,009
Chile	674	Peru	501
Colombia	98	Philippines	870
Denmark	527	Portugal	262
Egypt	112	Singapore	3,658
Finland	729	South Korea	3,445
France	3,088	Sweden	1,835
Germany	3,193	Taiwan	8,036
Greece	719	Thailand	2,735
Hong Kong	6,307	Turkey	558
India	13,390	United Kingdom	6,263
Indonesia	1,778	United States of America	30,133
Ireland	228	Total	132,909
Israel	495		
Italy	809		
Japan	20,871		

Table 2
Descriptive statistics

This table presents descriptive statistics of dependent and independent variables used in regressions. Descriptive statistics are calculated based on 132,909 firm year observations used in ABSDA regressions for all variables except ABSRCFO. The descriptive statistics of ABSRCFO are calculated based on 132,916 firm year observations used in ABSRCFO regressions. Variables are defined in Appendix B.

Variable	Mean	First quartile value	Median	Third quartile value	Standard deviation
Dependent variables					
ABSDA	0.0808	0.0212	0.0478	0.0954	0.1152
ABSRCFO	0.1035	0.0270	0.0610	0.1209	0.1471
Country-level variables					
Weak FTR	0.4184	0.0000	0.0000	1.0000	0.4933
Common Law	0.6113	0.0000	1.0000	1.0000	0.4874
Ownership Concentration	0.2797	0.1300	0.2000	0.4300	0.1747
Creditor Right	2.2234	1.0000	2.0000	4.0000	1.2589
GDP Growth	0.0002	0.0267	0.0552	0.1137	0.0060
Uncertainty Avoidance	56.2695	40.0000	46.0000	75.0000	22.7658
Masculinity	59.0970	48.0000	61.0000	62.0000	19.4042
Individualism	56.5980	26.0000	48.0000	91.0000	27.5912
Power Distance	56.9453	40.0000	54.0000	68.0000	19.1548
Firm-level variables					
Size	7.1437	4.9418	7.0658	9.2922	3.1266
Leverage	0.6140	0.3336	0.5304	0.7251	0.6318
CFO	-0.3712	0.0031	0.0622	0.1364	2.6651
ROA	-0.0439	-0.0122	0.0286	0.0684	0.3876
Loss	0.2809	0.0000	0.0000	1.0000	0.4494

Table 3
Correlations

This table reports Pearson correlations. All correlations are significant at the 1% level except for the correlation between *ABSRCFO* and *GDP Growth*, which is significant at the 5% level, and the correlation between *GDP Growth* and *Leverage* and the correlation between *Masculinity* and *ROA*, which are not statistically significant. All variables are defined in Appendix B.

	ABSDA	ABSRCFO	Weak FTR	Common Law	Ownership Concentration	Creditor Right	GDP Growth
ABSRCFO	0.6597						
Weak FTR	-0.1116	-0.1688					
Common Law	0.1422	0.1898	-0.5735				
Ownership Concentration	0.0078	-0.0083	0.1556	0.0775			
Creditor Right	-0.0284	-0.0751	0.2514	0.1458	0.5138		
GDP Growth	0.0277	0.0055	-0.0155	0.0250	0.2460	0.1591	
Uncertainty Avoidance	-0.1316	-0.1696	0.2485	-0.7640	-0.2585	-0.2963	-0.0556
Masculinity	-0.0684	-0.0863	0.2264	-0.1891	-0.3166	-0.2298	-0.0872
Individualism	0.0985	0.1804	-0.5693	0.4273	-0.4741	-0.5880	-0.1377
Power Distance	-0.0505	-0.1022	0.1490	0.0611	0.4336	0.6574	0.1536
Size	-0.2818	-0.3314	0.3322	-0.4948	-0.0549	0.1615	0.0315
Leverage	0.3805	0.3472	-0.0757	0.0499	-0.0193	-0.0430	-0.0018
CFO	-0.2542	-0.3109	0.1072	-0.1088	0.0403	0.0986	-0.0086
ROA	-0.3641	-0.3812	0.1218	-0.1332	0.0981	0.1372	0.0502
Loss	0.1925	0.1894	-0.1255	0.1395	-0.0529	-0.1220	-0.0549

	Uncertainty Avoidance	Masculinity	Individualism	Power Distance	Size	Leverage	CFO	ROA
Masculinity	0.4875							
Individualism	-0.2090	0.1058						
Power Distance	-0.1802	-0.1993	-0.6303					
Size	0.4695	0.2793	-0.4606	0.1279				
Leverage	-0.0343	-0.0075	0.0779	-0.0397	-0.0904			
CFO	0.0696	0.0135	-0.1588	0.1112	0.2605	-0.0759		
ROA	0.0873	-0.0041	-0.2022	0.1396	0.3926	-0.3742	0.4012	
Loss	-0.1085	-0.0397	0.1966	-0.1308	-0.3721	0.0972	-0.2703	-0.4460

Table 4

Languages, accrual-based earnings management, and real earnings management

This table presents the results from pooled ordinary least squares (OLS) regressions that examine the relation between FTR in language and accrual-based earnings management and the relation between FTR in language and real earnings management. All variables are defined in Appendix B. Standard errors are clustered by country. *t*-statistics are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Dependent variable =	ABSDA	ABSRCFO
Weak FTR	-0.0195*** (-4.25)	-0.0195*** (-3.20)
Common Law	-0.0056 (-0.67)	-0.0013 (-0.12)
Ownership Concentration	-0.0303** (-2.54)	-0.0071 (-1.32)
Creditor Right	0.002 (1.05)	0.0003 (0.11)
GDP Growth	0.0471*** (2.61)	0.0171 (0.79)
Uncertainty Avoidance	-0.0004* (-1.91)	-0.0005* (-1.82)
Masculinity	0.0003** (2.36)	0.0001 (0.56)
Individualism	-0.0008*** (-5.19)	-0.0005*** (-2.83)
Power Distance	-0.0005*** (-4.28)	-0.0007*** (-3.91)
Size	-0.0075*** (-4.86)	-0.0088*** (-4.33)
Leverage	0.0561*** (13.65)	0.0605*** (11.01)
CFO	-0.0050*** (-5.41)	-0.0095*** (-3.59)
ROA	-0.0405*** (-4.05)	-0.0559*** (-8.03)
Loss	0.0002 (0.04)	-0.0092*** (-3.73)
Intercept	0.1856*** (4.93)	0.1982*** (4.77)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Sample size	132,909	132,916
Adjusted R-squared	0.27	0.29

Table 5

Equity market development and country-level aggregate earnings management

This table presents the results from ordinary least squares (OLS) regressions that examine the effect of FTR in language on earnings management aggregated at the country level and the effect of FTR in language on equity market development. Aggregate Earnings Management is from Leuz et al. (2003). It is calculated as the average ranks across four earnings management measures: (1) the median ratio of the firm-level standard deviations of operating income and operating cash flow, both scaled by lagged total assets; (2) the spearman correlation between the change in accruals and the change in cash flow from operations, both scaled by lagged total assets; (3) the median ratio of the absolute value of accruals and the absolute value of the cash flow from operations; (4) the number of “small profits” divided by the number of “small losses” for each country. Anti-director Index from La Porta, et al. (1998) ranges from zero to five where a higher value indicates greater investor protection. Legal Enforcement is measured as the average score across three legal variables used in La Porta et al. (1998): (1) the efficiency of the judicial system, (2) an assessment of rule of law, and (3) the corruption index. All three variables range from zero to ten where a higher value denotes greater law enforcement. External CAP / GNP is a measure of equity market development from La Porta et al. (1997) and is calculated as a ratio of the stock market capitalization to gross national product. All other variables are defined in Appendix B. Standard errors are clustered by country. *t*-statistics are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Dependent variable =	Aggregate Earnings Management	External CAP / GNP
Weak FTR	-7.1289** (-2.87)	0.2090** (2.18)
Anti-director Index	-1.5587* (-2.10)	0.0622 (1.38)
Enforcement	3.1664*** (4.01)	0.0483* (1.90)
Common Law	-6.2336** (-2.74)	0.2043 (1.49)
Owner Concentration	13.4392** (2.62)	-0.3161 (-0.85)
Creditor Rights	2.7444*** (4.02)	0.0028 (0.09)
GDP Growth	13.2737 (0.93)	0.0223 (0.84)
Uncertainty Avoidance	0.0717* (2.00)	-0.0018 (-0.82)
Masculinity	0.1044** (2.55)	-0.0011 (-0.55)
Individualism	-0.2387*** (-4.97)	-0.0012 (-0.31)
Power Distance	-0.0218 (-0.61)	0.0063** (2.33)
Intercept	-7.6136 (-0.83)	-0.2971 (-0.46)
Sample size	28	38
Adjusted R-squared	0.84	0.61

Table 6

Analyses based on the birthplace information of U.S. firms' CEOs.

This table presents the results from pooled ordinary least squares (OLS) regressions that examine the effect of FTR in language on earnings management based on the birthplace information of U.S. firms' CEOs. Female is an indicator variable equal to one if a CEO is a female and zero, otherwise. Age is the age of CEO at the end of the fiscal year. All other variables are defined in Appendix B. Standard errors are clustered by country of birth. *t*-statistics are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Dependent variable =	ABSDA	ABSRCFO
Weak FTR	-0.0133** (-2.19)	-0.0299** (-2.25)
Female	-0.0013 (-0.44)	0.0031 (0.92)
Age	-0.0003*** (-3.86)	-0.0003 (-1.47)
Size	-0.0050*** (-13.53)	-0.0035*** (-4.74)
Leverage	0.0059 (0.70)	-0.0226** (-2.22)
CFO	0.0011 (1.18)	0.0061*** (5.30)
ROA	-0.0395*** (-12.64)	-0.0448*** (-11.54)
Loss	-0.0018 (-1.24)	-0.0437*** (-20.60)
Intercept	0.0795*** (9.95)	0.1710*** (12.78)
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Sample size	4,781	4,812
Adjusted R-squared	0.24	0.60

Table 7
Sensitivity Analysis

This table presents sensitivity test results. Panel A reports the results excluding U.S. firms and the results excluding Belgian and Singaporean firms. Panel B reports the results based on the *Sentence Ratio* and *Verb Ratio*, excluding Belgian and Singaporean firms. Replacing *Weak FTR* with *Sentence Ratio* or *Verb Ratio* decreases the number of countries from 38 to 32. Panel C reports the results with two additional controls, *Insider Trading Restrictions* and *Book-Tax Conformity*. Including them and excluding Belgian and Singaporean firms decreases the number of countries in the sample from 38 to 25 in accrual-based earnings management and real earnings management tests. In Panel D, we test whether international exposure mitigates the effect of FTR in language on earnings management, excluding Belgian and Singaporean firms. All variables are defined in Appendix B. Standard errors are clustered by country. *t*-statistics are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Panel A: Alternative samples

Dependent variable =	Excluding U.S. firms		Excluding Belgian and Singaporean firms	
	ABSDA	ABSRCFO	ABSDA	ABSRCFO
Weak FTR	-0.0168*** (-4.94)	-0.0148*** (-3.12)	-0.0249*** (-5.22)	-0.0237*** (-2.84)
Country-level controls	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Sample size	102,776	102,771	128,774	128,781
Adjusted R-squared	0.23	0.22	0.27	0.30

Table 7 (continued)

Panel B: Based on the sentence ratio and the verb ratio, excluding Belgian and Singaporean firms

Dependent variable =	ABSDA	ABSDA	ABSRCFO	ABSRCFO	ABSDA	ABSDA	ABSRCFO	ABSRCFO	ABSDA	ABSDA	ABSRCFO	ABSRCFO
Sentence Ratio	-0.0002** (-2.13)	0.0001 (0.15)	-0.0002 (-1.51)	0.0006 (0.95)	-0.0002* (-1.73)	0.0003 (0.77)	-0.0001 (-0.82)	0.0014*** (2.87)	-0.0026*** (-2.85)	0.0003 (0.77)	-0.0001 (-0.82)	0.0014*** (2.87)
Verb Ratio												
Weak FTR		-0.0273 (-0.63)		-0.0721 (-1.55)		-0.0445 (-1.37)		-0.1260*** (-3.23)				
Weak FTR* <i>Sentence ratio</i>		-0.0017** (-2.51)		-0.0045* (-1.68)								
Weak FTR* <i>Verb ratio</i>												
Country-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample size	103,713	103,713	103,720	103,720	103,713	103,713	103,720	103,720	103,713	103,713	103,720	103,720
Adjusted R square	0.30	0.30	0.32	0.33	0.30	0.30	0.32	0.33	0.30	0.32	0.33	0.33

Table 7 (continued)

Panel C: Additional controls for insider trading restrictions and compliance between financial and tax reporting, excluding Belgian and Singaporean firms

Dependent variable =	ABSDA	ABSRCFO
Weak FTR	-0.0198*** (-2.91)	-0.0185** (-2.16)
Insider Trading Restriction	0.0095* (1.80)	0.0243*** (3.91)
Book-Tax Conformity	-0.0215 (-1.26)	-0.0566** (-2.40)
Other country-level controls	Yes	Yes
Firm-level controls	Yes	Yes
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Sample size	111,785	111,794
Adjusted R-squared	0.28	0.31

Panel D: International exposure and the effect of FTR in language on earnings management, excluding Belgian and Singaporean firms

Dependent variable =	ABSDA	ABSRCFO
Weak FTR	-0.0251*** (-5.22)	-0.0240*** (-2.85)
ADR	0.0033 (0.64)	0.0131** (2.46)
Weak FTR*ADR	0.0117** (2.20)	0.0129 (1.54)
Country-level controls	Yes	Yes
Firm-level controls	Yes	Yes
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Sample size	128,774	128,781
Adjusted R-squared	0.27	0.30

Table 8

Analyses based on signs of accrual-based and real earnings management

This table presents the results from analyses based on different signs of discretionary accruals and abnormal cash flows from operations. Panel A reports the results of pooled ordinary least squares (OLS) regressions with *ABSDA* and *ABSRCFO* as dependent variables. In Panel B, we estimate multinomial logistic regressions that test the likelihood that a firm might be in the extreme *DA* or *RCFO* quartiles as a function of *Weak FTR*. This specification considers simultaneously, but separately, the likelihood of positive and negative discretionary accruals (abnormal cash flows from operations). Firm year observations in the middle two quartiles are classified as the benchmark group. We estimate a model predicting the likelihood that a firm will be in the top quartile *DA* (*RCFO*) group and a model predicting the likelihood that a firm will be in the bottom quartile *DA* (*RCFO*) group. *DA* is discretionary accruals and *RCFO* is abnormal cash flows from operations. Other variables are defined in Appendix B. Standard errors are clustered by country. *t*-statistics are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Panel A: Subsample analysis

Dependent variable =	ABSDA		ABSRCFO	
	DA > 0	DA < 0	RCFO < 0	RCFO > 0
Weak FTR	-0.0241*** (-4.20)	-0.0144*** (-4.03)	-0.0206*** (-3.31)	-0.0190*** (-2.94)
Common Law	-0.0112 (-1.06)	-0.0011 (-0.16)	-0.0022 (-0.21)	-0.0022 (-0.17)
Ownership Concentration	-0.0437*** (-2.76)	-0.0181* (-1.93)	-0.0061 (-1.00)	-0.0058 (-1.07)
Creditor Right	0.0030 (1.30)	0.0016 (0.94)	0.0016 (0.58)	0.0004 (0.11)
GDP Growth	0.0473*** (2.83)	0.0486** (2.37)	0.0239 (1.22)	0.0314 (1.38)
Uncertainty Avoidance	-0.0005* (-1.94)	-0.0003* (-1.70)	-0.0005** (-1.98)	-0.0004 (-1.44)
Masculinity	0.0004*** (2.61)	0.0002* (1.82)	0.0001 (0.60)	0.0002 (1.09)
Individualism	-0.0009*** (-4.66)	-0.0007*** (-5.75)	-0.0004** (-2.32)	-0.0007*** (-3.34)
Power Distance	-0.0006*** (-4.12)	-0.0005*** (-4.25)	-0.0007*** (-4.07)	-0.0008*** (-3.63)
Size	-0.0093*** (-4.55)	-0.0058*** (-5.59)	-0.0076*** (-4.66)	-0.0108*** (-4.04)
Leverage	0.0741*** (14.80)	0.0460*** (7.43)	0.0586*** (3.89)	0.0632*** (6.21)
CFO	-0.0074*** (-7.17)	0.0020** (2.32)	-0.0114*** (-6.55)	0.0032** (2.14)
ROA	-0.0561*** (-9.19)	-0.0482*** (-5.21)	-0.0734*** (-8.87)	0.0167 (1.43)
Loss	-0.0065** (-2.42)	0.0017 (0.39)	0.0190*** (2.86)	-0.0324*** (-4.08)

Intercept	0.2101*** (5.07)	0.1656*** (4.52)	0.1209*** (3.40)	0.2967*** (5.11)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Sample size	64,742	68,167	59,938	72,978
Adjusted R-squared	0.31	0.26	0.37	0.23

Table 8 (continued)*Panel B: Multinomial logistic regression results*

Dependent variable =	Top quartile vs. middle quartiles DA	Bottom quartile vs. middle quartiles DA	Top quartile vs. middle quartiles RCFO	Bottom quartile vs. middle quartiles RCFO
Weak FTR	-0.5184*** (-5.13)	-0.4513*** (-3.22)	-0.5272*** (-3.67)	-0.3040*** (-2.78)
Common Law	0.0145 (0.09)	-0.3456* (-1.67)	-0.3085* (-1.75)	0.3142* (1.68)
Ownership Concentration	0.1702 (0.60)	-0.5872 (-1.62)	-0.0157 (-0.15)	-0.1786** (-2.15)
Creditor Right	0.0034 (0.08)	0.0832* (1.83)	0.0535 (1.27)	-0.0408 (-0.77)
GDP Growth	-0.0923 (-0.09)	-2.4834* (-1.95)	0.6937** (2.44)	0.9245* (1.84)
Uncertainty Avoidance	-0.0105** (-2.37)	-0.0073 (-1.57)	-0.0076* (-1.70)	-0.0112** (-2.07)
Masculinity	0.0013 (0.51)	0.0048 (1.39)	-0.0021 (-0.65)	-0.0049 (-1.59)
Individualism	-0.0146*** (-4.49)	-0.0184*** (-4.68)	-0.0128*** (-4.09)	-0.0092** (-2.43)
Power Distance	-0.0104*** (-3.81)	-0.0110*** (-3.67)	-0.0085*** (-3.79)	-0.0163*** (-5.13)
Size	-0.0728*** (-4.79)	-0.1798*** (-4.27)	-0.1083*** (-4.40)	-0.1214*** (-5.72)
Leverage	0.5068*** (10.97)	0.5851*** (4.49)	0.5014*** (4.70)	0.4519*** (7.55)
CFO	0.0498* (1.67)	-0.1085*** (-4.15)	-0.1303** (-2.57)	0.1691 (0.56)
ROA	-0.8938*** (-14.73)	-0.0970 (-0.98)	-0.3725*** (-7.19)	0.8309 (0.98)
Loss	0.0304 (0.22)	0.0679 (0.69)	0.8706*** (12.67)	-0.9676*** (-3.73)
Intercept	1.6065 (1.60)	2.4083* (1.77)	1.9147** (2.27)	2.7650*** (3.93)
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Sample size	132,909		132,916	
Pseudo R-squared	0.07		0.15	

Table 9

The effect of FTR language on timely recognition of economic losses

This table presents the results from ordinary least squares (OLS) regressions that examine the effect of FTR in language on the asymmetric timely recognition of economic losses. ΔNI_t is change in net income from year t-1 to year t divided by total assets at the end of year t-1. ΔNI_{t-1} is change in net income from year t-2 to year t-1 divided by total assets at the end of year t-2. $D\Delta NI_{t-1}$ is 1 if ΔNI_{t-1} is negative and 0 otherwise. All other variables are defined in Appendix B. Standard errors are clustered by country. *t*-statistics are reported in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Dependent variable =	Predicted sign	ΔNI_t	ΔNI_t	ΔNI_t
$D\Delta NI_{t-1}$?	-0.0089*** (-5.43)	-0.0095*** (-7.33)	0.0556** (1.98)
ΔNI_{t-1}	0	-0.0582*** (-7.72)	-0.0641*** (-6.97)	0.3955*** (3.10)
$\Delta NI_{t-1} * D\Delta NI_{t-1}$	-	-0.5001*** (-12.59)	-0.4643*** (-13.12)	-0.4642 (-0.97)
Weak FTR	?		-0.0059** (-2.25)	-0.0079*** (-2.90)
Weak FTR * $D\Delta NI_{t-1}$?		-0.0015 (-0.35)	-0.0117* (-1.95)
Weak FTR * ΔNI_{t-1}	?		0.0203 (1.19)	0.0231 (0.55)
Weak FTR * $\Delta NI_{t-1} * D\Delta NI_{t-1}$	-		-0.1780** (-2.25)	-0.2918** (-2.28)
Size	?			0.0010** (2.25)
Size * $D\Delta NI_{t-1}$?			-0.0019 (-1.56)
Size * ΔNI_{t-1}	?			-0.0240*** (-3.25)
Size * $\Delta NI_{t-1} * D\Delta NI_{t-1}$?			0.0613*** (4.72)
Country-level Controls		No	No	Yes
Industry fixed effects		Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes
Sample size		116,720	116,720	116,720
Adjusted R-squared		0.08	0.08	0.09