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The Effect of Language on Income Smoothing: Cross-Country Evidence

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The Effect of Language on Income Smoothing: Cross-Country Evidence

Abstract

We examine whether and how the time-oriented tendency embedded in languages influences income smoothing. Separating languages into weak- versus strong-future time reference (FTR) groups, we find that firms in weak-FTR countries tend to smooth earnings more. We also find that relationships with major stakeholders (i.e., debtholders, suppliers, and employees) amplify the effect of the FTR of languages on income smoothing. Additional analyses suggest that income smoothing driven by the FTR of languages enhances earnings informativeness. These findings provide new insights on the role that language plays in financial reporting decisions and on how relationships with major stakeholders influence the relation between an important feature of language and corporate income smoothing behavior.

Keywords: language; future time reference; income smoothing; stakeholder relationships; informativeness of earnings

JEL Classification: M40, M41

Data Availability: Data are available from the sources identified in the text.

1. Introduction

In this paper, we investigate whether and how the time-oriented tendency embedded in languages shapes corporate income smoothing behavior. Income smoothing, which can be defined as "an effort to reduce fluctuations in reported earnings" (Moses, 1987, p. 360), is a common accounting practice whereby managers adjust the relative timing of current and future earnings. In a survey of more than 400 executives, Graham et al. (2005) finds that, holding cash flows constant, 96.9 percent of chief financial officers (CFOs) prefer smooth earnings paths. Despite its importance, prior literature provides only limited evidence on the determinants of income smoothing. In this paper, we identify an important factor – obligatory future-time reference (FTR) in a language – that helps to explain international variation in corporate income smoothing behavior. Because smoother earnings patterns take years to establish, managers must consider future-oriented net rewards when making current reporting decisions. This makes income smoothing an ideal setting to examine whether the intertemporal choices induced by the FTR of languages affect corporate financial reporting behaviors.

The way in which the future is perceived differs based on whether languages require speakers to grammatically mark future events (Whorf 1956; Hong and Zhao 2017). This is known as the obligatory future-time reference (FTR) in a language.[1] The underlying idea is that having the present and the future in the same conceptual category, as is the case for weak-FTR languages, increases the psychological importance of—and hence a speaker's concern for—the future because it makes the future seem closer (Dahl 2000; Chen et al. 2017). Although speakers of weak-FTR languages can distinguish between the future and the present, they are not obligated to do so, making them less likely to mark the future in their

[1] The Sapir-Whorf hypothesis from cognitive linguistics predicts that whether languages require speakers to grammatically mark future events, known as the FTR, affects how people make choices that impact future outcomes (Whorf 1956; Dahl 2000; Hong and Zhao 2017).

daily conversations (Chen et al. 2017). Consistent with these arguments, Chen (2013) finds evidence suggesting that speakers of weak-FTR languages care more about future-oriented benefits such as savings, retirement wealth, and long-run health. We argue that this effect may also impact managers who make future-related corporate reporting choices. Specifically, we conjecture that firms in weak-FTR countries are more likely to engage in income smoothing because they view future rewards of smooth earnings patterns as more valuable.

Future rewards from smoother earnings patterns are not trivial. Prior research documents that smoother earnings lead to lower perceived risk, lower cost of capital, better managerial job security, improved terms of trade, and more stable long-term relationships with a variety of stakeholders (Trueman and Titman 1988; Bowen et al. 1995; Barth et al. 1999; Myers et al. 2007; de Jong et al. 2014; Gassen and Fülbier 2015). If the FTR of languages leads firms in weak-FTR countries to place more weight on the future rewards that arise from income smoothing, then we expect these firms to be more likely to engage in income smoothing.

We also explore whether relationships with major stakeholders impact the relation between the FTR of languages and corporate income smoothing. Major stakeholders bear higher costs when operating uncertainty is high (Titman 1984; Trueman and Titman 1988). Given the multi-period nature of implicit contracts, firms with smooth earnings are perceived more favorably by their major stakeholders. Income smoothing improves the effectiveness of debtholder monitoring (Demerjian et al. 2019), helps to maintain supply chain relationships (Dou et al. 2013), and reduces employees' perceived unemployment risks (Dou et al. 2016; Ng et al. 2019). Given that weak-FTR firms view future rewards as more valuable, we hypothesize that when firms rely to a greater extent on long-term relationships (or implicit contracts) with major stakeholders, the relation between the time perception of language and income smoothing will be amplified.

To test our first hypothesis – that firms in weak-FTR countries are more likely to engage in income smoothing – we follow Burgstahler et al. (2006) and Dou et al. (2013) and perform tests where the unit of analysis is at the country-industry level. Specifically, we construct a sample of 10,020 country-industry observations, representing 42 countries and 1,502 industries. We measure income smoothing following Dou et al. (2013) and measure the FTR of languages following Chen (2013). In our main test, we find that even after controlling for industry- and country-level characteristics, firms in weak-FTR countries are more likely than firms in strong-FTR countries to smooth earnings. Our results are robust to different model specifications, including the use of robust standard errors that are two-way clustered by country and industry with or without industry fixed effects, as well as clustering by language family (Roberts et al. 2015; Gotti et al. 2021).

To test our second hypothesis – that firms in weak-FTR countries are more likely to engage in income smoothing when long-term relationships with major stakeholders are more important – we consider three major stakeholder groups, specifically, debtholders, suppliers, and employees, and examine whether relationships with these stakeholders amplify the effect of the FTR of languages on income smoothing.[2] Using proxies for the extent to which the firm depends on implicit claims with major stakeholders (i.e., the importance of these stakeholders), we find that firms in weak-FTR countries are even more likely, relative to firms in strong-FTR countries, to engage in income smoothing when leverage or the probability of bankruptcy is higher, relationship-specificity with suppliers is higher, and unemployment risks are higher.

Next, we conduct additional analyses to examine whether the variation in income smoothing associated with the FTR of languages improves or reduces the informativeness of

[2] Our selection of these three stakeholder groups is motivated by Trueman and Titman (1988) and Bowen et al. (1995), but we omit customers because we are unable to identify a strong proxy for customer bargaining power in our cross-country setting.

current earnings about future earnings. By decomposing income smoothing into its 'informational component' and its 'garbled component' (Tucker and Zarowin 2006), we find that income smoothing behavior, as affected by the FTR of languages, enhances the informativeness of corporate earnings. In contrast, we find no relation between the FTR of languages and the use of income smoothing to obfuscate underlying firm performance.

Finally, we conduct a battery of robustness checks and find that our inferences hold: (1) controlling for the adoption of International Financial Reporting Standards (IFRS), the level of globalization, earnings management, and the cultural dimensions from Hofstede (1980, 1994, 2001) and Hofstede and Hofstede (2005); (2) in a within-country analysis where we test for the effect of linguistic backgrounds of chief executive officers (CEOs) and CFOs; (3) using the verb ratio and the sentence ratio from Chen (2013) as alternative measures of the time-oriented tendency embedded in languages; (4) using alternative samples that exclude the largest weak-FTR country (Japan) and the largest strong-FTR country (the U.S.) or multi-language countries from our sample; and (5) performing analyses at the country-industry-year level and at the firm-year level.

Our paper makes several important contributions to the literature. First, prior research finds that income smoothing is more pervasive in countries with weak formal institutions (e.g., legal regimes and investor protections) (Ball et al. 2000; Leuz et al. 2003; Gassen et al. 2006; Cahan et al. 2008). Our paper adds to this stream by documenting that the heterogeneity in spoken languages determines corporate income smoothing behavior. We also contribute to research documenting the impact of stakeholder-related incentives on income smoothing. Recent studies find that major stakeholders can influence income smoothing (Dou et al. 2013, 2016; Ng et al. 2019; Demerjian et al. 2020a, 2020b), but research does not investigate whether certain managers or firms are more susceptible to the benefits arising from these major stakeholders. We find that when future benefits arising from

relationships with major debtholders, suppliers, and employees should be more valuable (e.g., by providing better terms of trade and more stable long-term relationships), firms in weak-FTR countries are even more likely than firms in strong-FTR countries to engage in income smoothing. Overall, our findings demonstrate that the FTR of languages influences management's decisions regarding whether to use income smoothing as a financial reporting strategy.

Second, prior literature shows that managerial characteristics such as culture, managerial ability, and overconfidence affect corporate decisions, including corporate risk-taking and accounting conservatism (Schrand and Zechman 2012; Li et al. 2013; Kanagaretnam et al. 2014; Demerjian et al. 2020b). In contrast to these commonly studied managerial characteristics, we contribute to research on the importance of managerial characteristics by documenting that management's spoken language is a key feature that influences managerial decisions.

Third, an emerging stream of research examines the role of language in corporate decision-making. Recent research finds that the FTR of languages affects corporate social responsibility (CSR) performance (Liang et al. 2018), precautionary cash holdings (Chen et al. 2017), the composition of executive compensation (Ellahie et al. 2017), investments in research and development (Chi et al. 2020), investment efficiency (Kim et al. 2020), corporate tax strategies (Na and Yan 2022), and management forecasts (Guan et al. 2022). The closest study to ours is Kim et al. (2017), which investigates the relation between the FTR of languages and earnings management. Although Kim et al. (2017) also examines how the FTR of languages influences management's financial reporting choices, our focus on income smoothing is distinct from the focus in Kim et al. (2017) because, as we discuss in sections 2.2 and 2.3, earnings management and income smoothing are fundamentally different constructs (Chapman and Steenburgh 2011; Khurana et al. 2018).

2. Related Literature and Hypothesis Development

2.1. Prior Research on the Time-Orientated Tendency of Languages

Linguistics and economics research finds that the characteristics of spoken languages contribute to cultural differences around the world. Social identity theory-based arguments in sociolinguistics assert that language is more important for an individual's identity than age, gender, or race (Giles and Johnson 1981). We focus on an important feature of language – its impact on the speaker's time-oriented tendency. This impact arises because of the language's obligatory "future time reference" (FTR). We follow Chen (2013), which adopts the future time criterion from typological linguistics. This criterion distinguishes between languages that are considered to be "futureless" and those that are not, where futureless languages can be defined as "those which do not require the obligatory use of grammaticalized future time reference in main clause prediction-based contexts" (Dahl 2000, p. 325).

The future time criterion separates languages into two broad categories: weak-FTR languages (or futureless languages) and strong-FTR languages. In contrast to strong-FTR languages, weak-FTR languages use the same tense to describe past, present, and future events. For example, in German, a weak-FTR language, *Morgen ist es kalt* can be translated to "Tomorrow **is** it cold," and in Mandarin, also a weak-FTR language, *明天会冷* can be translated to "Tomorrow **is** cold" (where **is** is in the present tense). In French, a strong-FTR language, *Il fera froid demain* can be translated to "It **do** or **make** cold tomorrow", and in English, also a strong-FTR language, "It **will be** cold tomorrow" use the future tense.

Chen (2013) tests how linguistic differences affect individuals' future-oriented decisions. Controlling for cultural and institutional traits, Chen (2013) shows that weak-FTR languages lead speakers to engage in future-oriented behaviors (e.g., saving more, smoking less, retiring with more wealth, etc.). Building on Chen (2013), a few studies document the effect of the FTR of languages on corporate policies and decision-making. For example,

Liang et al. (2018) finds that firms in strong-FTR countries perform worse in terms of CSR performance, and that the FTR of languages is the only persistent determinant of CSR performance. In addition, firms in weak-FTR countries have higher levels of precautionary cash holdings (Chen et al. 2017) and higher research and development-to-assets ratios (Chi et al. 2020). Ellahie et al. (2017) finds that managers who speak strong-FTR languages prefer a higher proportion of variable pay. Finally, firms in weak-FTR countries are less likely to underinvest (Kim et al. 2020) and engage in less tax avoidance (Na and Yan 2022).

In contrast to the relatively well-developed literature exploring the effect of the FTR of languages on firms' real decisions, its effect on financial reporting practices is relatively unexplored. Guan et al. (2022) finds that firms in weak-FTR language countries are more likely to issue management forecasts and issue more long-horizon forecasts, and Kim et al. (2017) finds that speakers of weak-FTR languages are less likely to manage earnings to meet short-term benchmarks using discretionary accruals and real earnings management.

2.2. Prior Research on Income Smoothing

Income smoothing is a widespread accounting practice that focuses on the stability of long-term performance, with the goal of reporting a less volatile earnings series (Graham et al. 2005). To make income smoothing decisions, managers must consider both current-year and expected future-year earnings. When current earnings are poor and expected future earnings are good, they can take actions that 'borrow' from the future and increase current reported earnings, and when current earnings are good and expected future earnings are poor, they can take actions that 'save' earnings to report in the future (Fudenberg and Tirole 1995; DeFond and Park 1997). The shifting of earnings across periods, especially from the present to the future, distinguishes income smoothing from earnings management, which typically focuses on inflating current-period earnings.

Prior studies argue that earnings management and income smoothing are

fundamentally different constructs (Chapman and Steenburgh 2011; Khurana et al. 2018). The goal of earnings management is to alter the *level* of reported earnings, whereas the goal of income smoothing is to alter earnings *volatility*. Income smoothing affects outsiders' perceptions of firm performance, as does earnings management, but it also affects their perceptions of the riskiness of earnings. Moreover, earnings management is often linked to management myopia, leading to behaviors like boosting reported earnings to meet short-term earnings benchmarks, whereas income smoothing is a management reporting strategy that focuses on the stability of long-term performance. Managers view income smoothing as more sustainable than earnings management (Graham et al. 2005) because accounting constraints limit their ability to boost reported earnings for extended periods (Barton and Simko 2002; Ng et al. 2019) but reporting smooth earnings for extended periods can occur because managers have more ability to shift revenues, expenses, gains, and losses across periods (Barth et al. 1999; Myers et al. 2007; Dechow and Shakespeare 2009; Dechow et al. 2010).

Income smoothing provides many benefits to managers and their firms. First, although income was traditionally smoothed to ensure dividend payouts when economic performance was poor (Buckmaster 2001), income smoothing has evolved into a way to increase firm valuation and reduce the cost of capital (Trueman and Titman 1988; Barth et al. 1999; Myers et al. 2007; de Jong et al. 2014; Gassen and Fülbier 2015) because investors perceive firms with smooth earnings streams as less risky (Goel and Thakor 2003). According to the Graham et al. (2005) survey, CFOs believe that smoother earnings lead to higher valuations. This is consistent with empirical evidence in Barth et al. (1999), Myers et al. (2007), and Erickson et al. (2017). Second, managers can smooth earnings for personal gains (e.g., to earn bonuses and increase job security) (Healy 1985; Fudenberg and Tirole 1995). Third, managers can use income smoothing to communicate private information about firm prospects and increase the precision of earnings expectations (Kirschenheiter and

Melumad 2002; Sankar and Subramanyam 2002). Demerjian et al. (2020b) finds that intentional smoothing by high-ability managers is associated with improved future operating performance. Moreover, smoothed earnings tend to be more persistent and predictable (Nissim 2021). Lastly, prior literature argues that income smoothing should help firms maintain long-term relationships with stakeholders and improve their terms of trade in the presence of implicit contracts (Bowen et al. 1995). Consistent with this, empirical evidence documents that income smoothing can benefit debtholders (Demerjian et al. 2020a, 2020b), suppliers (Dou et al. 2013), and employees (Dou et al. 2016; Ng et al. 2019), among others. Moreover, the multi-period nature of implicit contracts with major stakeholders makes income smoothing preferable to earnings management because the latter can increase earnings variability (Dou et al. 2013, 2016).

Although income smoothing can yield non-trivial benefits, our understanding of its determinants is limited, especially in international settings. However, two prior studies are especially relevant. First, Leuz et al. (2003) uses data from 31 countries and finds that formal institutions, specifically, stronger investor protection and legal enforcement, reduce income smoothing. Second, Burgstahler et al. (2006) finds that legal institutions and capital market forces affect income smoothing behavior at the country-industry level. In contrast to this prior research, we consider the effect of an informal institution and investigate how the time-oriented tendency embedded in spoken languages influences corporate income smoothing behavior.

2.3. Hypothesis Development

Managers trade off expected benefits and costs when making income smoothing decisions, and should be more likely to smooth earnings if the perceived net present value of doing so is higher. The benefits from smoother earnings are not trivial because, as discussed previously, smoother earnings lead to lower perceived risk, a lower cost of capital, improved

job security, and more stable long-term relationships with stakeholders. The costs of income smoothing include managerial effort to understand firms' economic prospects and potentially costly adjustments to the accounting process (Baik et al. 2020). Therefore, income smoothing requires managers to consider both future and current net rewards when making current reporting decisions. We posit that the time-oriented tendency of managers' spoken language can influence how they perceive these future net rewards.

There are two mechanisms whereby the FTR of languages can affect speakers' future choices and lead weak FTR speakers to value future rewards more than strong FTR speakers (Chen 2013). First, there is the idea of a "linguistically-induced bias in time perception." Here, language can affect future choices by changing how distant future events feel. For example, weak-FTR speakers, by speaking about future events as if they are happening now (in the present tense), should perceive future events as more imminent. Similarly, the "historical present" in linguistics suggests that past events are experienced more vividly if they are referred to in the present tense (Schiffrin 1981), whereas "distancing" suggests that events are experienced less vividly when they are referred to in the past tense or future tense (Dancygier and Sweetser 2005; Mezhevich et al. 2008). The historical present and distancing would both make weak-FTR speakers perceive future events as closer to the present, leading to a lower discount rate and thus a higher perceived present value of future rewards (Chen 2013).

The second mechanism relates to the "precision of beliefs about time." Here, language can affect speakers' choices because it influences the *precision* of their beliefs about the timing of future rewards. Consistent with language influencing perceptions, linguistics research documents a positive relation between the number of terms for a color that exists in

a language and the precision of a speaker's color beliefs (MacLaury et al. 1992).[3] Franklin et al. (2008) finds that this effect of language applies to adults but not to pre-linguistic infants, reinforcing the argument that it relies on spoken languages and is independent of other personal traits. Theories based on the "precision of beliefs about time" argue that if a spoken language has the ability to partition time into different zones (i.e., strong-FTR), its speakers will have more precise beliefs about the timing of future rewards. In contrast, weak-FTR speakers have more ambiguous perceptions and beliefs about future timing. Because the discounting of future rewards is a convex function of time, weak-FTR speakers perceive a wider distribution in the timing of future rewards, increasing the present value of these rewards (Chen 2013; Thoma and Tytus 2018; Chi et al. 2020).

Both of these mechanisms, "linguistically-induced bias in time perception" and "precision of beliefs about time," lead us to predict that weak-FTR speakers will be more likely to engage in income smoothing because they should view the present value of future rewards as more valuable.[4] Accordingly, our first hypothesis, stated in the alternative form, is as follows:

Hypothesis 1: *Firms in weak-FTR countries are more likely than firms in strong-FTR countries to engage in income smoothing.*

Next, we consider whether relationships with major stakeholders amplify the relation between the FTR of languages and income smoothing. Prior research argues that major stakeholders (e.g., debtholders, suppliers, and employees) incur higher costs when operating uncertainty is high. These costs include higher perceived bankruptcy risk for debtholders and

[3] For example, Russian speakers are better than English speakers at distinguishing light blue (*goluboy*) from dark blue (*siniy*) because the Russian language assigns two different names to these colors whereas the English language uses blue for both (Winawer et al. 2007).

[4] It is worth noting that the forces from FTR that lead to earnings management differ from the forces from FTR that lead to income smoothing. Because firms in strong-FTR countries are likely to place more weight (or certainty) on near-term outcomes (e.g., beating earnings targets) and consider any negative consequences of earnings management (e.g., restatements or enforcement actions) to be distant, they may be more likely to engage in earnings management. In contrast, the FTR of languages should lead firms in weak-FTR countries to place more weight on the future rewards that arise from income smoothing.

searching and retooling costs for suppliers and employees with firm-specific capital (Titman 1984; Trueman and Titman 1988). Because stakeholders are likely to use reported accounting numbers to estimate the volatility of the underlying earnings process and to assess the probability of bankruptcy, income soothing can increase their assessment of the likelihood that the firm will fulfil its implicit contracts.[5, 6] When stakeholders perceive a firm as better able to fulfil its implicit claims, it should be able to negotiate better terms of trade with stakeholders. These terms include interest rates and the amount of loans supplied by debtholders, price and payment terms with suppliers, and wages and benefits paid to employees (Bowen et al. 1995). Prior studies find that firms with less volatile earnings are perceived more favorably by debtholders (Demerjian et al. 2020b), suppliers (Dou et al. 2013), and employees (Dou et al. 2016; Ng et al. 2019), resulting in stable long-term relationships with these stakeholders.

In our first hypothesis, we conjectured that firms in weak-FTR countries are more likely to engage in income smoothing because they view future rewards as more valuable. As discussed above, stable relationships with major stakeholders can lead to future benefits. Therefore, we posit that long-term relationships with major stakeholders should amplify the effect of the FTR of languages on income smoothing. Accordingly, our second hypothesis, stated in the alternative form, is as follows:

Hypothesis 2: *Firms in weak-FTR countries are more likely to engage in income smoothing when long-term relationships with major stakeholders are more important.*

3. Sample Selection and Research Design

3.1. Data Sources and Sample Selection

[5] Examples of implicit contracts include the continuing demand for products or services from suppliers, job security for employees, and timely payments to creditors (Bowen et al. 1995).
[6] Although firms can and do use other means (e.g., long-term employment contracts, purchase agreements) to satisfy the demands of major stakeholders, we posit that financial reports are important because they can provide useful information to a variety of current and prospective stakeholders.

We start by collecting accounting and stock return data for publicly listed firms from Compustat North America and Compustat Global from 1987 through 2019. We exclude firms in the Finance and Insurance, Real Estate Rental, and Leasing and Public Administration industries (i.e., those with North American Industry Classification System (NAICS) codes 52, 54, and 92) because of their unique accounting and regulatory requirements (Burgstahler et al. 2006; Tucker and Zarowin 2006). We obtain language FTR data from Chen (2013) and Kim et al. (2017),[7] data on the quality of legal enforcement from La Porta et al. (1998), and analyst following data from the Institutional Brokers' Estimate System (I/B/E/S).

Our sample selection criteria follow those in Dou et al. (2013). We require that sample observations have data available to compute our income smoothing and control variables, as well as data on the quality of legal enforcement (from La Porta et al. (1998)). We require each sample country to have a minimum of 100 available firm-year observations and each country-industry group to have a minimum of 5 observations. We define industry at the six-digit NAICS industry classification level, and following Burgstahler et al. (2006) and Dou et al. (2013), our unit of analysis is at the country-industry level.[8] This sample construction procedure results in a sample of 10,020 country-industry observations from 42 countries and 1,502 industries.

3.1.1. Measuring the Time-Orientated Tendency of Languages

We classify each sample country as weak- or strong-FTR based on the time-oriented tendency of its official languages, as defined in Chen (2013) and Kim et al. (2017). The variable *Weak_FTR* takes the value of one for countries with weak-FTR official languages and the value of zero for countries with strong-FTR official languages. Belgium, Singapore, and Switzerland have official languages belonging to both FTR categories so, following the

[7] Note that we follow the more recent approach in Kim et al. (2017) and expand our sample by including three countries not included in Chen (2013). These countries are India, Pakistan, and Singapore.
[8] In untabulated analyses, we find that our inferences hold using the broader three-digit NAICS industry classifications.

rationale in Kim et al. (2017), we classify them as *Weak_FTR* countries.[9]

3.1.2. Measuring Income Smoothing

We use three income smoothing measures from prior literature. The first and second measures, *IS1* and *IS2*, are from Burgstahler et al. (2006). *IS1*, which measures the smoothing of operating income relative to cash flow, is calculated as the country-industry ratio of the cross-sectional standard deviation of operating income divided by the standard deviation of cash flow from operations, multiplied by -1. *IS2* is the country-industry Spearman correlation between changes in total accruals and contemporaneous changes in cash flow from operations, multiplied by -1. Both of these measures capture management's response to shocks to the firm's economic performance, which is proxied by cash flows. The third measure, *IS3*, from Tucker and Zarowin (2006) is the country-industry Spearman correlation between the change in discretionary accruals and the contemporaneous change in pre-discretionary income (i.e., net income minus discretionary accruals), multiplied by -1. We estimate discretionary accruals using the performance-adjusted modified Jones model from Kothari et al. (2005). This measure assumes that managers use discretionary accruals to make the reported earnings series smoother than the underlying (pre-managed) earnings series. More positive values of our three income smoothing measures (*IS1*, *IS2*, and *IS3*) represent greater income-smoothing behavior. Following Dou et al. (2013) and Baik et al. (2020), we use principal component analysis to obtain an aggregate score (*IS_Score*) based on these three measures.[10] We provide detailed calculations of *IS1*, *IS2*, and *IS3* in online Appendix A.

3.1.3. Control Variables

We control for factors other than the FTR of languages that prior literature suggests may be associated with income smoothing. Leuz et al. (2003) finds that legal origin affects

[9] As we discuss in Section 5.2.4., our inferences are robust to excluding these three countries.
[10] Our main inferences hold (at p-values < 0.05, untabulated) when we use the individual income smoothing measures instead of the aggregate score.

the level of shareholder protection, which can impact opportunities to smooth earnings. Therefore, we include a country-level control variable, *Legal_Quality*, which captures the quality of legal enforcement.[11] We also include industry-level control variables to capture the fundamental characteristics of the firm and its industry. We control for firm size (*Log_Assets*) and analyst following (*Analyst_Follow*) because larger firms and those with more analysts following face greater monitoring (Yu 2008). We include leverage (*Leverage*) to control for incentives to avoid debt covenant violations, which may be achieved by smoothing earnings (Sweeney 1994). We include sales growth (*Sales_Growth*) and return on assets (*ROA*) to control for financial performance (Kothari et al. 2005). Following Dou et al. (2013), we include the market-to-book ratio (*MTB*) to control for growth opportunities and investment intensity (*Inv_Intensity*) to control for implicit claims between the firm and its stakeholders. Because our analyses are at the country-industry level, we follow Dou et al. (2013) and use the median of the control variables in the country-industry group. Appendix A provides more detailed variable definitions.

3.2. Research Design

To investigate how the time-oriented tendency embedded in languages affects corporate income smoothing behaviors (Hypothesis 1), we estimate the following ordinary least squares (OLS) regression model:

$$IS\_Score_{c,i} = \beta_0 + \beta_1 * Weak\_FTR_c + \boldsymbol{\gamma} Controls_{c,i} + \varepsilon_{c,i} \quad (1)$$

where: $IS\_Score_{c,i}$ is the aggregate score from three common income smoothing measures; $Weak\_FTR_c$ equals one for firms headquartered in countries with weak-FTR languages, and zero otherwise; and *Controls* is the vector of the country- and country-industry level control variables described above. The coefficient of interest, β_1, captures the effect of the time-

[11] *Legal_Quality* is the average score of the efficiency of the judicial system, an assessment of the rule of law, and the corruption index, from La Porta et al. (1998). More positive scores indicate higher-quality legal enforcement.

oriented tendency of languages on corporate income smoothing. If firms in weak-FTR countries are more likely to engage in income smoothing, β_1 will be positive and significant.

To investigate whether relationships with major stakeholders amplify the effect of the FTR of languages on income smoothing (Hypothesis 2), we estimate the following OLS model:

$$IS\_Score_{c,i} = \beta_0 + \beta_1 * Weak\_FTR_c + \beta_2 * Stakeholder_{c,i} + \beta_3 * Weak\_FTR_c * Stakeholder_{c,i} + \boldsymbol{\gamma} Controls_{c,i} + \boldsymbol{\delta} Controls_{c,i} * Stakeholder_{c,i} + \varepsilon_{c,i} \quad (2)$$

where $Stakeholder_{c,i}$ includes different proxies for the extent to which the firm depends on implicit claims with major stakeholders (i.e., the importance of these stakeholders). Specifically, we consider three stakeholder groups that are identified in Trueman and Titman (1988) and Bowen et al. (1995) as key beneficiaries of income smoothing – specifically, debtholders, suppliers, and employees. We also interact $Stakeholder_{c,i}$ with the control variables to mitigate the concern that $Stakeholder_{c,i}$ affects the relation between these control variables and income smoothing. Our coefficient of interest, β_3, captures whether relationships with major stakeholders amplify the relation between the FTR of languages and corporate income smoothing. If firms in weak-FTR countries are more likely to engage in income smoothing when long-term relationships with stakeholders are more important, then β_3 will be positive and significant.

3.3. Descriptive Statistics

Table 1 presents the distribution of industry-level observations from our 42 sample countries. The largest number of observations is from Japan (8.55 percent), followed by the United States (8.15 percent), the United Kingdom (6.62 percent), and China (6.00 percent). The value of *Weak_FTR* for each country is also presented in the table. There are 17 weak-FTR countries and 25 strong-FTR countries.

[Insert Table 1 here]

Table 2, Panel A presents descriptive statistics for the country-industry-level variables. Our main analysis includes 10,020 country-industry observations. The mean (median) value of our income smoothing measure, *IS_Score*, is 0.002 (0.245).[12]

[Insert Table 2 here]

Panel B presents the correlation matrix for the key variables. Supporting our expectations, *Weak_FTR* is positively correlated with *IS_Score* (*p*-value < 0.01). This preliminary evidence suggests that firms in weak-FTR countries are more likely than firms in strong-FTR countries to smooth earnings.

4. Main Empirical Results

4.1. Univariate Analyses

Table 3 presents the results from univariate tests. For each variable, we report the mean and median values in weak-FTR countries (columns (1) and (2)) and in strong-FTR countries (columns (3) and (4)), results from *t*-tests for a difference in means between firms in weak- versus strong-FTR countries (columns (5) and (6)), and results from Wilcoxon tests for a difference in medians (columns (7) and (8)). Consistent with expectations, we find that the degree of income smoothing is higher for firms in weak-FTR countries both at the mean (*t*-statistic = 8.79) and the median (*z*-statistic = 8.65). We also find that the means and medians of most control variables differ between firms in weak- versus strong-FTR countries. For example, firms in weak-FTR countries enjoy higher-quality legal enforcement, lower leverage, higher return on assets, and higher investment intensity, relative to firms in strong-FTR countries. These significant differences underscore the importance of including the control variables in our main regression model.

[12] When we restrict our sample to the 39 countries in Dou et al. (2013), the mean and median values of our income smoothing measure are -0.020 and 0.253, respectively. These are very similar to the mean and median values in Dou et al. (2013), which are -0.018 and 0.252, respectively.

[Insert Table 3 here]

4.2. Main Results

Table 4 presents the results from estimating Eq. (1). Column (1) contains our primary specification, where we use robust standard errors that are two-way clustered by country and industry. This specification is robust to arbitrary within- and cross-country correlations, as well as within- and cross-industry correlations (Cameron et al. 2011; Banker et al. 2013). Here, we find that the coefficient on *Weak_FTR* is positive and significant at the one percent level, indicating that firms in weak-FTR countries are more likely than firms in strong-FTR countries to smooth earnings. In column (1), the coefficient on *Weak_FTR* (0.282) indicates that after controlling for other determinants, the *IS_Score* is 0.282 higher, on average, for firms in weak-FTR countries than for firms in strong-FTR countries. This effect is sizeable because it is 115 percent (26 percent) of the median (standard deviation) of the *IS_Score*. Moreover, given a median value of 0.245 for *IS_Score*, a one-standard-deviation increase in *Weak_FTR* (0.496) leads to a 57 percent increase in *IS_Score*.[13] To facilitate the interpretation of the economic magnitude, we follow the methodology in Demerijan et al. (2020) and re-estimate our Eq. (1) using the decile rank of *IS_Score* as the dependent variable (untabulated). We find a significant coefficient on *Weak_FTR* (0.0781, *p*-value <0.01). Its magnitude indicates that the income smoothing rank is more than half a decile greater for weak-FTR firms than for strong-FTR firms. To put this into perspective, the coefficient on *Legal_Quality* in the same regression is -0.0314 (*p*-value <0.01). This indicates that the influence of legal quality documented in prior literature (e.g., Dou et al. 2013) is approximately half that of the FTR of languages.[14] This implies that the FTR of languages has an economically meaningful impact on corporate income smoothing.

[13] 0.282/0.245=1.15; 0.282/1.074=0.26; 0.282*0.496 / 0.245 = 0.57.

[14] The sign on the control variable *Legal_Quality* is opposite that on the variable *WEAK* in Dou et al. (2013) because *Legal_Quality* equals *WEAK* multiplied by -1 so that higher values of *Legal_Quality* indicate better legal enforcement quality.

In addition, most of the country-industry control variables are associated with income smoothing. For example, income smoothing is less likely when the country-industry median market-to-book ratio (*MTB*) is higher, and it is more likely when the median firm is larger (*Log_Assets*) and more profitable (*ROA*).

[Insert Table 4 here]

In column (2), we add industry-fixed effects to control for unobserved industry-level characteristics as well as for correlations between the explanatory variables and unobservable industry characteristics (Banker et al. 2013). The sample size drops slightly because in some industries, only one country is represented, but the inferences are robust.

Roberts et al. (2015) points out that languages are related to one another because of their shared histories and this language relatedness can impact the measured correlation between FTR and future-oriented behavior. In addition, linguistic features co-develop with many institutional factors, which can lead to omitted variables driving empirical results. Consistent with this reasoning, Gotti et al. (2021) finds that the FTR of languages is not associated with earnings management when language relatedness (i.e., linguistic history) is controlled for by clustering standard errors at the language family level. To address this concern, we assign languages to language families following the definitions provided in the *World Atlas of Language Structures*, and we cluster standard errors at the language family level in column (3). Again, our inferences are robust.

Overall, the results across all three columns support our expectation that corporate income smoothing behavior differs across countries based on the FTR of languages. That is, firms in weak-FTR countries are more likely than firms in strong-FTR counties to smooth earnings.

4.3. The Amplifying Effect of Relationships with Major Stakeholders on the Relation between the FTR of Languages and Income Smoothing

Next, we investigate whether the impact of the FTR of languages on income

smoothing is enhanced when future rewards related to long-term stakeholder relationships should be greater. Specifically, we test whether major debtholders, suppliers, and employees amplify the differential income smoothing behavior of firms in weak- versus strong-FTR countries.

First, to assess the impact of long-term relationships with debtholders on the relation between the FTR of languages and income smoothing, we use leverage (*Leverage*), which proxies for debt intensity, and Altman's Z-score (*Altmans Zscore*) multiplied by -1, which captures the likelihood of debt covenant violation or bankruptcy (Altman 1968; Begley et al. 1996). Both *Leverage* and *Altmans Zscore* are measured at the country-industry level. We estimate Eq. (2) and we present the results in Table 5, columns (1) and (2), respectively. The coefficient on *Weak_FTR* remains positive and significant in both columns. More importantly, the coefficients on *Weak_FTR*Leverage* and *Weak_FTR*Altmans Zscore* are positive and significant. This indicates that when firms rely more on relationships (or implicit contracts) with debtholders, those in weak-FTR countries are even more likely than those in strong-FTR countries to smooth earnings. Interestingly, the coefficients on *Leverage* and *Altmans Zscore* are not significantly different from zero, indicating that firms in strong-FTR countries do not smooth earnings more when they are more reliant on debt to finance business activities.

[Insert Table 5 here]

Second, to investigate whether supplier importance impacts income smoothing in weak- versus strong-FTR countries, we estimate Eq. (2) using a proxy for the importance of relationship-specificity in the industry (*Relation Specificity*). This proxy measures the proportion of intermediate inputs that require relationship-specific investments at the industry

level (Nunn 2007; Dou et al. 2013).[15] The results are presented in column (3). The positive and significant coefficient on *Weak_FTR * Relation Specificity* supports the notion that the relation between the FTR of languages and income smoothing is amplified when firms rely to a greater extent on long-term relationships (or implicit contracts) with major suppliers. In addition, although the main effect of *Weak_FTR* is insignificant, the joint test on the overall effect of *Weak_FTR* reveals that as relationships with suppliers become more important, firms in weak-FTR countries smooth earnings more than firms in strong-FTR countries.

Third, to examine whether relationships with employees affect the relation between the FTR of languages and income smoothing, we follow Banker et al. (2013) and use data on employee protection legislation (*EPL*), obtained from the Organisation for Economic Co-operation and Development (OECD), to proxy for country-level employee protections against unemployment risks.[16] We multiply the index by -1 so that higher values represent weaker employment protection legislation. Results from estimating Eq. (2) using *EPL* are presented in Table 5, column (4). The positive and significant coefficient on the interaction term supports the notion that firms in weak-FTR countries are even more likely than those in strong-FTR countries to smooth earnings when they depend more on long-term relationships with their employees.

[15] The industry-level relationship-specificity data are available at http://scholar.harvard.edu/nunn/pages/data-0. The data from Nunn (2007) include relationship-specificity for 381 industries with 6-digit NAICS. We have 1,502 industries in our sample with NAICS ranging from 2-digit through 6-digit. 244 of these 1,502 industries can be exactly matched with data from Nunn (2007). To increase our sample size, we manually match our NAICS industry classifications to those from Nunn (2007). We first attempt to match the 6-digit NAICS in our sample with the 6-digit NAICS; when there is no match, we look for 5-digit matches and use the average value of relationship-specificity for all industries starting with the same 5-digit NAICS; when we cannot find a 5-digit match, we repeat the process for 4-digit, then 3-digit, and then 2-digit NAICS. After completing these steps, we are able to obtain a relationship-specificity measure for 653 of 1,502 industries in our sample.

[16] Dou et al. (2016) and Ng et al. (2019) use U.S. state-level unemployment benefits to proxy for employees' unemployment concerns. Because unemployment benefits data are not available for most of our sample countries, we follow Banker et al. (2013) and use data on employee protection legislation. Specifically, we use the employee protection legislation strictness indexes from the OECD database. These indexes evaluate regulations regarding the dismissal of workers on regular contracts and the hiring of workers on temporary contracts. We follow Banker et al. (2013) and use the aggregate index data obtained from https://stats.oecd.org/Index.aspx?DataSetCode=EPL_OV. In untabulated analyses, we find that legislation related to regular contracts and legislation related to temporary contracts are both associated with more income smoothing by weak-FTR firms.

Taken together, these findings indicate stronger associations between the FTR of languages and corporate income smoothing behavior when incentives to maintain long-term stakeholder relationships are stronger. Supporting Hypothesis 2, these relationships amplify the relation between the FTR of languages and income smoothing.

5. Additional Analyses

5.1. Decomposing Income Smoothing

Although earnings management is typically interpreted as evidence of lower earnings quality, income smoothing can be viewed as beneficial or detrimental. Prior research suggests that income smoothing can increase the informativeness of earnings by conveying private information to outside stakeholders (Kirschenheiter and Melumad 2002; Tucker and Zarowin 2006) or decrease the informativeness of earnings by obfuscating underlying economic performance (Leuz et al. 2003; McInnis 2010; Khurana et al. 2018). Therefore, we test whether the prevalence of income smoothing that we document in weak-FTR countries improves or reduces the informativeness of earnings. If firms smooth earnings to convey information, income smoothing should strengthen the relation between current stock price and future earnings, increasing the future earnings response coefficient (Gelb and Zarowin 2002; Lundholm and Myers 2002).[17]

We follow Dou et al. (2013) and decompose income smoothing into two components – the informational component (*IS_Info*) and the garbled component (*IS_Garb*). *IS_Info* is measured as the predicted value from regressing the level of income smoothing on the future earnings response coefficient (Tucker and Zarowin 2006); this component represents the informativeness of past and current earnings about future earnings. *IS_Garb* is measured as the residual from regressing the level of income smoothing on the future earnings response

[17] Tucker and Zarowin (2006) discuss the advantages of using the future earnings response coefficient (based on stock price) rather than the persistence parameter (based on current earnings) to test whether income smoothing conveys information.

coefficient (Tucker and Zarowin 2006); this component represents the noise that results from income smoothing.[18] If income smoothing by weak-FTR firms conveys information, we will observe a positive association between weak-FTR languages and the informational component. Alternatively, if income smoothing by weak-FTR firms obfuscates underlying performance, we will observe a positive association between weak-FTR languages and the garbled component.

Recall that Table 2, Panel B presents these correlations.[19] *IS_Info* is positively correlated with *Weak_FTR* (*p*-value < 0.01) but *IS_Garb* is not, suggesting that the use of income smoothing by weak-FTR firms provides information about future earnings. In Table 6, we present the regression results.[20] In column (1), where *IS_Info* is the dependent variable, we find a positive and significant coefficient on *Weak_FTR* (*p*-value < 0.01); this suggests that firms are more likely to use income smoothing to provide information about future earnings in countries where the FTR of languages is weak. In contrast, in column (2), where *IS_Garb* is the dependent variable, we find a negative but insignificant coefficient on *Weak_FTR*; therefore, we find no relation between the FTR of languages and the use of income smoothing to obfuscate underlying economic performance. In summary, we find that the relation between weak-FTR languages and income smoothing is driven primarily by the informational component of income smoothing rather than the garbled component.

[Insert Table 6 here]

[18] For detailed calculations, see online Appendix B.
[19] The correlations between *IS_Score* and *IS_Info*, *IS_Score* and *IS_Garb*, and *IS_Info* and *IS_Garb* are comparable to those in Shuto and Iwasaki (2014); these correlations are 0.09, 0.99, and -0.03, respectively. Minor differences may be due to the difference in samples and units of observation; Shuto and Iwasaki (2014)'s sample is from Japan for the period 1988 through 2008 and the authors perform analyses at the firm-year level.
[20] Our sample size is smaller for this analysis than for prior analyses because past and future returns are required to calculate the two components of income smoothing and they are not available for all observations. We also require at least 20 industries within a country to estimate Eq. (C2) in online Appendix B.

5.2. Robustness Tests

5.2.1. Additional Controls

Although our baseline models include many important controls, one concern is that the relation between the FTR of languages and income smoothing might be driven by differences in accounting systems around the world, rather than by the FTR of languages. To mitigate this concern, we take advantage of the adoption of International Financial Reporting Standards (IFRS). One purpose of IFRS is to reduce cross-country variation in financial reporting by limiting alternative accounting treatments. To examine the effect of IFRS adoption, we recalculate the IS measures at the country-industry-IFRS adoption level.[21] Next, we combine the two subsamples and set an *IFRS* indicator variable equal to one for the IFRS sample. This process increases the number of observations (N = 12,801) relative to our baseline regression (N = 10,020).[22] Finally, we re-estimate Eq. (1) but include IFRS and its interaction with *Weak_FTR*.

Table 7, column (1) presents the results. We find that IFRS adoption does not moderate the effect of the FTR of languages on income smoothing (i.e., the coefficient on *Weak_FTR*IFRS* is insignificant) and that *Weak_FTR* remains significant. A joint significance test also reveals that the combined effect of *Weak_FTR* and *Weak_FTR*IFRS* is significantly greater than zero, supporting inferences from our main tests. Overall, this test helps to alleviate the concern that our results are driven by differences in accounting standards.

[21] IFRS have been voluntarily adopted by many firms worldwide, with some countries requiring mandatory adoption for listed firms (e.g., in the European Union in 2005). Following Li et al. (2021), we avoid self-selection bias associated with voluntary IFRS adoption by excluding firms that voluntarily adopt IFRS prior to the mandatory adoption year.

[22] Specifically, we separate our sample into two subsamples based on country-level mandatory IFRS adoption, and we re-estimate our income smoothing measures at the country-industry level for these two subsamples separately. If countries adopt IFRS during our sample period, we can have two observations in a country-industry. For example, countries in the EU were required to adopt IFRS in 2005 so EU country-industries from 1987 through 2004 appear in the non-IFRS subsample and EU country-industries from 2005 through 2019 appear in the IFRS subsample.

[Insert Table 7 here]

Another question is whether globalization can mitigate the effect of spoken languages because firms operating in countries with higher levels of globalization are more likely to be exposed to multiple languages. To test this, we obtain data from ETH Zurich and consider each country's level of globalization, measured by the KOF Index of Globalization (Dreher 2006). We use the overall index, which covers the economic, social, and political dimensions of globalization, and ranges from 1 through 100, with higher values denoting greater globalization. We form an indicator variable *Globalization*, which equals one for countries with a KOF Index of Globalization greater than the median and we include *Globalization* and its interaction with *Weak_FTR* in Eq. (1). The results in Table 7, column (2) indicate that the coefficient on *Weak_FTR*Globalization* is insignificant but the coefficient on *Weak_FTR* remains significant. In addition, a joint significance test reveals that the sum of *Weak_FTR* and *Weak_FTR*Globalization* is significantly greater than zero, supporting inferences from our main tests. Overall, these results reveal that the effect of the FTR of languages on income smoothing is robust to the country's level of globalization.

To mitigate the concern that IFRS adoption and globalization also affect the relationship between income smoothing and our other control variables, we simultaneously consider IFRS adoption and globalization and interact these two variables (*IFRS* and *Globalization*) with the control variables and one another. The results in Table 7, column (3) show that after controlling for the interactions, the coefficient on *Weak_FTR* remains significant. A joint significance test reveals that the sum of *Weak_FTR*, *Weak_FTR*IFRS*, and *Weak_FTR*Globalization* is significantly greater than zero, reinforcing our main inference.[23]

[23] Because *Globalization* is missing for some countries, column (2) of Table 7 which is based on our main sample (n = 10,020), has a smaller number of observations (n = 9,681). Similarly, column (3) of Table 7, which is based on the IFRS sample (n = 12,801), has a smaller number of observations than column (1) (n = 12,224).

Because managers may increase and decrease reported earnings to achieve a smooth earnings series, another concern that arises is whether our results on the relation between weak-FTR languages and income smoothing are simply a by-product of the relation between the FTR of languages and earnings management, which is documented in Kim et al. (2017). To address this concern, we form a country-industry measure of earnings management using the mean value of the firm-year-level earnings management measure from Kothari et al. (2005) and rank each country-industry so that a higher-ranking score indicates more earnings management (Leuz et al. 2003). Next, we re-estimate Eq. (1) including *EM_Rank*. The results in Table 7, column (4) reveal that our inferences are robust to controlling for earnings management, supporting the view that income smoothing and earnings management are fundamentally different constructs.

Finally, prior research finds that culture can have a significant impact on financial outcomes (Guiso et al. 2009; Chui et al. 2010; Giannetti and Yafeh 2011; Cheon and Lee 2018). The most commonly used set of cultural dimensions in corporate finance studies is from Hofstede (Hofstede 1980, 1994, 2001; Hofstede and Hofstede 2005). Accordingly, we re-estimate Eq. (1) including Hofstede's six cultural dimensions.[24] Results in Table 7, column (5) reveal that our inferences are not sensitive to the inclusion of these dimensions. To further disentangle the effect of the FTR of languages from Hofstede's cultural dimensions, we orthogonalize *Weak_FTR* by regressing it on the six cultural dimensions and taking the residual. This measure is the portion of the FTR of languages that is not captured by the right-hand side variables (Guedhami and Pittman 2008; Cao et al. 2012). In untabulated analyses, we replace *Weak_FTR* with its orthogonalized value and re-estimate Eq. (1). Again, we find that our inferences are robust.

[24] These dimensions are Power Distance, Individualism versus Collectivism, Masculinity versus Femininity, Uncertainty Avoidance, Long-Term Orientation, and Indulgence versus Restraint.

5.2.2. Within-Country Analysis

A potential concern is whether our prior tests effectively control for cross-country differences that could be correlated with the FTR of languages. We mitigate this concern by performing a within-country analysis in the United Kingdom (UK). The UK provides a suitable setting to test our research question because UK firms are more likely than firms from many other countries to have foreign executives with diverse nationalities (Conyon et al. 2019). Our tests consider both CEOs and CFOs and use all firms listed on the UK's Financial Times Stock Exchange (FTSE) All-Share Index from 1999 through 2016. This index captures 98 percent of the UK's market capitalization and includes all constituents of the FTSE 100, FTSE 250, and FTSE Small Cap Indexes.

We collect financial information from Datastream and CEO and CFO nationalities from BoardEx. We calculate firm-year level income smoothing measures following Tucker and Zarowin (2006) and Shuto and Iwasaki (2014) to generate *IS1_UK*, *IS2_UK*, and *IS3_UK*. Next, we extract the first component from a principal component analysis of these three measures to form *IS_Score_UK*. Detailed definitions appear in Appendix A. The sample consists of 666 unique firms, 1,441 unique CEOs, 1,324 unique CFOs, and 6,574 firm-year observations. There are 813 (308) firm-year observations with foreign CEOs (CFOs), representing approximately 12 (5) percent of the final sample.

The results in Table 8, Panel A reveal that firms with CFOs from weak-FTR countries (*CFO_Weak_FTR*) are significantly more likely than CFOs from strong-FTR countries to smooth earnings, providing further support for the effect of the FTR of languages. Although we do not detect a similar effect for CEOs (*CEO_Weak_FTR*), this is unsurprising because prior research finds that CFOs have more influence than CEOs over financial reporting decisions in general (Jiang et al. 2010; Ham et al. 2017), and that CFOs are more central for making firm decisions in the UK than in the U.S. (Florackis and Sainani 2018).

[Insert Table 8 here]

5.2.3. Alternative Measures of the Time-Oriented Tendency of Languages

To test whether our inferences depend on how we measure the time-oriented tendency of languages, we use two alternative measures: the "*Verb_Ratio*" and the "*Sentence_Ratio*," which Chen (2013) develops using sentences scraped from online weather reports. The *Verb_Ratio* is the number of grammatically future-marked verbs divided by the total number of future-referring verbs and the *Sentence_Ratio* is the number of sentences containing a future-referring verb divided by the total number of sentences. Therefore, the *Verb_Ratio* measures the proportion of verbs that are future-referring and the *Sentence_Ratio* measures the proportion of sentences that are future-referring. We multiply *Verb_Ratio* and *Sentence_Ratio* by -1 so that higher values indicate weaker-FTR languages. We also form an aggregate time-oriented tendency score (*TOT_Score*) as another alternative measure. *TOT_Score* is first component from a principal component analysis of *Weak_FTR*, *Verb_Ratio*, and *Sentence_Ratio*.

The results using these three alternative measures are presented in Table 8, Panel B, in columns (1) through (3), respectively. All three alternative measures are positively associated with income smoothing. This evidence supports our main results and again suggests that firms in weak-FTR countries tend to smooth earnings to a greater extent than firms in strong-FTR countries.

5.2.4. Alternative Samples

We also test whether our main results are sensitive to the exclusion of certain countries. The largest weak-FTR country (Japan) and the largest strong-FTR country (the U.S.) constitute approximately 8.55 and 8.15 percent of our sample, respectively, so we test whether our inferences hold after excluding observations from these countries. Results in Table 8, Panel C, column (1) reveal that our main inferences are robust.

Next, we perform tests acknowledging that some countries have multiple official languages, which include both weak- and strong-FTR languages. Specifically, the official languages in Belgium are Dutch and German, which are weak-FTR languages, as well as French, which is a strong-FTR language. Similarly, the official languages in Switzerland are German, which is a weak-FTR language, and French, Italian, and Romansh, which are strong-FTR languages. Finally, the official languages in Singapore are English, which is a strong-FTR language, and Mandarin, which is a weak-FTR language. In our main tests, we follow Kim et al. (2017) and classify Belgium and Singapore as weak-FTR countries, and we classify Switzerland as a weak-FTR country because the majority of its spoken languages are weak-FTR languages. However, because the measured FTR of languages in these countries includes measurement error, we re-estimate our main tests excluding firms from Belgium, Singapore, and Switzerland. Results in Panel C, column (2) reveal that our inferences continue to hold.

5.2.5. Alternative Unit Definition

As previously discussed, our main analyses are at the country-industry level following Burgstahler et al. (2006) and Dou et al. (2013). This unit of analysis is suitable in our context because we assume that the FTR of a language is time-invariant. Moreover, the country-industry unit of analysis allows us to control for industry characteristics. However, we assess whether our inferences are robust to the use of two alternative unit definitions: the country-industry-year unit and the firm-year unit. The sample construction procedure yields a sample of 24,834 (288,988) country-industry-year (firm-year) observations from 36 countries.[25] Results in Table 8, Panel D reveal that our main inferences continue to hold.

[25] In our country-industry-year (firm-year) analysis, we require that each country-industry (firm) has at least five observations, which reduces the number of countries included in our sample.

6. Conclusion

In this paper, we investigate how the time-oriented tendency embedded in languages shapes corporate income smoothing behavior by separating languages into those with weak- versus strong-FTR. Results from our cross-country analyses, covering 42 countries and 1,502 industries, reveal that the time-oriented tendency of spoken languages plays a key role in corporate income smoothing behavior. Specifically, we find that income smoothing is more prevalent in weak-FTR countries, where different tenses that distinguish between the future and the present are not required. We also find that the positive relation between weak-FTR languages and income smoothing is more pronounced when relationships with debtholders, suppliers, and employees are more important. That is, higher leverage, bankruptcy probability, supplier relationship-specificity, and lower employee protection against unemployment risk amplify the relation between the FTR of languages and corporate income smoothing.

In additional analyses, we document a positive and significant relation between the informational component (but not the garbled component) of income smoothing and weak-FTR languages, indicating that income smoothing by managers of firms in weak-FTR countries enhances the informativeness of earnings. We also find that our inferences hold using a battery of robustness tests that consider different controls, samples, and unit definitions, as well as alternative measures of the FTR of languages.

Our findings provide valuable contributions to the literature. We document that language is a key factor influencing corporate reporting behavior. In contrast, most previous international studies focus on formal institutional characteristics such as investor protection, and studies that consider other characteristics are typically limited to culture. Results related to the time-orientation of languages also advance our understanding of the determinants of corporate income smoothing behavior. This is important because of the increasing

globalization of financial markets, the prevalence of income smoothing in practice, and the relation between earnings variability and relationships with major stakeholders.

Our findings suggest that international stakeholders can use the FTR of spoken languages to make preliminary assessments about management's focus on long-term earnings stability. Moreover, our results should be important to managers, boards of directors, and auditors because they point to an unconscious bias in the financial reporting process that arises because of the future time-orientation of spoken languages. Finally, our findings should be of interest to regulators because we find that the use of common accounting standards (i.e., IFRS) does not mitigate the cross-national variation in financial reporting that arises from informal institutions.

As is the case in all empirical studies, this study is subject to a number of limitations. First, we are mindful of debates regarding the definition and classification of FTR (Dahl 2013; Sutter et al. 2018; Gotti et al. 2021) and we acknowledge challenges in demonstrating causality when studying high-level constructs like language, especially because cultural phenomena such as languages are likely to develop in bundles and entail a variety of features (Dahl 2013). However, we conduct several robustness tests, including controlling for the relatedness of languages, performing within-country analyses, and using alternative measures of the FTR of languages, in order to help assuage these concerns. Future studies can consider alternative methodologies (e.g., identifying settings where a sudden influx of suppliers and employees takes place) that may provide additional insights. Second, although we evaluate three major stakeholder groups that could amplify the relation between the FTR of languages and income smoothing, we acknowledge that there are other stakeholder groups that we do not examine. For example, important customers may also influence the relation between the FTR of languages and financial reporting choices but we do not examine the impact of customer relationships because we lack a proxy for customer bargaining power that is

comparable across countries. Finally, our tests regarding the role of major stakeholders are cross-sectional so we recommend that readers focus on the consistent amplifying effects of major stakeholders on the relation between the FTR of languages and income smoothing rather than on the relations between major stakeholders and income smoothing. At a minimum, we document empirical patterns that can spur further research.

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Appendix A. Variable Definitions

Variable	Definition
	Main Variables
IS1	The country-industry ratio of the cross-sectional standard deviation of operating income divided by the standard deviation of cash flow from operations, multiplied by -1.
IS2	The country-industry contemporaneous Spearman correlation between changes in total accruals and changes in cash flow from operations, multiplied by -1.
IS3	The country-industry Spearman correlation between the change in discretionary accruals and the change in pre-discretionary income, multiplied by -1.
IS_Score	The first component from a principal component analysis of *IS1*, *IS2*, and *IS3*.
Weak_FTR	An indicator variable set to one (zero) for weak-FTR (strong-FTR) language countries. Data are from Chen (2013) and Kim et al. (2017).
Analyst_Follow	The country-industry median of the number of analysts following.
Inv_Intensity	The country-industry median of investment intensity, which is the sum of research and development, advertising, and human capital investment, all divided by lagged total assets.
Legal_Quality	The average value of the efficiency of the judicial system, rule of law, and the corruption index from La Porta et al. (1998), where higher values indicate better legal enforcement quality.
Leverage	A proxy for the importance of relationships with debtholders: The country-industry median of the ratio of long-term debt to the sum of long-term debt and the book value of equity.
Log_Assets	The country-industry median of the logarithm of total assets.
MTB	The country-industry median of the market-to-book ratio.
ROA	The country-industry median of net income over beginning-of-year total assets.
Sales_Growth	The country-industry median of the annual percentage change in sales.
	Other Variables
Altmans Zscore	A proxy for the importance of relationships with debtholders: The country-industry median of Altman's Zscore, which measures the risk of financial distress (Altman 1968; Begley et al. 1996).
CEO_Weak_FTR	An indicator variable set to one (zero) for CEOs from weak-FTR (strong-FTR) language countries. CEO nationality is obtained from BoardEx.
CFO_Weak_FTR	An indicator variable set to one (zero) for CFOs from weak-FTR (strong-FTR) language countries. CFO nationality is obtained from BoardEx.
EM_Rank	An aggregate rank measure of earnings management at the country-industry level calculated by averaging the firm-year earnings management measure from Kothari et al. (2005) at the country-industry level.

EPL	A proxy for the importance of relationships with employees: Computed as the average employment protection legislation (EPL) for regular employees and temporary employees following OECD indicators of employment protection legislation updated in 2018, multiplied by -1, so that higher scores represent weaker employee protection legislation, from https://stats.oecd.org/Index.aspx?DataSetCode=EPL_OV.
Globalization	An indicator variable set to one for countries with a KOF Index of Globalization, updated in 2018, higher than the median value; the KOF Index of Globalization covers economic, social, and political dimensions of globalization, and is scaled from 1 through 100.
IFRS	An indicator variable set to one for country-industry-years that have mandatorily adopted IFRS, and zero otherwise.
Individualism	Individualism score from Hofstede (2001), defined as a preference for a loosely-knit social framework in which individuals are expected to care only for themselves and their immediate families.
Indulgence	Indulgence score from Hofstede (2001), which represents the extent to which people attempt to control their desires and impulses based on their upbringing.
IS_Garb	The garbled component of income smoothing, measured as the residual from regressing the industry-level *IS_Score* on the industry-level coefficients on future earnings (b_{3P} and b_{3L}), as described in online Appendix B, within each country.
IS_Info	The informational component of income smoothing, measured as the predicted value from regressing the industry-level *IS_Score* on the industry-level coefficients on future earnings (b_{3P} and b_{3L}), as described in online Appendix B, within each country.
Long Term Orientation	Long-term orientation score from Hofstede (2001), which represents a preference for encouraging thrift and modern education versus maintaining time-honored traditions and norms.
Masculinity	Masculinity from Hofstede (2001), which represents a preference in society for achievement, heroism, assertiveness, and material rewards rather than cooperation, modesty, caring for the weak, and quality of life.
Power Distance	Power distance score from Hofstede (2001), which addresses how a society handles inequalities (hierarchical orders) among people.
Relation Specificity	A proxy for the importance of relationships with suppliers: Industry-level relationship specificity, measured as the fraction of inputs that are not sold on an organized exchange or reference priced, from http://scholar.harvard.edu/nunn/pages/data-0.
Sentence_Ratio	The proportion of sentences containing a future-referring verb scraped from full-sentence online weather forecasts, multiplied by -1, from Chen (2013).
TOT_Score	The first component from a principal component analysis of *Weak_FTR*, *Verb_Ratio*, and *Sentence_Ratio*.
Uncertainty Avoidance	Uncertainty avoidance score from Hofstede (2001), which measures the degree to which members of a society feel

	uncomfortable with uncertainty and ambiguity.
Verb_Ratio	The ratio of the number of grammatically future-marked verbs divided by the total number of future-referring verbs scraped from full-sentence online weather forecasts, multiplied by -1, from Chen (2013).
	Alternative Measures of Income Smoothing
IS_Score_FY	The first component from a principal component analysis of *IS1_FY*, *IS2_FY*, and *IS3_FY*.
IS1_FY	The firm-year ratio of a firm's standard deviation of net income to its standard deviation of cash flow from operations measured over a 5-year period, multiplied by -1.
IS2_FY	The firm-year Spearman correlation between changes in total accruals and contemporaneous changes in operating cash flows measured over a 5-year period, multiplied by -1.
IS3_FY	The firm-year Spearman correlation between changes in discretionary accruals and changes in pre-discretionary income over a 5-year period, multiplied by -1.
IS_Score_CIY	The first component from a principal component analysis of *IS1_CIY*, *IS2_CIY*, and *IS3_CIY*.
IS1_CIY	The country-industry-year ratio of the cross-sectional standard deviation of operating income divided by the standard deviation of cash flow from operations, multiplied by -1.
IS2_CIY	The country-industry-year Spearman correlation between changes in total accruals and contemporaneous changes in operating cash flows, multiplied by -1.
IS3_CIY	The country-industry-year Spearman correlation between changes in discretionary accruals and contemporaneous changes in pre-discretionary income, multiplied by -1.
IS_Score_UK	The first component from a principal component analysis of *IS1_UK*, *IS2_UK*, and *IS3_UK*.
IS1_UK	The UK firm-year ratio of a firm's standard deviation of net income to its standard deviation of cash flow from operations measured over a 5-year period, multiplied by -1.
IS2_UK	The UK firm-year Spearman correlation between changes in total accruals and contemporaneous changes in operating cash flows measured over a 5-year period, multiplied by -1.
IS3_UK	The UK firm-year Spearman correlation between changes in discretionary accruals and changes in pre-discretionary income over a 5-year period, multiplied by -1.

Table 1. Industry Distribution by Country

Country	No. industries	Percent	*IS_Score*	*Weak_FTR*	Country	No. industries	Percent	*IS_Score*	*Weak_FTR*
Argentina	47	0.47	-0.40	0	Korea South	406	4.05	0.16	0
Australia	408	4.07	-0.65	0	Luxembourg	28	0.28	-0.50	1
Austria	72	0.72	0.20	1	Malaysia	397	3.96	0.16	1
Belgium	95	0.95	0.04	1	Mexico	82	0.82	-0.31	0
Canada	236	2.36	-0.39	0	Netherlands	143	1.43	-0.08	1
Chile	98	0.98	0.00	0	New Zealand	118	1.18	-0.41	0
China	601	6.00	0.28	1	Norway	114	1.14	-0.39	1
Colombia	30	0.30	0.35	0	Pakistan	106	1.06	0.40	0
Denmark	118	1.18	0.09	1	Poland	282	2.81	-0.03	0
Finland	104	1.04	0.08	1	Portugal	51	0.51	0.39	0
France	394	3.93	0.16	0	Singapore	327	3.26	0.06	1
Germany	354	3.53	0.25	1	Slovenia	25	0.25	0.55	0
Greece	137	1.37	0.46	0	Spain	107	1.07	-0.03	0
Hong Kong	401	4.00	-0.27	1	Sweden	277	2.76	-0.50	1
Hungary	20	0.20	0.19	0	Switzerland	169	1.69	-0.10	1
Iceland	14	0.14	0.10	1	Taiwan	339	3.38	0.28	1
India	569	5.68	0.14	0	Thailand	301	3.00	0.12	0
Ireland	59	0.59	-0.20	0	Turkey	152	1.52	0.12	0
Israel	168	1.68	0.09	0	United Kingdom	663	6.62	-0.33	0
Italy	173	1.73	0.09	0	United States	817	8.15	-0.41	0
Japan	857	8.55	0.39	1	Vietnam	161	1.61	0.74	0
Total						**10,020**	**100**		

Table 1 presents the distribution of sample industries by country. The sample includes 42 countries and 10,020 country-industry-level observations. *IS_Score* is the mean value of the country-industry-level income smoothing variable. *Weak_FTR* measure the time-oriented tendency in languages; it takes the value of 1 for weak-FTR countries and 0 for strong-FTR countries.

Table 2. Descriptive Statistics and Correlation Matrix

Panel A: Descriptive Statistics

Variables	N	Mean	SD.	p25	Median	p75
IS_Score	10,020	0.002	1.074	-0.603	0.245	0.799
IS_Info	7,389	0.057	0.327	-0.274	0.138	0.312
IS_Garb	7,389	0.006	0.876	-0.513	0.155	0.627
Weak_FTR	10,020	0.440	0.496	0.000	0.000	1.000
Verb_Ratio	8,109	0.458	0.408	0.000	0.596	0.881
Sentence_Ratio	8,109	0.499	0.437	0.000	0.667	0.929
Legal_Quality	10,020	8.053	1.706	6.528	8.911	9.504
Log_Assets	10,020	4.509	1.759	3.319	4.425	5.569
Leverage	10,020	0.182	0.190	0.016	0.127	0.292
Sales_Growth	10,020	0.066	0.163	0.015	0.056	0.105
ROA	10,020	0.020	0.103	0.010	0.031	0.057
MTB	10,020	1.537	1.665	0.985	1.192	1.564
Inv_Intensity	10,020	0.751	0.231	0.614	0.767	0.907
Analyst_Follow	10,020	1.397	3.232	0.000	0.000	1.000

Panel B: Correlations

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	*IS_Score*											
(2)	*IS_Info*	**0.348**										
(3)	*IS_Garb*	**0.937**	-0.002									
(4)	*Weak_FTR*	**0.088**	**0.340**	-0.001								
(5)	*Legal_Quality*	**-0.155**	**-0.452**	-0.000	**0.326**							
(6)	*Log_Assets*	**0.107**	**0.055**	**0.108**	**0.157**	**0.137**						
(7)	*Leverage*	0.002	**-0.076**	**0.064**	**-0.107**	**0.164**	**0.403**					
(8)	*Sales_Growth*	**-0.060**	**-0.077**	-0.010	**-0.074**	**-0.056**	0.019	**0.026**				
(9)	*ROA*	**0.242**	**0.158**	**0.211**	**0.040**	**-0.140**	**0.294**	-0.000	**0.042**			
(10)	*MTB*	**-0.082**	**-0.088**	**-0.074**	0.006	0.009	**-0.045**	**-0.061**	**0.080**	**-0.106**		
(11)	*Inv_Intensity*	-0.011	**-0.051**	0.023	**0.044**	**0.052**	**-0.168**	**-0.288**	**0.223**	-0.003	**0.106**	
(12)	*Analyst_Follow*	0.011	**-0.095**	**0.062**	0.002	**0.155**	**0.476**	**0.192**	**0.035**	**0.140**	**0.043**	**-0.032**

Table 2 Panel A reports descriptive statistics for test variables and Panel B presents Pearson correlations between the key variables. Detailed variable definitions are provided in Appendix A. Bolded correlations are significant at the 0.01 level.

Table 3. Univariate Tests for Differences in Key Variables across Country-Industries in Weak-FTR Versus Strong-FTR Countries

	Weak-FTR		Strong-FTR		*t*-test		Wilcoxon Test	
	Mean	Median	Mean	Median	Mean Diff (1)-(3)	*t*-stat	Median Diff (2)-(4)	*z*-stat
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IS_Score	0.108	0.347	-0.081	0.150	0.189***	8.79	0.197***	8.65
IS_Info	0.175	0.247	-0.048	0.033	0.223***	31.11	0.214***	32.91
IS_Garb	0.005	0.168	0.007	0.136	-0.002	-0.08	0.032	0.33
Legal_Quality	8.680	9.054	7.561	7.717	1.120***	34.49	1.337***	24.09
Log_Assets	4.820	4.751	4.264	4.106	0.555***	15.88	0.645***	17.03
Leverage	0.159	0.098	0.200	0.152	-0.041***	-10.82	-0.054***	-10.78
Sales_Growth	0.053	0.043	0.077	0.066	-0.024***	-7.38	-0.023***	-13.70
ROA	0.025	0.031	0.016	0.031	0.008***	3.99	-0.001	-0.82
MTB	1.548	1.179	1.527	1.198	0.021	0.63	-0.019	-0.11
Inv_Intensity	0.763	0.775	0.742	0.760	0.020***	4.41	0.015***	3.76
Analyst_Follow	1.405	0.000	1.391	0.000	0.014	0.22	0.000	0.70

Table 3 presents univariate tests for differences in key variables between weak- and strong-FTR countries. Detailed variable definitions are provided in Appendix A. *** indicates statistical significance at the 1% level.

Table 4. The Impact of the Time-Oriented Tendency Imbedded in Spoken Languages on Income Smoothing

Dependent variable =	*IS_Score* (1)	*IS_Score* (2)	*IS_Score* (3)
Weak_FTR	0.282***	0.268***	0.282***
	(3.81)	(3.72)	(4.03)
Legal_Quality	-0.118***	-0.111***	-0.118***
	(-6.51)	(-6.34)	(-6.83)
Log_Assets	0.031*	0.030*	0.031*
	(1.87)	(2.00)	(1.94)
Leverage	0.209**	0.221**	0.209***
	(2.44)	(2.32)	(3.28)
Sales_Growth	-0.485***	-0.413***	-0.485***
	(-3.67)	(-3.39)	(-6.27)
ROA	2.033***	1.690***	2.033***
	(11.13)	(10.51)	(17.94)
MTB	-0.034**	-0.021*	-0.034
	(-2.22)	(-1.87)	(-1.70)
Inv_Intensity	0.159	0.116	0.159**
	(1.34)	(1.20)	(2.69)
Analyst_Follow	-0.004	-0.002	-0.004
	(-0.50)	(-0.32)	(-0.37)
Constant	0.579***	0.542***	0.579**
	(3.44)	(3.24)	(3.06)
Industry F.E.	No	Yes	No
Cluster	Country & Industry	Country & Industry	Language Family
Observations	10,020	9,709	10,020
Adj. R-squared	0.100	0.194	0.100

Table 4 presents the results from estimating the following OLS regression:

$$IS\_Score_{c,i} = \beta_0 + \beta_1 Weak\_FTR_c + \boldsymbol{\gamma} Controls_{c,i} + \varepsilon_{c,i}$$

The dependent variable $IS\_Score_{c,i}$ is the first component from the principal component analysis of *IS1*, *IS2*, and *IS3* for industry *i* in country *c*. *Weak_FTR* is the measure of time-oriented tendency in languages; it takes the value of one for weak-FTR countries, and zero for strong-FTR countries. *Controls* is the vector of control variables. Detailed variable definitions are provided in Appendix A. T-statistics are provided in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels using two-tailed tests, respectively.

Table 5: The Impact of Major Stakeholders on the Relation between the Time-Oriented Tendency and Income Smoothing

Panel A: Descriptive Statistics of Stakeholder Variables

Variables	N	Mean	SD.	p25	Median	p75
Leverage	10,020	0.182	0.190	0.016	0.127	0.292
Altmans Zscore	10,004	-2.972	2.085	-3.622	-2.499	-1.698
Relation Specificity	4,515	0.503	0.211	0.340	0.502	0.686
EPL	8,686	-1.782	0.883	-2.508	-1.942	-1.146

Panel B: Regression Results on the Impact of Major Stakeholders

Dependent variable =	*IS_Score*			
	(1)	(2)	(3)	(4)
Weak_FTR	0.237***	0.357***	0.095	0.919***
	(3.94)	(3.66)	(0.63)	(4.27)
Leverage	0.661			
	(1.45)			
*Weak_FTR * Leverage*	0.267**			
	(2.08)			
Altmans Zscore		0.022		
		(0.46)		
*Weak_FTR * Altmans Zscore*		0.017*		
		(1.76)		
Relation Specificity			1.248***	
			(3.08)	
*Weak_FTR * Relation Specificity*			0.374*	
			(1.82)	
EPL				0.362*
				(1.97)
*Weak_FTR * EPL*				0.363***
				(3.35)
Joint Significance test: β1 + β3 = 0	10.78	12.57	22.64	16.14
F-Statistic	0.002	0.001	0.000	0.000
p-value				
Controls	Yes	Yes	Yes	Yes
*Controls * Stakeholder*	Yes	Yes	Yes	Yes
Cluster	Country & Industry	Country & Industry	Country & Industry	Country & Industry
Observations	10,020	10,004	4,515	8,686
Adj. R-squared	0.105	0.107	0.109	0.109

Table 5 presents the results from estimating the following OLS model:

$$IS\_Score_{c,i} = \beta_0 + \beta_1 Weak\_FTR_c + \beta_2 Stakeholder_{c,i} + \beta_3 Weak\_FTR_c * Stakeholder_{c,i} + \boldsymbol{\gamma} Controls_{c,i} + \boldsymbol{\delta} Controls_{c,i} * Stakeholder_{c,i} + \varepsilon_{c,i}$$

The dependent variable $IS\_Score_{c,i}$ is the first component from the principal component analysis of *IS1*, *IS2*, and *IS3* for industry *i* in country *c*. *Weak_FTR* is the measure of time-oriented tendency in languages; it takes the value of one for weak-FTR countries, and zero for strong-FTR countries. $Stakeholder_{c,i}$ is one of the following proxies: *Leverage*, *Altmans Zscore*, *Relation Specificity*, and *EPL*. Detailed variable definitions are provided in Appendix A. T-statistics are provided in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels using two-tailed tests, respectively.

Table 6: The Impact of the Time-Oriented Tendency on the Informational and Garbling Components of Income Smoothing

Dependent variable =	*IS_Info*	*IS_Garb*
	(1)	(2)
Weak_FTR	0.355***	-0.026
	(4.16)	(-0.98)
Legal_Quality	-0.127***	0.004
	(-6.52)	(0.45)
Log_Assets	0.008	0.016
	(0.71)	(1.28)
Leverage	0.150*	0.286**
	(2.02)	(2.47)
Sales_Growth	-0.329***	-0.379
	(-3.34)	(-1.55)
ROA	0.207*	2.092***
	(2.02)	(8.15)
MTB	-0.013**	-0.032*
	(-2.29)	(-1.70)
Inv_Intensity	0.044	0.269*
	(0.81)	(1.97)
Analyst_Follow	-0.002	0.002
	(-0.55)	(0.32)
Constant	0.851***	-0.329***
	(5.41)	(-3.19)
Cluster	Country & Industry	Country & Industry
Observations	7,389	7,389
Adj. R-squared	0.498	0.055

Table 6 presents the results from estimating the following OLS regression:

$$Income\_Smoothing_{c,i} = \beta_0 + \beta_1 Weak\_FTR_c + \boldsymbol{\gamma} Controls_{c,i} + \varepsilon_{c,i}$$

The dependent variable $Income\_Smoothing_{c,i}$ is either *IS_Info* or *IS_Garb*. *IS_Info* is the informational component of income smoothing and *IS_Garb* is the garbled component of income smoothing. *Weak_FTR* is the measure of time-oriented tendency in languages; it takes the value of one for weak-FTR countries, and zero for strong-FTR countries. *Controls* is the vector of control variables. Detailed variable definitions are provided in Appendix A. T-statistics are provided in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels using two-tailed tests, respectively.

Table 7. The Impact of Controlling for Additional Factors on the Association between Time-Oriented Tendency and Income Smoothing

Dependent variable =	*IS_Score*				
	(1)	(2)	(3)	(4)	(5)
Weak_FTR	0.285***	0.315***	0.238***	0.320***	0.171*
	(3.51)	(3.18)	(4.44)	(4.77)	(1.82)
IFRS	0.008		0.135		
	(0.13)		(0.47)		
*Weak_FTR*IFRS*	-0.112		-0.030		
	(-0.91)		(-0.31)		
Globalization		0.002	0.864**		
		(0.01)	(2.51)		
*Weak_FTR*Globalization*		-0.073	-0.054		
		(-0.56)	(-0.79)		
*IFRS * Globalization*			0.091		
			(0.720)		
EM_Rank				-0.111	
				(-0.93)	
Power Distance					0.000
					(0.31)
Individualism					-0.001
					(-0.51)
Masculinity					0.001
					(0.78)
Uncertainty Avoidance					0.003***
					(2.86)
Long Term Orientation					0.003
					(1.46)
Indulgence					-0.001
					(-0.57)
Joint Significance test:	β1 + β3 = 0	β1 + β3 = 0	β1 + β3 + β5 = 0		
F-Statistic	3.68	8.60	4.00		
p-value	0.062	0.005	0.052		
Controls	Yes	Yes	Yes	Yes	Yes
*Controls * IFRS*	No	No	Yes	-	-
*Controls * Globalization*	No	No	Yes	-	-
S.D Cluster	Country & Industry	Country & Industry	Country & Industry	Country & Industry	Country & Industry
Observations	12,801	9,681	12,224	8,029	10,020
Adj. R-squared	0.054	0.099	0.107	0.113	0.111

Table 7 presents the results from estimating the following OLS models:

$$IS\_Score_{c,i} = \beta_0 + \beta_1 Weak\_FTR_c + \beta_2\, IFRS_{c,i}/Globalization_c + \beta_3\, Weak\_FTR_c * IFRS_{c,i}/Globalization_c + \boldsymbol{\gamma} Controls_{c,i} + \varepsilon_{c,i}$$

$$IS\_Score_{c,i} = \beta_0 + \beta_1 Weak\_FTR_c + \beta_2 IFRS_{c,i} + \beta_3\, Weak\_FTR_c * IFRS_{c,i} + \beta_4 Globalization_c + \beta_5\, Weak_{FTR_c} * Globalization_c + \beta_6\, IFRS_{c,i} * Globalization_c + \boldsymbol{\gamma} Controls_{c,i} + \boldsymbol{\delta} Controls_{c,i} * IFRS_{c,i} + \boldsymbol{\theta} Controls_{c,i} * Globalization_c + \varepsilon_{c,i}$$

$$IS\_Score_{c,i} = \beta_0 + \beta_1 Weak\_FTR_c + \beta_2 AdditionalControls_{c,i} + \boldsymbol{\gamma} Controls_{c,i} + \varepsilon_{c,i}$$

The dependent variable $IS\_Score_{c,i}$ is the first component from principal component analysis of *IS1*, *IS2*, and *IS3* for industry *i* in country *c*. *Weak_FTR* is the measure of time-oriented tendency in languages; it takes the value of one for weak-FTR countries, and zero for strong-FTR countries. $IFRS_{c,i}$ in column (1) is an indicator for mandatory IFRS adoption and $Globalization_c$ in column (2) is an indicator set to one if the KOF Index of

Globalization for country *c* is higher than the median. In column (3), we simultaneously consider *IFRS* and *Globalization* and their joint effects by adding their interactions with the control variables and one another. The $AdditionalControls_{c,i}$ in column (4) is *EM Rank* and in column (5) is a set of Hofstede's cultural dimensions, which include Power Distance, Individualism versus Collectivism, Masculinity versus Femininity, Uncertainty Avoidance, Long Term Orientation, and Indulgence versus Restraint. *Controls* is the vector of control variables. Detailed variable definitions are provided in Appendix A. T-statistics are provided in parentheses. *, **, and *** indicate statistical significance at the 10%, 5% and 1% levels using two-tailed tests, respectively.

Table 8. Robustness Tests

Panel A: Within-Country Analysis (UK)			
Dependent variable =		*IS_Score_UK*	
	(1)	(2)	(3)
CEO_Weak_FTR	0.015		-0.001
	(0.14)		(-0.00)
CFO_Weak_FTR		0.407*	0.408*
		(1.81)	(1.85)
Controls	Yes	Yes	Yes
S.D Cluster	Firm & Year	Firm & Year	Firm & Year
Observations	6,574	6,574	6,574
Adj. R-squared	0.069	0.070	0.069

Panel B: Alternative Measures of the FTR of Languages			
Dependent variable =		*IS_Score*	
	(1)	(2)	(3)
Verb_Ratio	0.309**		
	(2.63)		
Sentence_Ratio		0.302***	
		(2.84)	
TOT_Score			0.078***
			(2.88)
Controls	Yes	Yes	Yes
S.D Cluster	Country & Industry	Country & Industry	Country & Industry
Observations	8,109	8,109	8,109
Adj. R-squared	0.110	0.111	0.111

Panel C: Alternative Samples		
Dependent variable =	*IS_Score*	
	(1)	(2)
Weak_FTR	0.193***	0.286***
	(3.14)	(3.48)
Controls	Yes	Yes
Countries Dropped	JPN & U.S.	BEL & CHE & SGP
S.D Cluster	Country & Industry	Country & Industry
Observations	8,346	9,429
Adj. R-squared	0.097	0.103

Panel D: Alternative Unit of Analysis			
Dependent variable =	*IS_Score_CIY*	*IS_Score_FY*	*IS_Score_FY*
	(1)	(2)	(3)
Weak_FTR	0.383***	0.262***	0.262***
	(4.08)	(3.91)	(5.98)
Unit of analysis	country-industry-year	firm-year	firm-year
Controls	Yes	Yes	Yes
S.D Cluster	Country & Industry	Country	Language Family
Observations	24,834	288,996	288,996
Adj. R-squared	0.133	0.134	0.134

Table 8 presents the results from robustness tests. Panel A presents the results from estimating the following OLS regression model:

$$IS\_Score\_UK_{i,t} = \beta_0 + \beta_1 CEO/CFO\_Weak\_FTR_{i,t} + \boldsymbol{\gamma} Controls_{i,t} + \varepsilon_{i,t}$$

The dependent variable $IS\_Score\_UK_{i,t}$ is the first component from the principal component analysis of *IS1_UK*, *IS2_UK*, and *IS3_UK* for firm *i* in year *t*. $CEO/CFO\_Weak\_FTR_{i,t}$ is an indicator variable set to one (zero) for CEOs/CFOs from weak-FTR (strong-FTR) language countries. Panel B presents results from estimating our baseline model using alternative FTR measures. The alternative FTR measures in columns (1) through (3) are *Verb_Ratio*, *Sentence_Ratio*, and *TOT_Score*. Panel C reports results from estimating our baseline model excluding the largest strong- and weak-FTR countries (i.e., U.S. and Japan) or the multi-languages countries (i.e., Belgium, Switzerland, and Singapore). Panel D reports results when we change our unit of analysis from the country-industry level to the country-industry-year level (column (1)) and the firm-year level (columns (2) and (3)). The dependent variable $IS\_Score\_CIY_{c,i,t}$ in column (1) is the first component from a principal component analysis of *IS1_CIY*, *IS2_CIY*, and *IS3_CIY* for industry *i* in country *c* in year *t*, and the dependent variable $IS\_Score\_FY_{i,t}$ in columns (2) and (3) is the first component from a principal component analysis of *IS1_FY*, *IS2_FY*, and *IS3_FY* for firm *i* in year *t*. Controls is the vector of control variables. Detailed variable definitions are provided in Appendix A. T-statistics are provided in parentheses. ** and *** indicate statistical significance at the 5% and 1% levels using two-tailed tests, respectively.