

# Future-Time Framing: The Effect of Language on Corporate Future Orientation

Finance Working Paper N° 412/2014

May 2018

Hao Liang

Singapore Management University and ECGI

Christopher Marquis

Cornell University

Luc Renneboog

Tilburg University and ECGI

Sunny Li Sun

University of Massachusetts Lowell

© Hao Liang, Christopher Marquis, Luc Renneboog and Sunny Li Sun 2018. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

This paper can be downloaded without charge from:  
[http://ssrn.com/abstract\\_id=2403878](http://ssrn.com/abstract_id=2403878)

[www.ecgi.org/wp](http://www.ecgi.org/wp)

ECGI Working Paper Series in Finance

## Future-Time Framing: The Effect of Language on Corporate Future Orientation

Working Paper N° 412/2014

May 2018

Hao Liang  
Christopher Marquis  
Luc Renneboog  
Sunny Li Sun

We thank Dennis de Buijzer, Xi Cheng, Xiaodong Li, Weibin Mo, Xiaoming Yang for their help with collecting the data. We also thank Ruth Aguilera, Fabio Braggion, Keith Chen, Xi Cheng, Nicolas Craen, Donal Crilly, Ilya Cuypers, Frank de Jong, Magali Delmas, Scott Derue, Joost Driessen, Sadok El Ghoul, Steffen Giessner, Edith Ginglinger, Denis Gromb, Uli Hege, Inga Hoever, Tyler Hull, Yiannis Ioannou, Mark-Humphery Jenner, Thore Johnsen, Sarah Kaplan, Daan van Knippenberg, Matt Lee, Joril Maeland, Alberto Manconi, Mary-Hunter McDonnell, Chad Navis, Lars Pedersen, Jo-Ellen Pozner, Johan Pilloys, Francisco Santos, Oliver Spalt, Steef van de Velde, Servaes van der Muelen, Ying Yang, and conference and seminar participants at the 74th Academy of Management annual meeting (Philadelphia), Harvard Business School, University of Michigan (Ross), National University of Singapore, Norwegian School of Economics (NHH), Pennsylvania State University, Singapore Management University, Stockholm School of Economics, Erasmus University - Rotterdam School of Management, University of Antwerp, University Paris-Dauphine, Stanford University, Ghent University, Stockholm University, NYU (Stern), and Tilburg University (CentER) for helpful comments. An earlier version of this paper was entitled 'Speaking of Corporate Social Responsibility'.

© Hao Liang, Christopher Marquis, Luc Renneboog and Sunny Li Sun 2018. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

## Abstract

We examine how international variation in corporate future-oriented behavior, such as corporate social responsibility (CSR) and research and development (R&D) investment, could partially stem from characteristics of the languages spoken at firms. We develop a future-time framing perspective rooted in the literatures on organizational categorization and framing. Our theory and hypotheses focus on how companies with working languages that obligatorily separate the future tense and the present tense engage less in future-oriented behaviors, and this effect is attenuated by exposure to multilingual environments. The results based on a large global sample of firms from 39 countries support our theory, highlighting the importance of language in affecting organizational behavior around the world.

---

Keywords: Language, International Business, Organizational Cognition, Future-Time Framing, Corporate Future Orientation, Corporate Culture

JEL Classifications: G3, Z10, Z11, G28

### Hao Liang

Assistant Professor of Finance  
Singapore Management University, Lee Kong Chian School of Business  
81 Victoria Street  
Singapore 188065, Singapore  
phone: +65 6828 0662  
e-mail: hliang@smu.edu.sg

### Christopher Marquis\*

Samuel C. Johnson Professor in Global Sustainable Enterprise  
Cornell University, SC Johnson College of Business  
363 Sage Hall  
Ithaca, NY 14853-6201, United States  
phone: +1 607 255 1584  
e-mail: cmarquis@cornell.edu

### Luc Renneboog

Professor of Corporate Finance  
Tilburg University, School of Economics and Management, Department of Finance  
Warandelaan 2  
5037 AB Tilburg, The Netherlands  
phone: +31 134 668 210  
e-mail: luc.renneboog@uvt.nl

### Sunny Li Sun

Associate Professor  
University of Massachusetts Lowell, Manning School of Business  
220 Pawtucket St  
Lowell, MA 01854, United States  
phone: +1 978 934 5471  
e-mail: Li\_Sun@uml.edu

\*Corresponding Author

# **Future-Time Framing: The Effect of Language on Corporate Future Orientation\***

Hao Liang, *Singapore Management University*

Christopher Marquis, *Cornell University*

Luc Renneboog, *Tilburg University*

Sunny Li Sun, *University of Massachusetts Lowell*

May 19, 2018

\* Author contact information: Hao Liang: [hliang@smu.edu.sg](mailto:hliang@smu.edu.sg); Christopher Marquis: [cmarquis@cornell.edu](mailto:cmarquis@cornell.edu); Luc Renneboog: [Luc.Renneboog@uvt.nl](mailto:Luc.Renneboog@uvt.nl); Sunny Li Sun: [Li\\_Sun@uml.edu](mailto:Li_Sun@uml.edu). We thank Dennis de Buijzer, Xi Cheng, Xiaodong Li, Weibin Mo, Xiaoming Yang for their help with collecting the data. We also thank Ruth Aguilera, Fabio Braggion, Keith Chen, Xi Cheng, Nicolas Craen, Donal Crilly, Ilya Cuypers, Frank de Jong, Magali Delmas, Scott Derue, Joost Driessen, Sadok El Ghouli, Steffen Giessner, Edith Ginglinger, Denis Gromb, Uli Hege, Inga Hoever, Tyler Hull, Yiannis Ioannou, Mark-Humphery Jenner, Thore Johnsen, Sarah Kaplan, Daan van Knippenberg, Matt Lee, Joril Maeland, Alberto Manconi, Mary-Hunter McDonnell, Chad Navis, Lars Pedersen, Jo-Ellen Pozner, Johan Pilloys, Francisco Santos, Oliver Spalt, Steef van de Velde, Servaes van der Muelen, Ying Yang, and conference and seminar participants at the 74<sup>th</sup> Academy of Management annual meeting (Philadelphia), Harvard Business School, University of Michigan (Ross), National University of Singapore, Norwegian School of Economics (NHH), Pennsylvania State University, Singapore Management University, Stockholm School of Economics, Erasmus University - Rotterdam School of Management, University of Antwerp, University Paris-Dauphine, Stanford University, Ghent University, Stockholm University, NYU (Stern), and Tilburg University (CentER) for helpful comments. An earlier version of this paper was entitled 'Speaking of Corporate Social Responsibility'.

# **Future-Time Framing: The Effect of Language on Corporate Future Orientation**

## **ABSTRACT**

We examine how international variation in corporate future-oriented behavior, such as corporate social responsibility (CSR) and research and development (R&D) investment, could partially stem from characteristics of the languages spoken at firms. We develop a future-time framing perspective rooted in the literatures on organizational categorization and framing. Our theory and hypotheses focus on how companies with working languages that obligatorily separate the future tense and the present tense engage less in future-oriented behaviors, and this effect is attenuated by exposure to multilingual environments. The results based on a large global sample of firms from 39 countries support our theory, highlighting the importance of language in affecting organizational behavior around the world.

**Keywords:** Language, International Business, Organizational Cognition, Future-Time Framing, Corporate Future Orientation, Corporate Culture

# **Future-Time Framing:**

## **The Effect of Language on Corporate Future Orientation**

Decades of research on organizational behavior have shown that it varies significantly across countries and regions and is strongly influenced by the socio-economic environments in which firms operate (Aguilera and Jackson, 2010; Guillen, 2001; Kostova, 1999). Studies in this tradition typically examine how formal and informal institutions shape organizational cognition and behavior, especially through regulative, normative, and cognitive forces (Guler, Guillen, and McPherson, 2002; Kostova and Roth, 2002). Although the general link between global institutions and organizational behavior has been widely recognized, existing studies fall short in explaining the cross-country differences in some important yet largely unexplored aspects of organizational behavior, such as how organizations consider time. Research in economics has shown that cross-national variation in people's time horizon affects individuals' behavior (Chen, 2013), but to date little is known about how intertemporal trade-offs or cross-national variation in perceiving time horizon affects organizations. Establishing such a link is important given prior research showing the significance of temporal orientation for understanding organizational behavior in general (Flammer and Bansal, 2017; Kaplan and Orlikowski, 2013).

In this paper, we introduce a new way to think about the underlying mechanisms of international variation in organizational behavior with regard to time by focusing on how such variation could result from organizations' "future-time framing" stemming from characteristics of the languages spoken within organizations across the globe. We define future-time framing as a systematic cognitive tendency in an organization, due to the languages spoken there, that affects how the organization perceives the future. Our framework is supported by recent research in linguistics and economics showing that language use may affect decisions and that a critical difference across languages that may be related to future-oriented

behavior is whether or not they require speakers to grammatically mark future events (Boroditsky, 2001, 2011; Chen, 2013). For some languages, such as English, grammatically separating the future and the present is mandatory, while for other languages, such as German, differentiating between the present and future is optional. The underlying insight is that by having the present and the future in different conceptual categories, obligatory future-time reference (FTR) in a language reduces the psychological importance of—and hence a person’s concern for—the future, as it makes the future feel more distant (Dahl, 2000; Thieroff, 2000). Consistent with these arguments, Chen (2013) finds that strong-FTR speakers save less, retire with less wealth, smoke more, practice less safer sex, and are more obese, after controlling for other well-known cross-national explanatory factors. The conclusion is that speaking in a distinct way about future events leads individuals to take specific future-oriented actions.

Our theorizing emphasizes that such effects may be even more pronounced when examined at the organizational level, and we develop the idea that future-time framing by a company’s dominant language affects whether the firm has a future orientation and prioritizes related practices. The crucial extension of Chen’s (2013) proposed individual mechanism is that while within individual differences are cognitive, decisions within organizations are fundamentally social processes that are negotiated among organizational members (Jarzabkowski, 2005; Kaplan, 2008b; Whittington, 2007). As such, variation in communication and how language is used within the organization in discussion and negotiation processes is essential to understanding how it affects organizational outcomes. Specifically, we argue that as organization members more frequently emphasize the future in daily operations, a cognitive tendency is developed within the organization that induces it to categorize (Durand and Paoletta, 2013; Glynn and Navis, 2013; Porac et al., 1995) the future differently from the present and reinforces the categorization through framing (Cornelissen and Werner, 2014; Kaplan, 2008b). These processes then lead the organization to insulate its future behaviors or strategies from its current ones. Furthermore, because these processes are developed and reinforced through social interaction which could potentially shift as organizational membership and operations change, we theorize that such an organizational-level cognitive tendency can be “blurred”. That is, the categorization of future and present may change as an organization is exposed to multilingual

environments such as operating in a more linguistically diverse and more globalized country, and having more foreign institutional ownership and decision makers with more international experience.

We examine firms' CSR and R&D as examples of their future-oriented behaviors, consistent with prior work from both scholars and practitioners that has argued that CSR and R&D signify the long-term orientation of an organization. To investigate the effects of language, we adopt the FTR criterion from Dahl (2000) and Chen (2013) as our empirical operationalization for "future-time framing," which separates languages into two broad categories: those languages that require future events to be grammatically marked when making predictions and those that do not. We also use alternative typological classifications of FTR and continuous measures that tap how frequently a language marks the future in its grammar. Our findings—derived from a sample including companies on major equity indices from 39 countries between 1999 to 2014—support our theorizing that companies with a strong-FTR language or a language that more frequently marks the future in its grammar as their working language on average have less of a future orientation.

Our paper makes two main contributions to the research literature. First, our study contributes to understanding how international variation of organizational behavior stems from organizational level cognitive variation with respect to temporal orientation. Though studies in the international organization theory literature suggest that many important organizational practices are deeply influenced by cultural and cognitive forces (e.g., Guler, Guillen, and Macpherson, 2002; Kostova and Roth, 2002), few have specifically considered the time aspect of these practices (including CSR and R&D) and how they are linked to cognitive schemas at the organizational and country levels. Our conceptualization of future-time framing shows how a language-induced cognitive tendency is not just an important individual process, but due to the social nature of organizational decisions, may even be more powerfully present in organizational behaviors. By drawing on the literatures of organizational categorization (e.g., Durand and Paoella, 2013; Glynn and Navis, 2013; Porac et al., 1995; Porac and Thomas, 1990) and framing (e.g., Eggers and Kaplan, 2013; Kaplan, 2008a), and linking them to future-orientation, we advance the scope and depth of organizational cognition theory. Importantly, reflecting the social nature of organizational decisions, we

show that such cognitive tendencies created by future-time framing are malleable by exposure to multilingual environments, suggesting that the relationship between language and organizational cognition is not static and can be reshaped by contextual factors.

Second, our research contributes to the emerging interest in the role of language in management. How language affects intra-organization communications between departments or different levels of hierarchy, as well as across organizations in different countries, have been extensively discussed and theorized (e.g., Cooren et al., 2011; Robichaud, Giroux, and Taylor, 2004; Hinds, Neeley, and Cramton, 2014; Selmier II, Newenham-Kahindi, and Oh, 2015). Some recent studies have begun to pay attention to how language use can affect corporate strategy, such as cross-border acquisition (e.g., Cuypers, Ertug, and Hennart, 2015) and competitive interactions (Guo, Yu and Gimeno, 2017). Our study adds a novel aspect to the literatures on the relation between language and strategy, by focusing on how a common grammatical structure differentially affects the future-orientation of organizations, and by providing systematic evidence from a large international sample. This broader focus helps advance our understanding of how languages fundamentally shape future-oriented corporate strategy, an increasingly important issue for global companies. To our knowledge, our study is among the first in organizational studies to empirically investigate the role of language structures in systematically influencing management practices.

### **FUTURE-ORIENTED FRAMING AND ORGANIZATIONAL BEHAVIOR**

Time is a socially constructed variable for organization and human cooperation (Ancona, Okhuysen, and Perlow, 2001; Bluedorn, 2002). Butler (1995: 946) claims that “time, as we experience it in the present, can only have meaning in relation to our understanding of the past and *our vision of the future*.” In a capitalist economy, various stakeholders orient their activities toward a future that contains uncertainty, and their expectations and framing of the future drive aggregate economic activities and development (Beckert, 2016). While a past–present–future time frame is widely adopted to study many important organizational concepts like learning, risk, imprinting, decision making, and organizational transformation (Butler, 1995; Marquis and Tilcsik, 2013; Shi and Prescott, 2011), few scholars have incorporated a future orientation into organization theory, constructs, and methods. Below, we review research that has shown that the future

orientation of a language affects individuals' economic decisions, as well as the underlying cognitive mechanisms of this relationship. Then, we integrate these insights with the organizational cognition literatures focused on categorization and framing, arguing that at the organizational level, the language-induced cognitive tendency is due to the social nature of organizational decision making that involves frequent communication and discussion using certain language structures and meanings. That is, strategic choices of organizations result from how the diversity of experience and background of managers is negotiated within organizations (Jarzabkowski, 2005; Kaplan, 2008b). We then theorize how these processes would reinforce the tendency thus make the language effects even stronger within organizations than on individuals, leading to international variation in organizational behaviors with regard to time.

### **The Future Orientation of Languages and Time Perception**

Research in linguistics and cognitive psychology shows that languages do not merely express thoughts; the structures of languages also shape the very thoughts that people wish to express. In the linguistics literature, the Sapir-Whorf hypothesis (Whorf, 1956) argues that the structure of a language affects the ways in which its speakers conceptualize their world (i.e., their worldview) or otherwise influences their cognitive processes. This hypothesis has a strong version (*linguistic determinism*), which states that the language we speak determines or constraints the way we think and view the real world, and a weak version (*linguistic relativity*), which suggests that our language influences the way we think and view the real world but does not fully determine or constrain it. Though evidence on linguistic determinism is mixed (e.g., Berlin and Kay, 1969; Boroditsky, 2001, 2011; Kay and Kempton, 1984; Yang et al., 2017), a recent wave of psychological and cognitive science research supports linguistic relativism, showing that language profoundly influences how people perceive the world. For example, studies have shown that people find it easier to recognize and remember shades of colors for which their spoken language has a specific name (D'Andrade, 1995) and that people's recognition memory was better for the focal colors of their own language than for those of English (Roberson et al., 2004). Research has also shown that language affects the degree to which people judge events with different degrees of goal-orientation (Athanasopoulos and Bylund, 2013; Flecken et al., 2014; von Stutterheim et al., 2012) and whether they describe ongoing actions

by mentioning endpoints (Athanasopoulos et al., 2015).

A key feature of languages that is relevant to our context is that they differ in whether they require speakers to specify the timing of events, or whether timing can be left unsaid (Dahl, 2000; Thieroff, 2000). This feature, referred to as “temporal frames of reference,” enables speakers to conceptualize time by their use of specific languages (Evans, 2013). Dahl (2000) develops a criterion to distinguish between languages that are considered “futureless” and those that are not: “futureless” languages are defined as those which do not require “the obligatory use [of grammaticalized future time reference (FTR)] in (main clause) prediction-based contexts”. As noted, Chen (2013) empirically showed that there is a strong correlation between weak-FTR languages and future-oriented economic behavior, and that the effect of language is not attenuated when controlling for cultural and institutional traits. He argues that this is due to the fact that weak-FTR speakers perceive the future as closer. Extending this logic, grammatically requiring speakers to separate the future tense from the present tense (such as in English and French) makes speakers less future-oriented in their preferences. To better highlight the underlying cognitive mechanism connecting language and cognition, experimental studies have been conducted on bilingual individuals, documenting that speaking different languages can induce different spatial representations and motion of the concept of time (Bylund and Athanasopoulos, 2017; Flecken et al., 2015). Furthermore, research using fMRI analyses, which measure brain activity by examining blood flow, has identified the brain regions in which neural activity is strongly related to discounting time, triggered by different ways of framing intertemporal choices (e.g., Ballard and Knutson, 2009; McClure et al, 2007; Peters and Buchel, 2009, 2010; Wittmann et al., 2007).

Other research in economics and management decision making presents similar arguments on how different perceptions of the present and future affect cognition and behavior. In economics, a fundamental concept is intertemporal discounting, which posits that people usually apply a discount factor when they consider future value: they tend to discount the importance of the future when assigning value to something in the present. In addition, such a discount factor tends to be skewed, meaning that people are more impatient in the near future (Frederick et al., 2002; Glimcher, Kable, and Louie, 2007; Monterosso and Luo,

2010; Souder and Bromiley, 2012). Relatedly, the literature on “mental accounting” and “myopic loss aversion” also suggests that people tend to psychologically separate portfolios into different cognitive categories (“mental accounts”), and their behavior tends to be myopic: primarily focusing on the present account while neglecting the future account (Benartzi and Thaler, 1995). These concepts are closely related to corporate and strategic myopia theories advocated by management scholars (e.g., Hambrick and Mason, 1984; Lavery, 1996), who argue that managers’ temporal myopia can lead to corporate short-termism and the neglect of longer-term strategies and initiatives.

Overall, these theories and empirical evidence across a wide array of disciplines are consistent with the notion that grammatically separating the future from the present induces speakers to be less future-oriented.

### **The Future Orientation of Organizational Behavior**

While the above research suggests there are important cognitive effects of how the future is expressed in languages, it is not clear how these effects would be translated into organizational behaviors. On the one hand, organizational behaviors can be thought of as simply the sum of individuals’ cognitive biases such that variation in future orientation would extend to the organization as such individuals are responsible for making decisions. On the other hand, however, we argue below that because organizational decisions are made through the “ongoing interpretations and interactions of multiple organizational participants in practice and over time,” (Kaplan and Orlikowski, 2013: 990) it is likely that the individual level cognitive bias would be enhanced at the organizational level. This is because as organizational members use different language structures repeatedly, the intra-organizational communication structures, processes and routines would come to reflect the underlying cognitive bias. In fact, at the organizational level, there may not even need to be a cognitive shift in the constituent individuals as repeated communication in a certain way in and of itself would lead to organizational processes that emphasize the future more or less.

Building on these ideas, we develop the concept of future-time framing as an organizational level cognitive tendency that affects corporate decisions through two interrelated processes: (1) categorization, which refers to the idea that decision makers speaking certain languages may put the future and present into

different cognitive categories, and the salience and sharpness of those category boundaries can be altered; (2) framing, which is the type of communication that leads organizational members to accept one meaning over another—in our context, the importance of the future. As decision makers repeatedly use certain language structures in formulating and justifying their decisions, such a tendency is reinforced in the organization. Through such framing process, the language-induced cognitive tendency is rationalized in organizational thinking (Crilly, 2016) and becomes dominant through the repeated use of certain language structures and in specific organizational routines (Eggers and Kaplan, 2013).

First, conceptual categories, as part of broader classification systems embedded in managerial and organizational cognition, reflect how certain values are coded in organizations' thinking. Prior research on cognitive categories suggests that the way top managers deal with the increasing diversity of strategic decisions in a company depends on those managers' cognitive orientation (Glynn and Navis, 2013; Prahalad and Bettis, 1986). Studies have also shown how the cognitive categories of managers within organizations enduringly affect strategy and organizational routines (Eggers and Kaplan, 2013) and furthermore the extent to which future and present are joined can affect strategic outcomes (Kaplan and Orlikowski, 2013). By grammatically marking the future, a language classifies the future and the present in two separate categories for an organization's decision makers. Thus, in some organizations, information about the present may be more likely to be deemed relevant by the organization and its decision makers at specific times, and further the underlying organizational structures and processes will come to reflect such biases.

Second, this categorization of future and present due to language structure is also built into the organization through frequent communications among organizational members in a specific way of framing. Framing is a quality of communication that leads people in an organization to accept one meaning over another, and it can profoundly affect individual sensemaking in an organization (Weick, 1995). The cognitive framing we focus on results from reinforcement via in-group communications with others in an organization, most of whom have "frames of reference" similar to each other (March and Simon, 1958), including using the same working language. Through this framing and communication process, individual-level cognitive tendencies are aggregated into collective thinking (Kaplan, 2008b). According to Starbuck

and Milliken (1988), and relating to our context, by frequently communicating strategies in the same language and in the same way of expression, organizational members (especially managers) comprehend, understand, explain, attribute, and extrapolate future-related events and strategies. All these processes result in an organization's cognitive tendency toward or against a future orientation.

The above argument is consistent with organizational studies which suggest that decision making is mainly driven by issues that an organization focuses its attention on (Cho and Hambrick, 2006; Greve, 2008; Ocasio, 1997; 2011; Ocasio and Joseph, 2005), and an organization focuses its attention mainly on information deemed relevant by a dominant logic whereas other information is largely ignored (Thornton, Ocasio, and Lounsbury, 2012). Thus if a future-time categorization is recursively framed and formed as an organizational routine, it should reinforce the organization's logics that the future is distant from today's decisions.

Based on these arguments, we hypothesize that different degrees of future-time framing shaped by different language structures induce different levels of future orientation in organizational communication and decision-making, leading to variation in firms' engagement in future-oriented behaviors. Because future-time framing creates a cognitive tendency against a future orientation at the organization level and makes the company pay less attention to information in the "future" category, which is then routinized within an organization, we predict a negative association between speaking a strong-FTR language—one that more frequently uses the future tense—as the dominant language of the organization and its future-oriented behavior.

***H1: Companies with a strong-FTR language as their official language exhibit less future orientation.***

### **Future-Time Framing and Exposure to Multilingual Environments**

We furthermore suggest that the organizational cognitive bias that results from future-time framing is malleable, as the boundaries of cognitive categories can be blurred by exposure to multilingual environments. Prior research argues that perceptual categories are flexible—the boundaries of what is in and out of the categories can change over time and contexts (Porac et al., 1995)—and that situational factors

significantly shape where decision makers place their cognitive attention (Ocasio, 1997, 2011). As Glynn and Navis (2013) point out, when categorical classifications and boundaries are unclear or in flux (due to using different languages as in our context), the perceiver (decision maker) has few if any benchmarks against which to sort, classify, and assign meaning, which affects sensemaking and action. This “blurring mechanism” suggests that the language FTR effect can be attenuated when the company is more exposed to a multilingual environment. In particular, we examine whether the above effect of language on an organization’s future orientation is moderated by the linguistic diversity and globalization of the home country, and by the organization’s foreign ownership. Our choice of these moderator variables is motivated by the widely accepted argument that the organizational decisions are influenced by factors at different levels (Miller, Hickson, and Wilson, 1999), allowing us to show whether greater exposure to and use of different languages by the focal firm will attenuate the organizational tendencies with regard to future orientation that result from the repeated use of a single language. Below we discuss these moderating (“blurring”) mechanisms.

**Home Country Linguistic Diversity.** Our first moderator is the linguistic diversity of an organization’s home country, which refers to the extent to which people in the same country have different mother tongues. In many countries, people from different areas speak distinct languages (e.g., Switzerland, Belgium, and Canada) or different dialects of the same language (e.g., China). Recent research has shown that linguistic diversity in one’s home country, an important dimension of within-country heterogeneity, affects people’s and organizations’ perceptions (e.g., Dow, Cuypers, Ertug, 2016). In particular, home country linguistic diversity exposes speakers and organizations even in the same region to multiple languages throughout their lives. This process can increase the cognitive complexity of the decision makers, thus altering the framing effect of single language use and moderate the firm’s business decisions. Intuitively, greater linguistic diversity makes speakers more flexible with language use, even if different languages in the home country refer to future-time in a similar way (i.e., fall into the same FTR category) as it would still increase organizations’ adaptability to new ways of thinking through discussion and negotiation. These processes will reduce the sharpness and salience of their categorical classifications and

boundaries with regard to time. Therefore, we hypothesize that:

***H2: The negative relation between the FTR of a language and corporate future orientation is weaker if the company's home country is more linguistically diverse.***

**Home Country Globalization.** The language effect can similarly be moderated by a country's globalization, as cross-country linguistic exposure leads to cognitive malleability. First, globalization facilitates the spread of ideas, information, images, and people across different cultures and language backgrounds. It involves more frequent personal contact and communication; information flow via the Internet, television, and newspapers; and the diffusion of cultures and social norms. As a result, people and organizations in more globalized countries have greater exposure to multiple languages in their daily life and operations to accommodate for people speaking different languages, which can blur the boundaries between distinct languages. Second, globalization also brings in international trade and foreign direct investment, which means firms increasingly deal with business partners from different language backgrounds, thus altering the cognitive tendency in organizational decision making due to single language use. In addition, as globalization increases, languages evolve to adopt each other's grammars and ways of expression, which means speakers of different languages increasingly adapt to each other's way of thinking. Companies headquartered in a more globalized environment are more exposed to a multilingual environment with business partners in different countries. Such a multilingual environment makes a manager more flexible to changing perceptual categories and more likely to pay attention to future-related issues than a single-language environment does. We focus on the headquarters country because that is typically the location of a firm's top leaders (Cantwell, 2009). If the negative effect of a language's FTR on future-oriented cognition can be moderated by the international exposure of a firm's home country, we hypothesize that:

***H3: The negative relation between the FTR of a language and corporate future orientation is weaker if the company's home country is more globalized.***

**Foreign Institutional Ownership.** Another way categories become blurred is through interacting with stakeholders outside the firm, especially institutional investors from foreign countries. We focus on

foreign institutional investors, as opposed to other investors or other types of corporate foreign exposure, because they have increasingly become more salient to and active in companies, especially multinationals, in recent decades (Desender, Aguilera, Crespi, Garcia-cestona, 2013). They can influence corporate decisions both through exposing the company to different languages and through their activism in pushing for new values and practices.

First, the focal firm's cognitive structure resulting from the native language spoken can be gradually altered by communicating with its foreign shareholders in foreign languages. For example, a firm often has to use another language to engage with foreign auditors and regulators, to communicate in shareholder meetings, and to translate annual reports. This foreign exposure through professional dialogue and discourse could change the firm's framing about the future and blur the boundary between future and present categories. This process is then routinized and rationalized in its organizational cognition through daily communications (Kuznetsov and Kuznetsova, 2014).

Second, foreign institutional investors can bring new views and institutional logics to a firm through activism, which may change the firm's perception about the future and thus its future-related behavior. In addition, more foreign institutional ownership also represents stronger global stakeholder pressures and provides insurance for firm managers against innovation failure, which leads the local firm to focus more on long-term investments (e.g., Bena et al., 2016).

These blurring processes through exposure to foreign institutional investors should reduce the effect of our proposed organizational cognitive tendency against the future among firms with strong-FTR native languages. Therefore, we hypothesize that:

***H4: The negative relation between the FTR of a language and corporate future orientation is weaker if the company has a higher proportion of foreign institutional ownership.***

## METHODS

We conduct our analysis using both random-effects and fixed-effects models in a panel dataset. The empirical operationalization of our future-time framing construct is a language's "future-time reference (FTR)" as termed by Chen (2013) and is a dummy variable indicating whether the firm's official language

is a strong- or weak-FTR language. While language FTR is time-invariant, our dependent and moderator variables and other covariates are mostly time-variant; thus working with panel models takes these time variations into account. As alternative measures of future-time reference, we also employ FTR classifications with stronger criteria, namely *Prediction FTR* and *Inflectional FTR*, and with weaker criteria, namely *Any FTR*, as well as two continuous variables: the *Verb Ratio* and the *Sentence Ratio* based on full-sentence weather forecasts scraped from the Internet and assembled by Chen (2013). These alternative measures, especially the latter two continuous ones, capture not only the tense but also the “aspect” that can indicate the future in a language.<sup>1</sup> Other explanatory variables include the country-level moderating variables *Linguistic Diversity* and *Globalization*, and firm-level moderators *Foreign Institutional Ownership*, as well as their interactions with FTR. For the last moderating variable, it is important to note that even if foreign investors are from a country with its native language being classified as the same FTR as the focal company, the fact that organizational decision makers have to frequently communicate in different languages increases the flexibility of their cognitive ability in adapting to a new language. Empirically, the attenuating effect should be particularly prominent if foreign institutional investors are from weak-FTR language countries, but international data on institutional investors’ native languages are impossible to obtain. Therefore, our results without differentiating between strong- and weak-FTR of these investors represent the lower-bounds of the attenuating effect. That is, if we still find an attenuating effect of having more foreign institutional holdings in general (without distinguishing whether the foreign institutional investors are from weak-FTR language countries), the results will only be stronger if we further make a distinction on the FTR of these investors’ languages.

Following many other cross-country studies that cluster countries into groups, we exclude former and current Socialist countries from the regression, mostly due to their particularity in institutional infrastructure

---

<sup>1</sup> We acknowledge that in this paper we mainly deal with time reference marked by verb tense. We are aware of the fact that the strict categorization is somewhat compromised in languages whose informal registers differ from the formal ones. For instance, in informal French and English, we often use the present progressive tense along with a lexical time indicator (e.g., “On va au parc demain” or “We are going to the park tomorrow”). While it is equally grammatical to say “On ira au parc demain” and “We will go to the park tomorrow,” the use of the formal future tense is somewhat stilted. We argue that the Verb Ratio and the Sentence Ratio, derived from the more standardized weather forecast, are better at capturing such “aspect” that goes beyond tense, and thus provide a nuanced measurement of language future-time reference.

and legal traditions (e.g., Beckert, 2016; La Porta et al., 1998).

**Dependent Variables.** Empirically, we use a firm's CSR and R&D as proxies for organizational future orientation, because to implement them, firms must incur short-term costs in order to benefit from future benefits associated with insurance against future risks and with the allocation of valuable resources. For example, recent research emphasizes CSR as being an intertemporal trade-off for business sustainability (Bansal and DesJardine, 2014; Slawinski and Bansal, 2012, 2015), a strategy to engage non-financial stakeholders over the long term (e.g. Greening and Turban, 2000; Hillman and Keim, 2001; Luo and Bhattacharya, 2006; Marquis, Glynn and Davis, 2007), and an insurance mechanism against future risks (e.g., Godfrey, 2005; Koh, Qian, and Wang, 2014). Similarly, R&D is a forward-looking behavior whereby corporations in the present invest in innovation activities that have a future return (Chen, 2008; McGrath, 1997; Miller and Arikian, 2004), and thus it represents a firm's long-term investment orientation (Chrisman and Patel, 2012).

Our primary data source for a firm's CSR is Morgan Stanley Capital International's (MSCI) Intangible Value Assessment (IVA) program, which measures a corporation's environmental and social risks and opportunities that refer to issues where companies generate large environmental and social externalities and may be forced to internalize (future) unanticipated costs associated with those externalities in the future. MSCI uses raw data from corporate documents (environmental and social reports, annual reports, securities filings such as 10Ks and 10Qs, websites, etc.), environmental groups and other NGOs, trade groups and other industry associations, government databases (e.g., central bank data and U.S. Toxic Release Inventory), periodical searches (e.g., in Factiva and Nexis), and financial analysts' reports to construct the CSR rating for each firm. This is one of the most widely used datasets in studying CSR behavior globally (e.g., Cai, Pan and Statman, 2016; Ferrell et al., 2017; Liang and Renneboog, 2017). Companies are rated and ranked in comparison with their industry peers from international markets, and therefore the rating does not depend on the local CSR situations and rules (jurisdictions and regulations). The data are then converted to a relative rating by giving the companies with the best performance (CSR level) *within their industry sector on a global scale* in a given category a AAA (top) rating, giving the companies with the worst

performance a CCC (lowest) rating, and pro-rata rating the remaining firms between AAA and CCC; we then converted each rating to a score from 6 to 0. The data cover the well-established equity indices of the largest companies across the world rather than just selecting a specific sample of firms that engage in CSR. For this large sample with global coverage, MSCI constructs a series of 29 CSR ratings for each company, among which a few categories such as *Labor Relations*, *Industry Specific Carbon Risk*, and *Environmental Opportunity* receive the highest weights in the global rating (see Appendix B).

Data on R&D investment are obtained from Worldscope, and the variable is calculated as a firm's total R&D expenditures over its total assets, winsorized at 95%. This is a standard way of measuring corporate R&D engagement and aims to capture the uncertainty in future rewards. The measurement has been widely used in the management literature (e.g., Chrisman and Patel, 2012). To maintain sample consistency in different estimations, we use the CSR sample from MSCI, and we match firms in this sample with R&D expenditure information. Our main sample comprises more than 5,500 firms from 39 countries and economies (see Appendix A) and spans 123 industries based on MSCI's industry classification.

**Explanatory Variables.** As noted, organizational future-time framing is proxied by the language future-time reference (FTR) of the firm, which we obtained by manually checking the focal firm's headquarter location and the official language of that region. For most companies in our sample, the official languages of the regions in which they are headquartered are the same as their national languages. For companies in countries with multiple official languages, such as Belgium, Switzerland, and Canada, we have taken the language spoken in the region where the firm is located. For these companies, we have manually coded their FTR as the region's FTR. For example, the official language for a Belgian firm located in Flanders, the Dutch-speaking part of Belgium, is coded as "weak-FTR," and the official language for a Swiss firm located in the French- or Italian-speaking region of Switzerland is coded as "strong-FTR."<sup>2</sup>

---

<sup>2</sup> The official languages of most countries in our sample are unitary in FTR: either strong or weak. Note that this applies even to most countries that have multiple official languages. For example, in Spain, the official languages of Spanish and Catalan are both strong-FTR languages. A similar situation applies to Canada, where French and English are both strong-FTR languages (see Appendix A for more examples). Belgium and Switzerland are the only countries in our sample where both strong- and weak- FTR languages exist as official languages. We carefully classify firms based in Belgium and Switzerland according to the dominant language in the location of their headquarters.

Furthermore, if the region is itself multi-lingual (e.g. Brussels) we coded the language use by the company based on characteristics of top management and significant investors. This way we were able to reach high granularity of language FTR within a region/city. For companies based in Canada, such as Montreal (or more broadly in Quebec), the issue does not constitute a problem since both English and French are strong FTR languages. The classification of strong- and weak-FTR follows the EURORTYP and Chen's (2013) strong-criterion classification. We also use the aforementioned five alternative measures of language FTR in our robustness tests: (1) Any FTR, which applies a weak criterion identifying the presence of any grammatical marking of future events in a language, even if infrequently used, including both inflectional markers (like the future-indicating suffixes in Romance languages) and periphrastic markers (like the English auxiliary "will"); (2) Inflectional FTR, which applies a stronger criterion that identifies the presence of an inflectional future tense and includes most Romance languages but excludes English; (3) Prediction FTR, which is a subset of the overall FTR but restricts the use to prediction-based contexts such as weather forecasts; (4) Verb Ratio, which is a continuous measure that counts the number of verbs that are grammatically future-marked, divided by the total number of future-referring verbs; (5) Sentence Ratio, another continuous measure of the proportion of sentences regarding the future that contains a grammatical future-marker. For the Verb Ratio and Sentence Ratio, Chen (2013) scraped the Internet for full-sentence weather forecasts (which contain relatively homogeneous sets of information about future) in 39 different languages that are currently available on a large number of websites. Unsurprisingly, these ratios are highly positively correlated in both Chen's (2013) and in our sample (Pearson correlation coefficient > 90%).

**Moderators.** Our first moderator is country-level *Linguistic Diversity*, for which we use Greenberg's (language) Diversity Index that measures the probability that two people selected from the population at random will have different mother tongues, and is obtained from the UNESCO World Report ("Investing in Cultural Diversity and Intercultural Dialogue"). We obtained data for our second moderator, *Globalization* at the country level, from *Eidgenössische Technische Hochschule (ETH)*, Zürich's KOF Index of Globalization. The KOF index is to date the most widely used index for globalization in the academic literature and policy research, as it comprehensively measures the degrees of a country's global

connectivity, integration, and interdependence in the economic, social, technological, cultural, political, and ecological spheres, and it has the broadest coverage on countries. The third moderator is *Foreign Institutional Ownership*, which is the sum of the holdings of all institutions domiciled in a country different from the one in which the stock is listed, divided by the firm's market capitalization; we obtained the data for this variable from the FactSet (Lionshares) database.

**Control Variables.** The country-level control variables capturing economic and social development include *Legal Origin* (common laws versus civil laws, orthogonalized to our FTR variable), *Rule of Law*, and the logarithm of *GDP Per Capita*. We focus on the countries of firms' corporate headquarters because they are the locations of most senior manager decision makers, and so their external environments likely have the greatest influence on corporate decisions (Marquis, Toffel and Zhou, 2016). At the firm level, we control for ownership concentration, proxied by the ownership stakes held by all blockholders who own at least 5% of the firm's free-float shares (*Total Blockholdings*), obtained from Datastream, and cross-validated with other data sources including Orbis and Factset. We also include several indicators of different aspects of firms' financial performance (constraints), including *ROA* and *Tobin's Q*. We furthermore control for CEO characteristics and backgrounds, such as gender and international (work and education) experience, which involved significant manual data collection and cross-validation work. For example, *CEO International Experience* is a dummy variable capturing whether the CEO of the focal firm in the focal year had overseas education or work experience in the past; we manually collected these data from the BoardEx online database and Director Reports by first checking who was the CEO in each year of our sample period and then checking whether this person obtained either overseas education or international work experience in the past. Our empirical analysis has a multi-level nature: although our theory and the key dependent and explanatory variables are at the organizational level, some of our control variables are measured at the country or individual level. In robustness tests we also control for culture by including Hofstede's six cultural dimensions (power distance index, individualism vs. collectivism, uncertainty avoidance index, masculinity vs. femininity, normative vs. pragmatic, and indulgence vs. restraint). Finally, we control for time fixed effects and industry fixed effects. As a robustness check, we

also control for country fixed effects, which of course comes with a caveat that the identified FTR effect comes only from countries that have two or more languages with different FTR, such as Belgium and Switzerland.

Our sample's country coverage, the official languages, and their FTR are shown in Appendix A. More detailed descriptions of one of our key dependent variables, CSR ratings, are provided in Appendix B and of our independent variables are in Appendix C. (The definition of R&D is standard so we don't describe it in detail.) Table 1 shows the means and standard deviations of our independent variables, as well as their correlations. Few of them are highly correlated, especially with language FTR, which largely reduces potential multicollinearity concerns. Moreover, standard errors in all regressions are clustered at the firm level.

[Insert Tables 1 about here]

## **RESULTS**

In this section, we report results from our empirical analyses. We first show the baseline results with CSR (using the MSCI IVA rating) and R&D as the dependent variables, and we highlight the main effects and interaction effects with moderators of language FTR in Table 2. When using CSR as the dependent variable, our sample size has 88,774 firm-time observations, determined by the composition of the MSCI IVA sample, which comprises companies from the MSCI World Index, the MSCI Emerging Markets Index, the FTSE 100 and the FTSE 250, the ASX 200. In other words, our sample consists of large firms from major global equity indices. When using R&D as the dependent variable, the sample size becomes 54,902 as we further require non-missing R&D observations based on the MSCI IVA sample.

### **Baseline Results**

We first test the main effect of language FTR (Models 1 and 6), and one moderator is tested in each specification (Models 2–5 and 7–10). The coefficients on FTR for almost all specifications across the three tables are negative and statistically significant above the 99% confidence level, indicating a strong negative correlation between language FTR and corporate future orientation as proxied by CSR and R&D. And the economic significance is non-trivial: companies in regions with strong-FTR languages as their

official/working languages on average engage less in CSR by 7% ( $\beta = -0.159$ ,  $p\text{-value} = 0.000$ ) and in R&D by 40.6% ( $\beta = -0.446$ ,  $p\text{-value} = 0.000$ ). These results support Hypothesis 1 that, conditional on other things being equal, companies in regions with strong-FTR languages on average engage less in future-oriented behavior such as CSR and R&D investments.

Second, turning to the tests of our moderator variables in Models 2–5 and 7–10, the interactions of FTR with *Linguistic Diversity* (country-level), *Globalization* (country-level), and *Foreign Institutional Ownership* (firm-level) are all positive and statistically significant above the 95% level. For example, a one-standard-deviation increase in a country’s linguistic diversity is related to more than a one-standard-deviation decrease in the negative effect of FTR on CSR  $[(1.320 \times 0.204)/(0.519 \times 0.43)]$  and on R&D  $[(2.244 \times 0.204)/(1.023 \times 0.43)]$ . In other words, the negative effect of future-time framing can be completely offset when the firm is headquartered in a linguistically diverse country, supporting our H2. Similarly, the attenuating effect of country globalization on FTR is about 26% for CSR and 24% for R&D, that of foreign institutional ownership on FTR is about 85% for CSR and 15% for R&D.<sup>3</sup> These results largely support H3 and H4. The magnitudes of the attenuating effects of linguistic diversity are the largest, which is reasonable given that both globalization and foreign institutional ownership capture some other dimensions than language, whereas linguistic diversity is almost entirely about language effect. We also plot the graphical representations of these moderating effects in the Appendix.

[Insert Table 2 about Here]

Third, we show in Appendix Table D.1 that when we replace CSR or R&D with the logarithm of patents or citations as the dependent variable using data from Hsu, Li, Lin (2017), we obtain very similar results for the effects of both FTR and the three moderators. Given the consistency of our results using different DVs, to save space, we only report CSR and R&D in subsequent tables.

### **Alternative Measures of Future-Time Reference**

---

<sup>3</sup> Following the accounting literature, especially studies by Koh and Reeb (2015), and Koh, Reeb, and Zhao (2017), we also address the issue of “missing R&D” (firms may strategically disclose their R&D activities, or the company may fail to report its R&D spending due to other reasons) by (1) replacing missing R&D information with zero values, (2) including a blank “Missing” dummy, (3) replacing missing R&D information with the values of industry-average R&D, and cross-validating these results with the original results of treating missing R&D as missing. Our results are consistent across all these tests.

Fourth, we replace the original FTR dummy (strong criterion) with five alternative measures of FTR: (1) Any FTR, (2) Inflectional FTR, (3) Prediction FTR, (4) Verb Ratio, and (5) Sentence Ratio, as coded by Chen (2013). These alternative FTR measures are highly correlated with the original FTR measure (see Appendix Table E.1.) though they measure different aspects of language future reference (see footnote 9 for further description). A caveat is that except for “Any FTR”, alternative FTR measures do not have the coverage that is as broad as the Original FTR, and the coverage for Any FTR is the broadest among all our measures. We report the results of using these alternative measures in Appendix Table E.2. We find that the lower the percentage of verbs and sentences that are grammatically future-marked, the higher the CSR ratings and R&D ratio are. The estimated effects are economically similar to those in Models 1 and 6 of Table 2. For example, a one-standard-deviation reduction in Verb Ratio (34.34%) is associated with a 5.7% increase ( $-0.166 \times 34.34\%$ ) in CSR and 24.4% increase ( $-0.710 \times 34.34\%$ ) in R&D expenditure. A one-standard-deviation decrease in Sentence Ratio (37.6%) corresponds to a 7.6% increase ( $-0.202 \times 37.6\%$ ) in CSR and 22% increase ( $-0.584 \times 37.6\%$ ) in R&D expenditure. In addition, the interaction terms capture similar effects and significance. In unreported results we also test the interaction effects of these alternative measures of FTR, and the previous results hold. Therefore, our previous conclusion of a significant relationship between future-time framing and organizational future orientation is further upheld when we consider alternative (both dichotomous and continuous) measures of language structure, and our H1–H5 are empirically supported. Given the consistent results using various measures of FTR, we use the original FTR measure (strong criterion) as used in Chen’s (2013) published version in all subsequent tests.

### **Cross- and Within-Country Analysis**

**Controlling for Country Fixed Effects.** We control for country fixed effects to rule out concerns about alternative country-level processes that could endogenously affect our results. Country fixed effects take into account all unobservable time-invariant country-level factors that can drive organizational future orientation. This approach inevitably excludes all our time-invariant country-level variables such as linguistic diversity, cultures, and legal origins (it should be noted that FTR is not omitted because it is measured at the regional/firm level), and it comes with a caveat that our identified effects will be mainly

from countries that have two or more different FTR languages. We replicate the tests as in Table 2, but with country fixed effects included in regressions, and we report the results in Panel A of Table 3. From these results, we conclude that the significance of the interaction terms remains when applying this stringent test of including country fixed effects, and the significance of FTR becomes even stronger both statistically and economically.

**Weak- and Strong-FTR Languages within One Country.** We also investigate within-country variation in future-time framing by focusing on the subsample of firms located in the two countries in which both strong- and weak-FTR languages are present.<sup>4</sup> Belgium has three official languages: Dutch, French, and German, with Dutch and German classified as weak-FTR languages and French as a strong-FTR language. Switzerland has four official languages: German, French, Italian, and Romansh. Three of them are classified as strong-FTR languages: French, Italian, and Romansh. These two countries therefore provide an interesting setting to examine the effect of language within a single country. If we still observe similar patterns of CSR across different regions within the same country, we are more likely to pick up a pure language effect rather than country-specific effects.

The results from this within-country analysis based on Belgian and Swiss firms are reported in Panel B of Table 3 and again reinforce our earlier conjectures on the future-time framing effects due to language use. The coefficient on FTR is negative and significant, and its economic magnitudes are again nontrivial; for example, firms in a weak-FTR region engage 11% ( $0.714 \times 0.43/2.76$ ) more in CSR, although the difference in R&D appears to be much smaller. This within-country result further eliminates the concern that the observed correlation between language future-time framing and corporate future orientation is driven by other country-level factors such as legal origins, institutions, and regulations, as these other variables do not have significant within-country variations.

[Insert Table 3 about Here]

## **Robustness Checks**

---

<sup>4</sup> There are other countries with multiple languages as working languages in our sample, but their languages all belong to the same FTR category. For example, both English and French are spoken in Canada, and they are both strong-FTR languages.

We also conduct various other robustness tests using alternative samples and specifications, as well as taking into consideration the effects of cultures and religions. For conciseness, in these robustness tests we report only the main effects of FTR rather than their interactions with moderating variables and other control variables, but their effects are mostly upheld.

**Subsample Analysis.** First, we conduct our analysis on subsamples of only European languages, both in a narrowly defined way (only Germanic and Romance languages, as in Model 1 in Panels A and B of Appendix Table F.1) and in a broadly defined way (Germanic, Romance, Slavic, Baltic, Greek, and others, as in Model 2 of the two panels of Table F.1). The previous conclusions still hold.

Second, we exclude U.S. firms from our sample, as they represent more than 30% of our sample firms and thus one may be concerned that our results are driven by U.S. firms (Model 3 in Panels A and B, of Appendix Table F.1). In addition, we exclude Scandinavian countries from our sample to eliminate the concern of a “Scandinavian effect,” as Scandinavian firms have high levels of CSR and innovation capacities (Liang and Renneboog, 2017) (Model 4 in the two panels). Again, the coefficient on FTR is negative and significant, with similar magnitude as before.

Third, a potential concern is whether our language variables simply capture the effect of religious beliefs, such as Protestant versus Catholic, which are believed to shape the values and norms in a society and have been documented as an important factor in influencing economic behavior (e.g., Arruñada, 2010; Renneboog and Spaenjers, 2012). We therefore address this concern by including a religion variable—the percentage of Protestants in the population—as well as interacting it with FTR in regressions (Model 5). We find that religion has an impact on corporate future orientation in the case of R&D, but the interaction term is insignificant, indicating that religion is not influencing the effect of language. The coefficient of FTR is still negative and significant, with similar magnitude, suggesting that our previous results are not merely capturing a religion effect.

**Effects of Cultures.** To more thoroughly control for the effects of culture, we include the widely used Hofstede cultural variables (e.g., Hofstede, 1980, 2001) in regressions, both individually (Models 1–6) and together (with all interaction terms, as in Model 7) in Appendix Table F.3. The Hofstede cultural

dimensions rate each country along the dimensions of power distance, individualism (vs. collectivism), uncertainty avoidance, masculinity (vs. femininity), pragmatism, and indulgence (vs. restraint)—detailed descriptions of the Hofstede cultural variables can be found in Appendix C. We find that some cultural variables are strongly correlated with CSR and R&D, potentially indicating that culture does play an important role in influencing a firm’s future orientation. Nevertheless, FTR remains negatively and significantly correlated with CSR and R&D, and its economic magnitudes are comparable to the baseline effects shown in Table 2. In unreported tests, we obtain similar results when using the GLOBE cultural scores assembled by Chhokar, Brodbeck, and House (2013). These results are consistent with our analyses from controlling country fixed effects and within-country study, which already take this into account, as national cultures are largely time-invariant and homogenous within countries.

Furthermore, to account for the relatedness between different languages and between languages and cultures which can lead to spurious correlations, we follow the approach recommended by Roberts, Winter and Chen (2015) and re-estimate the FTR effects using mixed effects models (both with and without Hofstede cultural dimensions as controls) to control for cultural and language relatedness. These are essentially maximum likelihood estimations with the fixed-effects estimation at the industry- and year-level, and the random-effects estimation at the firm-level. As shown in Appendix Table F.2, our results are still upheld, reinforcing the argument that the language effect within organizations can be stronger than at the individual level due to the social nature of organizational future-time framing.

Finally, recent studies find that legal origin at the country level is an important predictor of firm-level CSR (Liang and Renneboog, 2017). Our legal origin variable is the component orthogonal to our FTR variable, which captures the effect of laws in the countries that do not use English as their official language. The reason why we orthogonalize is to avoid multicollinearity between legal origins and FTR. We apply a two-stage approach by regressing *Legal Origin* (the English common law dummy) on FTR in the first stage, and put its residual (which is orthogonal to FTR) as an explanatory variable,

together with other independent variables, in the second stage regression.<sup>5</sup> Even after orthogonalization, the coefficient on “English common law (orthogonalized)” is statistically significant and indicates that legal origin and language FTR are different mechanisms that influence organizational behavior. In results presented in the Appendix Table F.4, we also control for the unorthogonalized English common law origin dummy (Panel A) and reversely orthogonalized English common law origin dummy (Panel B), and our conclusions still hold (the coefficient on English common law origin is negative and highly significant, consistent with the Liang and Renneboog findings). Even in subsamples of countries in which FTR and legal origins do not perfectly overlap (Panel C), our FTR effect remains. All these results suggest that the mechanism of language FTR on organizational behavior is conceptually different from that of legal origin, especially in the context of CSR for European languages (Liang and Renneboog, 2017). The effect of language can vary within multilingual countries and be altered by exposure to multilingual environment, whereas the effect of legal origin is usually fixed at the country-level and less malleable, which are also supported by our empirical results. In addition, the effects of Hofstede’s culture variables such as Long-Term Orientation/Pragmatism in Panel A of Table F.2 in our Online Appendix are mostly consistent with that in Liang and Renneboog (2017). It is worth pointing out that our “future-orientation” construct is at the organizational level and hence distinct from the country-level long-term orientation by Hofstede which mostly captures whether a society has a more pragmatic or normative attitude towards societal changes.

## DISCUSSION AND CONCLUSIONS

---

<sup>5</sup> Besides the orthogonalizing approach, we have tried our best to further disentangle the effects of these two. Liang and Renneboog (2017) find that firms in civil law countries on average do more CSR than those in common law countries. But it is interesting to observe that many civil law countries are strong-FTR countries, and vice versa. There are quite a few examples of the distinction between legal origin and language FTR: Korea (German civil law and strong FTR), Spain (French civil law and strong FTR), Portugal (French civil law and strong FTR), Malaysia (common law and weak FTR), Hong Kong (common law and weak FTR), and Chile and most of former colonies of Spain, Portugal, and France (civil law and strong FTR). Thus we can use these “anomalous” cases to provide further robustness checks. For example, even when we exclude these countries from our sample or test only on a subsample of these countries (e.g., we exclude countries with French civil law origin, or only include countries only with French civil law origin, or on a subsample of countries in which FTR and legal origins do not “overlap” – see Panel B of Table F.4), we still find consistent results. This provides stronger evidence that our earlier results are not likely driven by legal origin and explained by the findings in Liang and Renneboog (2017) and others.

In this study, we connect two fundamental questions in the social sciences. First, the concept of the future is crucial in understanding the functioning and dynamics of capitalist economies (Beckert, 2016), but is yet a largely unexplored dimension of organizational behavior (Slawinski and Bansal, 2012, 2015). Second, the question as to whether language shapes the way people think goes back centuries; Charlemagne reportedly said that “to speak another language is to possess another soul.” Linguists have long believed that people from culturally different backgrounds tend to order their worlds differently based on the language they use, such that some languages are hinged to categorical structures in which time is conceptualized in more abstract terms. In popular culture, these ideas have also begun to take hold. For example, in the 2016 movie *Arrival*, Dr. Louise Banks (played by Amy Adams), a linguist attempting to communicate with aliens argued that “Language is the foundation of civilization. It is the glue that holds a people together.” And directly related to our thesis, that “if you ... really learn it (the aliens language), you begin to perceive time the way that they do. So you can see what’s to come. But time, it isn’t the same for them. It’s non-linear.”

By developing a future-time framing perspective at the organizational level by emphasizing the social context of communications within organization, we link language use with organizational future orientation, which we argue may be an even stronger mechanism than the individual-level effects documented by Chen (2013). While prior research that has shown that a company’s temporal choices and long-term orientation may affect its responsibility and sustainability (Bansal and DesJardine, 2014; Slawinski and Bansal, 2012, 2015), as well as uncertain investments such as R&D (Chrisman and Patel, 2012; McGrath, 1997; Miller and Arikian, 2004), they have not examined how organizational level cognition is related to the perception of time and how it is shaped by language structures. We theorize and test that when the categorical boundaries between the present and the future are sharper and more salient, the organization will be focused more on the present and less on the future. Our argument rests on the idea that because decision processes within organizations rely on discussion and negotiation—all of which significantly involve language use—organizational decision structures and processes would come to embody the future time cognitive tendency. Our three moderators on exposure to multilingual environments explore contingencies in which this future-

time organizational tendency is reduced.

Our empirical results support our hypotheses: after including many controls and using fixed effects and subsample analyses, we find that language structures capturing a future orientation are robustly associated with decreased firm-level CSR and R&D expenditure across a large sample of global firms. Further supporting our theory is that the linguistic diversity and globalization of the country, and foreign institutional ownership of the firm—all of which can reduce the cognitive tendency against a future orientation that results from the use of a single language—are found to significantly attenuate the negative effects of language FTR. In unreported results, we find similar moderating effects of a firm's foreign sales and foreign assets, and its CEO's international experience (both work and education). Of course, given the cross-country nature of our empirical setting and controversies around Chen's original thesis, these results should be interpreted with caution. Nevertheless, based on various robustness tests, we think our empirical results suggest that future-time framing by language affects the extent to which organizational-level future-oriented strategies are enacted. Our conceptualization and findings contribute to the literatures on international organizational behavior and the roles of language in organizations.

### **Contributions to Research on International Organizational Behavior and Management Practice**

In recent decades, researchers have begun to understand how various institutionally embedded organizational behaviors vary across countries, with most investigations focusing on the standard set of national business bundles that include cultural, political, legal, and economic systems (e.g., Aguilera, Rupp, Williams, and Ganapathi, 2007; Guler, Guillen, and Macpherson, 2002; Matten and Moon, 2008). Little is known, however, about how macro-level factors shape an important dimension of organizational cognition and practice, namely how organizations consider time, or organizational future orientation, as well as its underlying cognitive mechanisms. By introducing the concept of future-time framing, we address this issue from the angle of how language as an important individual and societal construct can be extended to the organizational level to explain such cross-organization and cross-country differences in time perception. We also hypothesize that such language-induced cognitive categorization of time perception is malleable, and we identify several contextual factors related to an organization's exposure to multilingual

environments that can reduce the effect of language on a company's future orientation. Our approach of focusing on within- and cross-country linguistic differences adds insight to the institutional perspective but also suggests that language-induced cognitive tendency is a different underlying mechanism from culture and legal origin. Moreover, while some organizational studies have investigated the link between organization long-term orientation and policies with regard to CSR (e.g., Flammer and Bansal, 2017; Slawinski and Bansal, 2012) and R&D (e.g., Azoulay, Graff Zivin, and Manso, 2011; Lerner and Wulf, 2007), to our knowledge, no other prior studies have provided a systematic investigation of a new concept (future-time framing) that explains differences in future-oriented organizational behavior around the world.

### **Contributions to Research on the Cognitive Bases of Language in Organizations**

Increasing attention is paid to how language affects organizational behavior in the organization and international business literature (see the review by Cooren et al. (2011) for organization studies and the review by Brannen et al. (2014) for international business). Studies in this field have mostly focused on two issues. One is the structure and dynamics of multinational or global teams, such as their trust formation (Tenzer, Pudelko, and Harzing, 2014), power struggles (Hinds, Neeley, and Cramton, 2014), boundary spanning (Barner-Rasmussen et al., 2014), and employee motivation for enhancement (Bordia and Bordia, 2014). The other stream focuses on the language effects on multinationals' activities, such as the relationship between headquarters and subsidiaries (Peltokorpi and Vaara, 2012; Reiche, Harzing, and Pudelko, 2015), board communication (Piekkari, Oxelheim, and Randøy, 2015), and the relationship between acquirers and targets in cross-border M&A (Cuypers, Ertug, and Hennart, 2015). To date, however, there is a lack of research on how language can systematically shape organizational level future orientation, partially due to the fact that language is usually not conceived as a social practice that forms the cognitive base for organizational behavior, but rather as a discrete entity (Janssens and Steyaert, 2014).

By identifying important structural differences across companies' working languages related to their future orientation and how such differences can be translated to organizational-level cognition, we have introduced a new, important way of conceptualizing the effect of language on organizational behavior around the globe. We believe our study is a first step in identifying a novel yet highly important underlying

factor that shapes cross-national organizational behavior. Furthermore, as we theorize, because language use within organizations directly affects communication processes and decision making, the effects may be even greater than for the individual level behaviors shown by Chen (2013). That is, for the effect of future time framing to manifest in organizational behaviors, there need not be a cognitive change at the individual level, but the organizational level cognitive tendency is shaped by individuals using different language structures in daily discourse and discussion which then become part of established company policies and procedures. Our organization-level theorization of future-time framing may help better understand country-level variations in social norms and policy making (e.g., Perez and Tavits, 2017), as well as in how expectations may shape economic activities in capitalist societies (Beckert, 2016). We think policymakers and corporate executives should consider such cognitive tendencies induced by language in their strategies and international expansion, and they can reduce such cognitive tendencies by exposing their companies to multilingual environments at different levels.

## REFERENCES

- Aguilera RV, Jackson G (2010) Comparative and international corporate governance. *Acad. Management Annals* 4(1): 485-556.
- Aguilera RV, Rupp DE, Williams CA, Ganapathi J (2007) Putting the S back in corporate social responsibility: A multilevel theory of social change in organizations. *Acad. Management Rev.* 32(3): 836-863.
- Ancona DG, Okhuysen GA, Perlow LA (2001) Taking time to integrate temporal research. *Acad. Management Rev.* 26(4): 512-529.
- Athanasopoulos P, Bylund E (2013) Does grammatical aspect affect motion event cognition? A cross-linguistic comparison of English and Swedish speakers. *Cognitive Sci.* 37(2): 286-309.
- Athanasopoulos P, Bylund E, Montero-Melis G, Damjanovic L, Scharfner A, Kribbe A, Riches N, Thierry G (2015) Two Languages, two minds, Flexible cognitive processing driven by language of operation, *Psychological Sci.* 26(4): 518-526.
- Arruñada B (2010) Protestants and Catholics: similar work ethic, different social ethic. *Econom. J.* 120: 890-918.
- Azoulay P, Graff-Zivin JS, Manso G (2011) Incentives and creativity: evidence from the academic life sciences, *Rand J. Econ.* 42(3), 527-554.
- Ballard K, Knutson B (2009) Dissociable neural representations of future reward magnitude and delay during temporal discounting, *Neuroimage* 45: 143-150.
- Bansal P, DesJardine M (2014) Business sustainability: It's about time, *Strategic Org.* 12(1): 70-78.
- Barner-Rasmussen W, Ehrnrooth M, Koveshnikov A, Mäkelä K (2014) Cultural and language skills as resources for boundary spanning within the MNC. *J. Internat. Bus. Stud.* 45, 886-905.
- Beckert, J (2016) *Imagined Futures. Fictional Expectations and Capitalist Dynamics.* Harvard University Press (Cambridge, MA).
- Bena J, Ferreira MA, Matos P, Pires P (2016) Are foreign investors locusts? The long-term effects of foreign institutional ownership *J. Financial Econom.* forthcoming.
- Benartzi S, Thaler RH (1995) Myopic loss aversion and the equity premium puzzle. *Quart. J. Econom.* 110(1): 73-92.
- Berlin B, Kay P (1969) Basic color terms: Their universality and evolution (University of California Press, Berkeley and Los Angeles, CA).

- Bluedorn AC (2002) *The Human Organization of Time: Temporal Realities and Experience*. (Stanford University Press, Stanford, CA).
- Bordia S, Bordia P (2014) Employees' willingness to adopt a foreign functional language in multilingual organizations: The role of linguistic identity. *J. Internat. Bus. Stud.* 46(4): 415-428.
- Boroditsky, L. (2001) Does language shape thought?: Mandarin and English speakers' conceptions of time. *Cognitive Psy.*, 43(1), pp.1-22.
- Boroditsky L. (2011) How languages construct time. In Dehaene and Brannon (Eds.), *Space, time, and number in the brain: Searching for the foundations of mathematical thought*. Elsevier, pp.333-341.
- Brannen MY, Piekkari R, Tietze S (2014) The multifaceted role of language in international business: Unpacking the forms, functions and features of a critical challenge to MNC theory and performance. *J. Internat. Bus. Stud.* 45(5): 495-507.
- Butler R (1995) Time in organizations: Its experience, explanations and effects. *Organ. Stud.* 16(6): 925-950.
- Bylund E, Athanasopoulos P (2017) The Whorfian time warp: Representing duration through the language hourglass. *J. Exp. Psychol. Gen.* 146(7): 911-916.
- Cai Y, Pan CH, Statman M (2016) Why do countries matter so much in corporate social performance? *J. Corp. Finance*, 41: 591-609.
- Chantwell J (2009) Location and the multinational enterprises. *J. Internat. Bus. Stud.* 40(1): 35-41.
- Chen MK (2013) The effect of language on economic behavior: Evidence from savings rates, health behaviors, and retirement assets. *Amer. Econom. Rev.* 103 (2): 690-731.
- Chen WR (2008) Determinants of firms' backward- and forward-looking R&D search behavior. *Organ. Sci.* 19: 609-622.
- Chhokar, J.S., Brodbeck, F.C. and House, R.J. eds. (2013) *Culture and leadership across the world: The GLOBE book of in-depth studies of 25 societies*. Routledge.
- Cho TS, Hambrick DC (2006) Attention as the mediator between top management team characteristics and strategic change: The case of airline deregulation. *Organ. Sci.*, 17(4):453-469.
- Chrisman JJ, Patel PC (2012) Variations in R&D investments of family and nonfamily firms: Behavioral agency and myopic loss aversion perspectives. *Acad. Management J.* 55(4): 976-997.
- Cooren F, Kuhn T, Cornelissen JP, Clark T (2011) Communication, organizing and organization: An overview and introduction to the special issue. *Organ. Stud.* 32(9): 1149-1170.
- Copley B (2009) *The Semantics of the Future* (Routledge, New York).
- Cornelissen JP, Werner MD (2014) Putting framing in perspective: A review of framing and frame analysis across the management and organizational literature. *Acad. Management Annals.* 8(1) 181-235.
- Crilly D. (2016) Time, Space and Intertemporal Choice: Why approaching the future Makes for short-term thinking. *Acad. of Management Proceedings. 2016:1 13590; doi:10.5465/AMBPP.2016.147*
- Cuypers IR, Ertug G, Hennart JF (2015) The effects of linguistic distance and lingua franca proficiency on the stake taken by acquirers in cross-border acquisitions. *J. Internat. Bus. Stud.* 46(4): 429-442.
- Dahl Ö (2000) The grammar of future time reference in European languages. Dahl Ö, eds. *Tense and Aspect in the Languages of Europe* (Mouton de Gruyter, Berlin), 309-328.
- D'Andrade RG (1995) *The Development of Cognitive Anthropology*: 185. (Cambridge University Press, Cambridge, UK).
- Desender K, Aguilera RV, Crespí-Cladera R, García-Cestona MA (2013) When does ownership matter? Board characteristics and behavior, *Strategic Management J.*, 34(7): 823- 842.
- Dow, D, Cuypers, IR, Ertug, G (2016). The effects of within-country linguistic and religious diversity on foreign acquisitions. *J. Internat. Bus. Stud.* 47(3), 319-346.
- Durand R., Paoletta L (2013) Category stretching: reorienting research on categories in strategy, entrepreneurship, and organization theory. *J. Management Stud.* 50(6), 1100-1123.
- Eggers JP, Kaplan S (2013) Cognition and capabilities: A multi-level perspective. *Acad. Management Annals* 7(1): 293-338.
- Evans V. (2013) *Language and time: A cognitive linguistics approach*. Cambridge University Press (Cambridge).
- Ferrell A, Liang H, Renneboog L (2016) Socially responsible firms, *J. Financ. Econ.* 122(3): 585-606.
- Flammer C, Bansal, P (2017) Does a long-term orientation create value? Evidence from a regression discontinuity, *Strategic Management J.* 38(9): 1827-1847.
- Flecken M, Athanasopoulos P, Kuipers JR, Thierry G (2015) On the road to somewhere: brain potentials reflect language effects on motion event perception, *Cognition* 141: 41-51.
- Flecken M, Carroll M, von Stutterheim C. (2014) Grammatical aspect influences motion event perception: Findings from a cross-linguistic nonverbal recognition task. *Language Cognition* 6: 45-78.

- Frederick S, Loewenstein G, O'Donoghue T (2002) Time discounting and time preference: a critical review, *J. Econom. Literature* 40, 351–401.
- Glimcher P, Kable J, Louie K (2007) Neuroeconomic studies of impulsivity: now or just as soon as possible? *Amer. Econom. Rev.* 97: 142–147.
- Glynn MA, Navis C (2013) Categories, identities, and cultural classification: Moving beyond a model of category constraint. *J. Management Stud.* 50(6): 1124–1137.
- Godfrey PC (2005) The relationship between corporate philanthropy and shareholder wealth: A risk management perspective, *Acad. Management Rev.* 30(4): 777–798.
- Greening DW, Turban DB (2000) Corporate social performance as a competitive advantage in attracting a quality workforce. *Bus. Society* 39: 254–280.
- Greve HR (2008) A behavioral theory of firm growth: Sequential attention to size and performance goals. *Acad. Management J.* 51(3): 476–494.
- Guillen M (2001). *The Limits of Convergence: Globalization & Organizational Change in Argentina, South Korea, and Spain* (Princeton University Press, Princeton, NJ)
- Guler I, Guillen M, Macpherson J (2002) Global competition, institutions, and the diffusion of organizational practices: the international spread of the ISO 9000 quality certificates. *Admin. Sci. Quart.* 47: 207–232.
- Guo W, Yu T, Gimeno J (2017) Language and competition: communication vagueness, interpretation difficulties, and market entry. *Acad. Management J.* 60(6): 2073–2098.
- Hambrick DC, Mason PA (1984) Upper echelons: the organization as a reflection of its top managers. *Acad. Management Rev.* 9: 193–206.
- Hillman AJ, Keim GD (2001) Shareholder value, stakeholder management, and social issues: What's the bottom line? *Strategic Management J.* 22(2): 125–139.
- Hinds PJ, Neeley TB, Cramton CD (2014) Language as a lightning rod: Power contests, emotion regulation, and subgroup dynamics in global groups. *J. Internat. Bus. Stud.* 45: 536–561.
- Hofstede GH (1980) *Culture's Consequences: International Differences in Work-Related Values* (Sage, Beverly Hills, CA).
- Hofstede, GH (2001) *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations*. Sage.
- Hsu PH, Li F, Lin TC (2017) Why do innovative firms hold more cash? The international evidence. Working Paper available at SSRN: <https://ssrn.com/abstract=2643536>
- Janssens M, Steyaert C (2014) Re-considering language within a cosmopolitan understanding: Toward a multilingual franca approach in international business studies. *J. Internat. Bus. Stud.* 45(5): 623–639.
- Jarzabkowski P (2005) *Strategy as Practice: An Activity Based Approach* (Sage, London, UK).
- Kaplan S (2008a) Cognition, capabilities, and incentives: Assessing firm response to the fiber-optic revolution. *Acad. Management J.* 51(4): 672–695.
- Kaplan S (2008b) Framing contests: Strategy making under uncertainty. *Organ. Sci.* 19(5): 729–752.
- Kaplan S, Orlikowski WJ (2013) Temporal work in strategy making. *Organ. Sci.* 24(4): 965–995.
- Kay P, Kempton W (1984) What is the Sapir-Whorf hypothesis? *Am. Anthropol.* 86(1): 65–79.
- Koh PS, Qian C, Wang H (2014) Firm litigation risk and the insurance value of corporate social performance. *Strategic Management J.* 35(10): 1464–1482.
- Koh PS, Reeb DM (2015) Missing R&D. *J. Account. Econ.* 60(1): 73–94.
- Koh PS, Reeb DM, Zhao, W (2017) CEO confidence and unreported R&D. *Manag. Sci.* forthcoming.
- Kostova T (1999) Transnational transfer of strategic organizational practices: A contextual perspective. *Acad. Management Rev.* 24(2): 308–324.
- Kostova T, Roth K (2002) Adoption of an organizational practice by subsidiaries of multinational corporations: Institutional and relational effects. *Acad. Management J.* 45(1): 215–233.
- Kuznetsov A, Kuznetsova O (2014) Building professional discourse in emerging markets: Language, context and the challenge of sensemaking. *J. Internat. Bus. Stud.* 45(5): 583–599.
- La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R (1998) Law and finance. *J. Polit. Economy* 106: 1113–1155.
- Laverty KJ (1996) Economic “short-termism”: the debate, the unresolved issues, and the implications for management practice and research, *Acad. Management Rev.* 21(3): 825–860.
- Lerner J, Wulf J (2007) Innovation and incentives: Evidence from corporate R&D, *Rev. Econ. Stat.* 89(4): 634–644.
- Liang H, Renneboog L (2017) On the foundations of corporate social responsibility. *J. Finance*, 72(2): 853–910.
- Luo X, Bhattacharya CB (2006) Corporate social responsibility, customer satisfaction, and market value. *J. Marketing* 70 (4): 1–18.
- March JG, Simon HA (1958) *Organizations* (Wiley, New York, NY).

- Marquis C, Glynn MA, Davis GF (2007) Community isomorphism and corporate social action. *Acad. Management Rev.* 32: 925-945.
- Marquis C, Tilcsik A (2013) Imprinting: Toward a multilevel theory. *Acad. Management Annals* 7: 193-243.
- Marquis C, Toffel M, Zhou Y (2016) Scrutiny, norms, and selective disclosure: a global study of greenwashing. *Organ. Sci.* 27: No. 2, 483–504.
- Matten D, Moon J (2008) “Implicit” and “explicit” CSR: a conceptual framework for a comparative understanding of corporate social responsibility. *Acad. Management Rev.* 33(2): 404-424.
- McClure SM, Ericson KM, Laibson DI, Loewenstein G, Cohen J (2007) Time discounting for primary rewards, *J. Neurosci.* 27, 5796-5804.
- McGrath RG (1997) A real options logic for initiating technology positioning investments. *Acad. Management Rev.*, 22: 974-996.
- Miller SJ, Hickson DJ, Wilson DC (1999) Decision-making in organizations, in Clegg SR, Hardy C, Nord WR (eds.) *Managing Organizations: Current Issues* (Sage, London, UK).
- Miller KD, Arikian AT (2004) Technology search investments: evolutionary, option reasoning, and option pricing approaches. *Strategic Management J.*, 25(5): 473-485.
- Monterosso J, Luo S (2010) An argument against dual valuation system competition: cognitive capacities supporting future orientation mediate rather than compete with visceral motivations. *J. Neuroscience Psych. Econom.* 3(1): 1-14
- Ocasio W (1997) Towards an attention-based view of the firm. *Strategic Entrepreneurship J.* 18(1): 187-206.
- Ocasio W (2011) Attention to attention. *Organ. Sci.* 22(5): 1286-1296.
- Ocasio W, Joseph J (2005) An attention-based theory of strategy formulation: Linking micro- and macroperspectives in strategy process. *Advances in Strategic Management*, 22: 39–61.
- Peltokorpi V, Vaara E (2012) Language policies and practices in wholly-owned foreign subsidiaries: A recontextualization perspective. *J. Internat. Bus. Stud.* 43(9): 808-833.
- Perez, E, Tavits M (2017) Language shares people’s time perspective and support for future-oriented policies, *Am. J. Polit. Sci.* forthcoming.
- Peters J, Buchel C (2009) Overlapping and distinct neural systems code for subjective value during intertemporal and risky decision making, *J. Neurosci.* 29: 15727-15734.
- Peters J, Buchel C (2010) Episodic future thinking reduces reward delay discounting through an enhancement of prefrontal-medioparietal interactions, *Neuron* 66: 138-148.
- Piekkari R, Oxelheim L, Randøy T (2015) The silent board: How language diversity may influence the work processes of corporate boards. *Corporate Governance* 23: 25-41.
- Porac JF, Thomas H (1990). Taxonomic mental models in competitor definition. *Acad. Management Rev.* 15: 224–240.
- Porac JF, Thomas H, Fiona W, Douglas P, Alaina K (1995) Rivalry and the industry model of Scottish knitwear producers. *Admin. Sci. Quart.* 40: 203-227.
- Prahalad CK, Bettis RA (1986) The dominant logic: A new linkage between diversity and performance. *Strategic Management J.* 7(6): 485-501.
- Reiche BS, Harzing AW, Pudelko M (2015) Why and how does shared language affect subsidiary knowledge inflows? A social identity perspective. *J. Internat. Bus. Stud.* 46(5): 528-551.
- Renneboog L, Spaenjers C (2012) Religion, Economic Attitudes, and Household Finance, *Oxf. Ec. Papers* 64 (1): 103-127.
- Roberson D, Davidoff J, Davies I, Shapiro L (2004) The development of color categories in two languages: A longitudinal study. *J. Experimental Psychol.* 133: 554-571.
- Roberts S, Winters J, Chen K (2015), Future Tense and Economic Decisions: Controlling for Cultural Evolution, *PLoS ONE* 10(7): e0132145 <https://doi.org/10.1371/journal.pone.0132145>
- Robichaud D, Giroux H, Taylor JR (2004) The metaconversation: The recursive property of language as a key to organizing. *Acad. Management Rev.* 29: 617-634.
- Selmier II WT, Newenham-Kahindi A, Oh CH (2015) Understanding the words of relationships: Language as an essential tool to manage CSR in communities of place. *J. Internat. Bus. Stud.* 46(2): 153-179.
- Shi W, Prescott JE (2011) Sequence patterns of firms’ acquisition and alliance behaviour and their performance implications. *J. Management Stud.* 48(5): 1044-1070.
- Slawinski N, Bansal P (2012) A matter of time: Temporal perspectives in organizational responses to climate change. *Organ. Stud.* 33(11): 1537-1563.
- Slawinski N, Bansal P (2015) Short on time: Intertemporal tensions in business sustainability. *Organ. Sci.* 26(2): 531-549.
- Souder D, Bromiley P (2012) Explaining temporal orientation: Evidence from the durability of firms’ capital investments. *Strategic Management J.* 33(5): 550-569.

- Starbuck W, Milliken E (1988) Executive perceptual filters: What they notice and how they make sense. In D. Hambrick (Ed.), *The executive effect: Concepts and methods for studying top managers* (JAI Press, Greenwich, CT).
- Tenzer H, Pudelko M, Harzing AW. (2014) The impact of language barriers on trust formation in multinational teams. *J. Internat. Bus. Stud.* 45(5): 508-535.
- Thieroff R (2000) On the areal distribution of tense-aspect categories in Europe. Dahl Ö, eds. *Tense and Aspect in the Languages of Europe* (Mouton de Gruyter, Berlin), 309-328.
- Thornton PH, Ocasio W, Lounsbury M (2012) *The Institutional Logics Perspective: A New Approach to Culture, Structure, and Process* (Oxford University Press, Oxford, UK).
- von Stutterheim C, Andermann M, Carroll M, Flecken M, Schmiedtová B (2012) How grammaticized concepts shape event conceptualization in language production: Insights from linguistic analysis, eye tracking data, and memory performance. *Linguistics* 50: 833-867.
- Weick KE (1995) *Sensemaking in Organizations* (Sage, Thousand Oaks, CA).
- Whittington R (2007) Strategy practice and strategy process: family differences and the sociological eye. *Organ. Stud.* 28(10): 1575-1586.
- Wittmann M, Leland DS, Paulus M (2007) Time and decision making: differential contribution of the posterior insular cortex and the striatum during a delay discounting task. *Exp. Brain Res.* 179: 643-653.
- Whorf BL (1956) The relation of habitual thought and behavior to language. Carroll JB, eds. *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf* (MIT Press, Cambridge, MA), 134–159.
- Yang Y, Wang J, Bailer C, Cherkassky V, Just MA (2017) Commonality of neural representations of sentences across languages: Predicting brain activation during Portuguese sentence comprehension using an English-based model of brain function, *NeuroImage* 146 (1): 658-666.

**Table 1. Summary Statistics and Correlations**

Variable	Obs	Mean	Std. Dev	Min	Max	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) CSR	88,774	2.9537	1.6629	0	6	1							
(2) RD/Assets (winsorized)	54,902	0.3594	0.9276	0	3.61406	0.0691*	1						
(3) FTR	108,964	0.7488	0.4337	0	1	-0.0967*	-0.4268*	1					
(4) Linguistic Diversity	108,964	0.2744	0.1730	0.003	0.758	-0.0973*	-0.4700*	0.3186*	1				
(5) Globalization	108,964	77.7580	7.4217	52.67	92.37	0.1777*	-0.5531*	0.2762*	0.4068*	1			
(6) Foreign Institutional Ownership	108,964	0.1323	0.1147	0	0.9998	0.1256*	-0.0270*	-0.1444*	0.0684*	0.2940*	1		
(7) CEO International Experience	108,964	0.3030	0.4596	0	1	0.1006*	-0.0581*	-0.0472*	0.0858*	0.2325*	0.1739*	1	
(8) CEO Gender	108,964	0.0198	0.1394	0	1	0.0339*	-0.0291*	0.0162*	0.0135*	0.0486*	0.0101*	0.0656*	1
(9) Rule of Law	108,964	9.3470	1.0240	2.0833	10	-0.0108*	-0.2801*	0.1164*	0.3072*	0.2383*	-0.1125*	-0.1478*	0.0262*
(10) English Common Law (orthogonalized)	108,964	-0.0358	0.3967	-1.0317	0.9382	-0.1471*	-0.2341*	0.5544*	0.1354*	0.0241*	-0.2454*	-0.1527*	0.0337*
(11) Ln(GDP per capita)	108,964	10.6526	0.3369	7.9502	11.5409	0.0512*	-0.2070*	0.0980*	0.1249*	0.2466*	0.0185*	-0.1067*	0.0346*
(12) Ln(total assets)	108,964	9.4870	1.9456	2.6469	19.5031	0.0948*	0.0151*	-0.2147*	-0.0308*	-0.2366*	0.0384*	0.0393*	-0.0024
(13) Tobin's Q (winsorized)	108,964	1.7051	0.8593	0.8789	4.2607	-0.0485*	-0.1685*	0.1462*	0.0864*	0.0368*	-0.0125*	-0.0143*	0.0038
(14) ROA (winsorized)	108,964	0.2830	0.8573	-0.0833	4.27	-0.0526*	-0.0567*	0.0984*	0.1351*	0.0229*	0.0337*	-0.0350*	-0.0353*
(15) Total Blockholdings	108,964	0.2411	0.2198	0	0.97	-0.0468*	-0.1142*	0.0713*	0.1059*	0.1201*	-0.1999*	0.0741*	0.0035
(16) Power Distance Index	108,926	43.2773	11.5358	11	104	-0.0354*	0.3429*	-0.1266*	-0.0881*	-0.4053*	-0.0345*	0.0538*	-0.0399*
(17) Individualism	108,926	76.7762	19.2717	13	91	-0.0337*	-0.5562*	0.6407*	0.3484*	0.4293*	-0.1310*	-0.1045*	0.0368*
(18) Masculinity	108,926	61.7435	17.9610	5	95	-0.0937*	0.4339*	-0.2126*	-0.3400*	-0.6057*	-0.2061*	-0.1625*	-0.0619*
(19) Uncertainty Avoidance Index	108,926	56.5811	20.1978	8	112	0.0275*	0.5363*	-0.4636*	-0.2814*	-0.4807*	0.0383*	0.0354*	-0.0481*
(20) Normative vs. Pragmatic	108,926	45.6838	23.7023	13	100	0.1457*	0.5243*	-0.6985*	-0.4095*	-0.2639*	0.1589*	0.0929*	-0.0477*
(21) Indulgence vs. Restraint	108,563	61.2590	12.4444	29	97	-0.0553*	-0.5101*	0.4680*	0.2761*	0.4113*	-0.0503*	-0.0460*	0.0527*

  

	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
(9) Rule of Law	1												
(10) English Common Law (orthogonalized)	0.3008*	1											
(11) Ln(GDP per capita)	0.7260*	0.1860*	1										
(12) Ln(total assets)	-0.1876*	-0.2290*	-0.1640*	1									
(13) Tobin's Q (winsorized)	0.1268*	0.1647*	0.0645*	-0.3879*	1								
(14) ROA (winsorized)	0.0892*	0.0581*	0.0336*	0.0545*	0.0339*	1							
(15) Total Blockholdings	-0.1849*	-0.0830*	-0.2891*	-0.1180*	0.0624*	-0.0098*	1						
(16) Power Distance Index	-0.4784*	-0.3788*	-0.5908*	0.2697*	-0.1282*	-0.0529*	0.1168*	1					
(17) Individualism	0.6606*	0.6312*	0.5666*	-0.3555*	0.2176*	0.1059*	-0.0664*	-0.6266*	1				
(18) Masculinity	-0.0369*	0.1522*	0.0409*	0.0645*	-0.0602*	-0.0287*	-0.1634*	0.1113*	-0.1684*	1			
(19) Uncertainty Avoidance Index	-0.3958*	-0.6470*	-0.3397*	0.3362*	-0.2249*	-0.0783*	0.0132*	0.6851*	-0.7925*	0.3404*	1		
(20) Normative vs. Pragmatic	-0.4279*	-0.6626*	-0.2344*	0.3110*	-0.2288*	-0.1270*	-0.0135*	0.3825*	-0.7249*	0.3486*	0.6851*	1	
(21) Indulgence vs. Restraint	0.4678*	0.6048*	0.3450*	-0.3668*	0.2312*	0.0707*	-0.0521*	-0.5762*	0.7509*	-0.3169*	-0.8432*	-0.7636*	1

\*  $p < 0.05$

**Table 2. Main Results**

	<i>DV = CSR</i>				<i>DV = R&amp;D/Assets</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTR (H1)	-0.159*** (0.0583)	-0.519*** (0.0944)	-1.005*** (0.383)	-0.308*** (0.0644)	-0.446*** (0.0312)	-1.023*** (0.0522)	-2.060*** (0.152)	-0.486*** (0.0321)
FTR × Linguistic diversity (H2)		1.320*** (0.273)				2.244*** (0.163)		
FTR × Globalization (H3)			0.0112** (0.00500)				0.0212*** (0.00196)	
FTR × Foreign institutional ownership (H4)				0.971*** (0.178)				0.275*** (0.0551)
Linguistic diversity	-1.625*** (0.127)	-2.413*** (0.206)	-1.575*** (0.129)	-1.606*** (0.127)	-1.130*** (0.0791)	-2.096*** (0.105)	-1.054*** (0.0787)	-1.116*** (0.0781)
Globalization	0.0515*** (0.00279)	0.0573*** (0.00304)	0.0463*** (0.00363)	0.0520*** (0.00279)	-0.0402*** (0.00107)	-0.0352*** (0.00113)	-0.0462*** (0.00119)	-0.0403*** (0.00106)
Foreign institutional ownership	0.920*** (0.0876)	0.908*** (0.0876)	0.910*** (0.0877)	0.258* (0.149)	0.0937*** (0.0301)	0.0979*** (0.0300)	0.114*** (0.0301)	-0.0634 (0.0435)
CEO international experience	0.0399** (0.0155)	0.0423*** (0.0155)	0.0395** (0.0155)	0.0389** (0.0155)	0.000520 (0.00573)	0.00332 (0.00573)	0.000732 (0.00573)	-1.18e-05 (0.00573)
CEO gender	0.199*** (0.0483)	0.200*** (0.0482)	0.200*** (0.0482)	0.201*** (0.0482)	-0.0364* (0.0195)	-0.0333* (0.0195)	-0.0373* (0.0195)	-0.0372* (0.0195)
Rule of law	-0.0709*** (0.0226)	-0.123*** (0.0250)	-0.0696*** (0.0226)	-0.0648*** (0.0226)	-0.200*** (0.0120)	-0.292*** (0.0137)	-0.201*** (0.0119)	-0.196*** (0.0119)
English common law (orthogonalized)	-0.317*** (0.0566)	-0.254*** (0.0581)	-0.334*** (0.0570)	-0.331*** (0.0567)	-0.360*** (0.0299)	-0.342*** (0.0298)	-0.393*** (0.0299)	-0.368*** (0.0298)
Ln(GDP per capita)	0.439*** (0.0429)	0.468*** (0.0433)	0.431*** (0.0430)	0.433*** (0.0429)	0.0352** (0.0152)	0.0727*** (0.0154)	0.0146 (0.0153)	0.0277* (0.0153)
Ln(Assets)	0.0501*** (0.00440)	0.0496*** (0.00440)	0.0516*** (0.00445)	0.0504*** (0.00440)	-0.358*** (0.00151)	-0.359*** (0.00151)	-0.355*** (0.00154)	-0.358*** (0.00151)
Tobin's Q (winsorized)	0.000669 (0.00947)	0.00191 (0.00947)	0.00169 (0.00948)	-0.000258 (0.00947)	-0.0531*** (0.00283)	-0.0523*** (0.00283)	-0.0516*** (0.00284)	-0.0532*** (0.00283)
ROA (winsorized)	0.00105 (0.0100)	0.000497 (0.0100)	0.00159 (0.0100)	0.00140 (0.0100)	-0.00443 (0.00293)	-0.00490* (0.00293)	-0.00380 (0.00293)	-0.00420 (0.00294)
Total blockholdings	-0.0806** (0.0388)	-0.0768** (0.0388)	-0.0807** (0.0388)	-0.0907** (0.0388)	-0.0391*** (0.00989)	-0.0439*** (0.00988)	-0.0249** (0.00997)	-0.0338*** (0.00995)
Constant	-3.640*** (0.596)	-3.738*** (0.596)	-3.227*** (0.624)	-3.585*** (0.596)	8.713*** (0.211)	9.000*** (0.211)	9.307*** (0.217)	8.764*** (0.210)
Observations	88,774	88,774	88,774	88,774	54,902	54,902	54,902	54,902
Time & Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table 3. Country Fixed Effects and Within-Country Analysis**

Panel A. Controlling for Country Fixed Effects								
	<i>DV = CSR</i>				<i>DV = R&amp;D/Assets (winsorized 5%)</i>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTR (H1)	-0.501*** (0.151)	-1.198*** (0.370)	-3.305*** (0.507)	-0.549* (0.309)	-0.235*** (0.0505)	-0.396** (0.197)	-3.963*** (0.164)	-0.282*** (0.0881)
FTR × Linguistic diversity (H2)		1.267** (0.615)				0.434 (0.513)		
FTR × Globalization (H3)			0.0358*** (0.0062)				0.0444*** (0.0019)	
FTR × Foreign institutional ownership (H4)				0.577** (0.241)				0.153*** (0.0540)
Observations	170,035	170,035	170,035	170,035	88,958	88,958	88,958	88,958
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B. Within-Country Analysis: Belgium and Switzerland				
	<i>DV = CSR</i>		<i>DV = R&amp;D/Assets (winsorized 5%)</i>	
	(1)	(2)	(3)	(4)
FTR	-0.714** (0.323)	-0.378*** (0.0516)	-0.0071*** (0.0019)	-0.0207*** (0.0017)
Observations	2,992	4,523	2,629	2,959
R-squared	0.096	0.023	0.823	0.730
Control variables	Yes	No	Yes	No
Time FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

Standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## about ECGI

The European Corporate Governance Institute has been established to improve *corporate governance through fostering independent scientific research and related activities*.

The ECGI will produce and disseminate high quality research while remaining close to the concerns and interests of corporate, financial and public policy makers. It will draw on the expertise of scholars from numerous countries and bring together a critical mass of expertise and interest to bear on this important subject.

The views expressed in this working paper are those of the authors, not those of the ECGI or its members.

## ECGI Working Paper Series in Finance

### Editorial Board

#### Editor

Ernst Maug, Professor of Corporate Finance, Mannheim Business School, University of Mannheim

#### Consulting Editors

Franklin Allen, Nippon Life Professor of Finance, Professor of Economics, The Wharton School of the University of Pennsylvania

Julian Franks, Professor of Finance, London Business School

Marco Pagano, Professor of Economics, Facoltà di Economia Università di Napoli Federico II

Xavier Vives, Professor of Economics and Financial Management, IESE Business School, University of Navarra

Luigi Zingales, Robert C. McCormack Professor of Entrepreneurship and Finance, University of Chicago, Booth School of Business

#### Editorial Assistants

Tamas Barko, University of Mannheim

Sven Vahlpahl, University of Mannheim

Vanessa Wang, University of Mannheim

## **Electronic Access to the Working Paper Series**

The full set of ECGI working papers can be accessed through the Institute's Web-site ([www.ecgi.org/wp](http://www.ecgi.org/wp)) or SSRN:

<b>Finance Paper Series</b>	<a href="http://www.ssrn.com/link/ECGI-Fin.html">http://www.ssrn.com/link/ECGI-Fin.html</a>
-----------------------------	---

<b>Law Paper Series</b>	<a href="http://www.ssrn.com/link/ECGI-Law.html">http://www.ssrn.com/link/ECGI-Law.html</a>
-------------------------	---