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Does Language Matter to Foreign Subsidiary Performance?

ABSTRACT

Purpose: This paper examines the role of language in foreign subsidiary performance.

Design/methodology/approach: We develop hypotheses relating to the effects of language difference and its interplay with cultural distance and market size. Considering languages that can be directly used and that can be acquired by MNEs, we employ language variables representing major languages and a population of 60 home and 57 host countries to study the performance of a sample of 1,751 subsidiaries between 2002–2013.

Findings: Language difference is found to have a negative impact on subsidiary performance. The positive effects of cultural distance on performance become stronger when the language difference is smaller. The language effects are also more pronounced in small markets.

Practical implications: This study reveals that subsidiary success depends on language difference, and such effects are more pronounced in small markets. The results also suggest that MNEs need to give more attention to bridging language barriers when they invest in culturally distant countries so that they can benefit from the positive effects of cultural distance.

Originality/value: Given that there is no systematic research investigating the role of language in the foreign subsidiary performance of MNEs, we make an important contribution by presenting a quantitative investigation of the language–performance relationship. The novelty of the paper also lies in examining the interplay of language difference with cultural distance and market size.

Keywords: language; foreign subsidiary performance; language difference; cultural distance; market size

Paper type: Research paper

Does Language Matter to Foreign Subsidiary Performance?

1. Introduction

Research in international marketing has long examined the foreign subsidiary performance of multinational enterprises (MNEs) (e.g. Chiao et al., 2008; Delios & Makino, 2003; Kwon, 2010; Pehrsson, 2009; Sousa & Tan, 2015) and the role of language in advertising, consumer research, industrial marketing and purchasing, services marketing and international market opportunities, and selection analysis (e.g. Alcantara-Pilar et al., 2016, 2017; Alexander et al., 2007; Craig & Douglas, 2006; Hernandez & Minor, 2010; Holmqvist et al., 2017; Holmqvist et al., 2019; Hornikx & de Groot, 2017; Hornikx & van Meurs, 2017; Rahman et al., 2017; Sheng & Mullen, 2011). However, taking stock of business and management research, Brannen et al. (2014) and Tenzer et al. (2017) noted that there was no systematic study linking language to subsidiary performance, although the connection between the two has been made in conceptual papers such as Luo and Shenkar (2006). This is an important research gap as the literature has established that language difference (LD) creates barriers for communication, disturbs information flow and knowledge transfer, influences HQ-subsidiary and inter-subsidiary relationships particularly from the aspect of control, communication and coordination, and affects foreign direct investment (FDI) (e.g. Björkman & Piekkari, 2009; Cuypers et al., 2015; Harzing & Feely, 2008; Konara & Wei, 2019; Luring & Klitmoller, 2015; Ly et al., 2018; Schomaker & Zaheer, 2014; Vaara et al., 2005; Vidal-Suárez & López-Duarte, 2013; Welch & Welch, 2008; Zhu et al., 2015). Arguably, all of these effects can be reflected in organizational performance. We aim to fill the research gap by presenting a quantitative investigation of the relationship between language and subsidiary performance using a large dataset tracking the performance of 1,751 foreign subsidiaries from 60 home-countries operating in 57 host-countries during 2002-2013.

Our starting point is to follow recent developments and to consider language as a stand-alone concept (Karhunen et al., 2018; Piekkari et al., 2014; Tenzer et al., 2017). Despite recognition of the role of language in International Business and International Marketing (Welch et al., 2001), it has been subsumed under the umbrella of culture and treated as a residual category, to the point that it has become “the forgotten factor in multinational management” (Marschan et al., 1997). However, the recent proliferation of papers has taken language “out of the culture box” by taking three different views on language (Karhunen et al., 2018). The structural view sees language as an object that is largely independent and unaffected by its context, including culture. The functional view considers

that language coexists with its user, is influenced by the user's culture, and serves as a carrier of culture. The social practice view regards language as intertwined with human activities and interacting with the social and socio-cultural context of its use. As the objective of this study is to examine the impact of LD between the home and host country of MNEs, the focus is on the overall language level of a subsidiary (not on the individual- or team-level), and on the separate effects of language and culture. Schomaker and Zaheer (2014) suggested that the way to move this line of research forward was by focusing on "the structural foundations of language rather than on its culturally-bound aspects" (p. 56), because the structural approach differentiates language from culture and allows us to focus on the fundamental characteristics of language that influence their acquisition and use, rather than the functional and societal aspects that deal with usage and interpretation. Following Schomaker and Zaheer (2014), we take a structural approach in the conceptualization of LD by focusing on the availability of language resources that can be tapped into by MNEs for their subsidiary operations.

We consider language as a medium through which agents communicate and coordinate activities. The relevant language competence is about mastering one shared system for communication, understanding, coordination and interaction. Firms conducting businesses outside their home country often deal with different language environments. Attempts have been made to capture LD by measuring and quantifying the extent to which the language environment of the host country is different from that of the home country (Brannen et al., 2014; Dow & Karunaratna, 2006). Taking account of the language(s) used in the home and host country of MNEs, we operationalize LD by examining language overlap (the proportion of the population in the host country who are able to speak the major languages of the home country of MNEs), linguistic distance (the extent to which the main home and the main host country language of MNEs differ from each other) and English usage in the host country. Building on the literature of language in MNEs, we will identify channels through which LD impacts subsidiary performance.

Taking a structural view allows us to separate language effects from cultural effects. While recognizing their interlink to a certain extent, we treat LD and cultural distance (CD) as two separate constructs, and adopt the following working definition for CD. Culture is defined as the collective programming of the mind that differentiates groups along four dimensions: power distance, masculinity-femininity, individualism-collectivism and uncertainty avoidance (Hofstede, 1980). CD refers to "the degree to which cultural values in one country are different from another country" (Sousa & Bradley, 2006, p. 52). In practice, a linguistically close country-pair would not necessarily

be culturally close, and a culturally distant pair would not necessarily be linguistically different. For example, Australia and Singapore have a high CD but a low degree of LD, while Norway and Iceland have a low CD but a high degree of LD. Studies have provided empirical evidence which dissociates LD from CD in international business research involving cross-border activities; for example, West and Graham (2004) point out that linguistic distance is not always captured by CD measures. Stahl et al. (2010) show that there is an important distinction between language-based similarity and similarity originating from a shared national culture.

Building on the above, we will investigate the joint effects of LD and CD on subsidiary performance. CD has emerged as a key variable in performance research; however, existing studies have found a mixed bag of evidence (see review papers by Beugelsdijk et al., 2018; Magnusson et al., 2008; Rottig, 2017; Tihanyi et al., 2005). Our focus on LD provides important insights that can be helpful in reconciling the mixed findings on the CD-performance relationship.

Complimentary to this, we recognize that subsidiary strategies are often formulated in such a way to take advantage of market opportunities (Cavusgil & Zou, 1994; Luo, 2003; Malhotra et al., 2009; Ojala & Tyrväinen, 2007; Rothaermel et al., 2006). Performance is, therefore, closely linked to host country market size which enables firms to reap the benefits of economies of scale and scope, and is critical for business vitality and sustainability. Studies have explored and confirmed that country differences explain performance variations among firms (e.g. Chan et al., 2008; Christmann et al., 1999; Goldszmidt et al., 2011; Ketelhöhn & Quintanilla, 2012; Makino et al., 2004). However, the role of language is overlooked in these studies. LD presents a challenge for MNEs wishing to take full advantage of opportunities related to market size. We posit that the language effects on subsidiary performance are contingent on the market size of the host country.

This paper contributes to the emerging research theme that investigates the role of language in business and management. First, we present theoretical arguments on the relationship between LD and foreign subsidiary performance, advancing the understanding of the previously under-explored effects of language in MNEs and laying a theoretical foundation on which further inquiries can be based. Second, by examining the joint effects of LD and CD, we supplement the existing research stream on the relationship between CD and subsidiary performance, and explicate the differential effects of LD and CD. This reinforces the need to “unbundle language from the confines of the concepts of psychic distance and culture” (Welch et al., 2001, p.195) and contributes to develop a better understanding of the interplay between language and culture in MNE subsidiaries. Our third

contribution is made through examining how the effects of LD are contingent on market size, adding value to the emerging research agenda on how country matters to firm performance. It is generally agreed that international expansion is an important growth strategy for MNEs. Simultaneous consideration of LD and market size elucidates another condition under which market matters to subsidiary performance, and offers a new account of how country matters to firm performance. Finally, this study adds value by responding to Brouthers et al. (2016)'s call to include a diverse group of countries in CD research. Sampling firms from a large number of host and home countries, this paper provides generalizable evidence on the language-performance relationship.

2. Literature Review and Hypothesis Development

2.1 The Role of Language in International Business and International Marketing

Language plays a complex part in global operations, primarily through its vital role in communication (in both written and oral form) and information flow, but also through its impact on human capital. Communication is a process where knowledge and information are shared for a common understanding. In an international setting, information can be costly and information asymmetry is further exacerbated by LD. Language competency is, therefore, required for effective communication and information transmission within an MNE and between the MNE and its business associates.

Language barriers hinder communication and information flow, which may lead to frustration, conflict, mistrust, and resistance (Vidal-Suárez & López-Duarte, 2013). Such issues can be triggered by language as a source of exclusion, power and identity. A non-native language speaker tends to be less comprehensible in that language and less confident in communication involving the use of that language (Kulkarni, 2015), which could potentially limit their participation in organizational activities, thus resulting in them being excluded intentionally or inadvertently from decision-making processes (Harzing & Feely, 2008; Tenzer et al., 2014). When reflected at the organizational level, this would impact communication and the information flow between a subsidiary and the rest of MNE if there is LD. Similarly, language competency can grant speakers a position of power helping them to gain access to more resources (Beeler & Lecomte, 2017; Piekkari et al., 2014; Welch et al., 2001) or act as information gate-keepers when intentionally filtering, delaying or distorting the flows of crucial information (Liu et al., 2015). Social boundaries can be created, and functional and psychological barriers to differentiate insiders and outsiders can be set along the language line (Barner-Rasmussen & Björkman, 2005; Schomaker & Zaheer, 2014; Tenzer et al., 2014). Thus,

subsidiaries whose language is different from the home country of MNEs would face more challenges in communication and information flow.

Language barriers can undermine the opportunities for harnessing human capital (Konara & Wei, 2019; Vidal-Suárez & López-Duarte, 2013), an ingredient for successful organizational management and operations. Tenzer et al. (2014) reveal that language-based misunderstandings keep multinational teams from fully understanding their assignments. This leads to unmet expectations, consequently, making colleagues appear unpredictable, thus undermining team effectiveness. Language barriers can prejudice the value of a professional's competency in the eyes of their colleagues, in addition to the possibility of impeding their professional performance (Kulkarni, 2015; Tenzer et al., 2014). Harzing and Feely (2008) reveal that HQ managers'/expatriates' lack of proficiency in the host country language may be portrayed as a lack of charisma, confidence and leadership skills in the eyes of subsidiary staff, and thus undermines their authority/direction. To fully realize the human capital of someone with limited language competency for communication, a translator who has a level of proficiency in the specialist subject, excellent communication skills may be needed as an immediate solution, which could add considerable costs.

Interestingly, despite the fact that language is an inherent characteristic of the empirical context in international business, management and marketing, the concept of language has only assumed a central stage in academic research in recent decades (Brannen et al., 2014; Holmqvist et al., 2017; Piekkari et al., 2014; Tenzer et al., 2017). Much of the research in international marketing communication, advertising and branding, industrial marketing and purchasing, services marketing and cross-cultural consumer has highlighted the role of language and has debated which/whose language should be used, and under what conditions a particular language strategy would be effective (e.g. Alcantara-Pilar et al., 2016, 2017; Holmqvist et al., 2017; Holmqvist et al., 2019; Hornikx & de Groot, 2017; Hornikx & van Meurs, 2017; Rahman et al., 2017). Research on international market opportunities or selection analysis has emphasized the importance of language considerations when identifying the attractiveness and accessibility of foreign markets (e.g. Alexander et al., 2007; Brannen et al., 2014; Rahman et al., 2017; Sheng & Mullen, 2011). The marketing literature has also identified that when recruiting sales personnel, foreign language competency is as important as sales ability (Welch et al., 2001).

More specific to MNEs, the impact of LD on foreign subsidiaries at the organizational level can be wide-ranging. Existing studies have identified the negative impact of LD, e.g., creating barriers for

communication, information flows and knowledge transfer (e.g. Luring & Klitmoller, 2015; Schomaker & Zaheer, 2014; Welch & Welch, 2008), causing conflicts in the HQ-subsubsidiary and the inter-subsubsidiary relationships (e.g. Björkman & Piekkari, 2009; Harzing & Feely, 2008) and influencing FDI (e.g. Konara & Wei, 2019; Ly et al., 2018) and cross-border merger and acquisitions (e.g. Cuypers et al., 2015; Vaara et al., 2005; Vidal-Suárez & López-Duarte, 2013; Zhu et al., 2015). Additionally, LD contributes to the liability of foreignness (LOF) (e.g. Luo & Shenkar, 2006; Piekkari et al., 2014). Needless to say, ultimately such language effects could have a profound impact on organizational performance. Nevertheless, language seems to be “a forgotten factor” in performance research.

2.2 Language Difference and Foreign Subsidiary Performance

In this section, we shall identify channels through which LD affects subsidiary performance by integrating the emerging literature on language in MNEs and the extensive research on subsidiary performance. First, LD affects performance through its role in communication and information flow. The success of a modern MNE depends on horizontal, vertical and diagonal communication within the organization, as well as between organizations (Barner-Rasmussen & Björkman, 2005). Successful communication enables a subsidiary to gain timely and valuable market information, reduce transaction costs, and improve operational efficiency and effectiveness, thus leading to a strong performance. LD creates barriers and increases the cost of communication and information flows. Modern communication methods, language training, the use of translators and relying on multilingual employees who act as language nodes between speakers of different languages may help ease language barriers. However, there is extensive evidence showing that there remains information filtration (messages are only partially transmitted), distortion (intended meaning is altered during transmission) and complete loss caused by LD (Tenzer et al., 2014). Miscommunication also leads to frustration, conflict and resistance among employees in a subsidiary (Barner-Rasmussen & Björkman, 2005; Schomaker & Zaheer, 2014). Organizational performance is essentially defined by the performance of employees, which is determined by their competency of undertaking appropriate/meaningful communication in their work relationships in both intra-organizational and inter-organizational settings (Piekkari et al., 2014).

LD can also reduce communication/interactions within an MNE and distant the relationship between a subsidiary and its HQ (Björkman & Piekkari, 2009), consequently isolating the subsidiary, which reduces the benefits that the subsidiary gain from the HQ. Barner-Rasmussen and Björkman (2005)

and Luring and Klitmoller (2015) show that language proficiency affects internal communication within MNEs. Barner-Rasmussen and Aarnio (2011) find that the number of top management visits to subsidiaries is lower in the presence of language diversity. When language acts as a source of power, subsidiaries in a host country whose language is the MNE's home country language, or official corporate language, may experience a position of power in the MNE network, as they gain more resources, more visibility and more power than those that can be accessed from their position alone.

MNE subsidiaries face external challenges associated with the language barrier when it comes to interacting with local suppliers, customers and many other external stakeholders, such as the local government, regulatory bodies, and pressure groups. MNE subsidiaries, due to their cross-national nature, are more likely to have stakeholders from different backgrounds, and thus are prone to cross-cultural conflicts. These conflicts can become intense when the involved parties cannot communicate effectively, leading to negative consequences on performance. For example, Feely and Harzing (2003) note that when working in non-native languages, salespersons appear to be less able, less credible, less likable and ultimately less persuasive, while buyers appear to be not as confident and assertive as those speaking their first language, and are less likely to close advantageous deals.

LD influences decision making. It is via language that executives disseminate and implement strategies (Luo & Shenkar, 2006). In the presence of multiple languages, information must be translated, and professional interpreters and translators take time to work and must be paid, which adds to costs. Consequently, decision-making becomes slower and less efficient and operations/activities take longer, adding further costs. The impact of language-induced communication and decision-making problems on performance is clearly recognized among senior management. Forbes Insights (2011) surveyed 106 senior executives at large US businesses and found that 67% believed that miscommunication led to inefficiency, 46% considered that miscommunication made collaboration difficult and 42% noted that productivity was lower than it should be due to language barriers. Finally, more than 80% agreed that workers were more productive when managers communicated with them in their native language.

Second, LD can negatively affect subsidiary performance through its impact on knowledge transfer and diffusion. The competitive advantages of subsidiaries often come from resources transferred from the MNEs, which are usually of intangible and tacit nature. As knowledge is not a neutral free-flowing resource (Luring & Selmer, 2011), knowledge transfer is a challenging process involving the willingness to transfer, the attractiveness of the source, the absorptive capacity and learning intent of

the recipient, the quality of the relationship, and causal ambiguity (Liu et al., 2015; Peltokorpi, 2017). Even with sufficient communication, LD can limit subsidiaries from comprehending and absorbing tacit knowledge. Under the condition of insufficient communication, subsidiaries would find it even harder to benefit from the knowledge available to them. Existing evidence has revealed the negative impact of LD on international knowledge transfer and diffusion (Liu et al., 2015; Schomaker & Zaheer, 2014; Welch & Welch, 2008). Knowledge sharing leads to better performance but linguistic differences create challenges to knowledge transfer, which in turn weaken subsidiary performance.

Finally, using non-native languages increase LOF (Luo & Shenkar, 2006; Piekkari et al., 2014). The studies have shown that LOF reduces performance (e.g. Miller & Richards, 2002; Qian et al., 2013; Wu & Salomon, 2016). LOF is defined as the disadvantages that MNE subsidiaries face in a host country. It stems from either an unfamiliarity with the host country environment or a discrimination hazard. When investing in a host country, MNEs seek legitimacy which provides the aptitude to overcome LOF and helps realize value gain in business activities (Kostova & Zaheer, 1999). However, LD creates barriers for MNEs, similar to the ones listed above. As a result, it exerts a negative impact on subsidiary performance.

In summary, the above discussion leads to the central hypothesis:

H1: Language difference between home and host country of MNEs negatively impacts foreign subsidiary performance.

The question now is on operationalizing LD. A common language dummy, i.e. focusing on the MNE's home and the host country where both speak one and the same language, is commonly used. However, only considering whether there is a common language between home and host country would not adequately capture LD (Konara & Wei, 2019). It overlooks that a number of languages are spoken in a multilingual country, albeit by different proportions of the population. Thus, there are different levels of language overlap across countries with common languages; for example, Canada and Switzerland have English as a common language. However, relatively speaking, Canada has a higher percentage of the population speaking English than Switzerland (Dow & Karunaratna, 2006). Thus, the degree of linguistic ease of UK MNEs tends to be higher in Canada than in Switzerland as there is a higher chance of "direct communication" with English speakers in Canada than in Switzerland. Also, even if the home country and the host country do not share a major language, a subset of the population of the host country may speak languages of the home country. If a large proportion of the host country population speaks the languages of the home country, the language

barrier faced by MNEs operations will be lower. We reformulate our central hypothesis specifically with reference to language overlap.

H1a: Foreign subsidiary performance is positively related to the language overlap between the home and host country of the MNE.

In cases where countries do not share a common language(s), linguistic barriers can be overcome through the acquisition of language. What is relevant is how easy/difficult it is to learn another language. Linguists have considered structural differences across languages which are relatively invariant across cultures (Schomaker & Zaheer, 2014). Some languages are more similar than others in terms of language family affiliations¹, i.e., language pairs have different degrees of linguistic distance (Lewis et al., 2014). Languages that share a common origin tend to have a similar syntax, are closer, and generally, easier to understand and learn than languages that belong to different families (Chiswick & Miller, 2005). Similarly, languages that belong to the same sub-branch of the same family are in some cases mutually understandable and relatively easier to learn. Empirical studies have verified this proposition, showing that respondents' proficiency of a second language (L2) is higher when the linguistic distance between first language (L1) and L2 is lower (Chiswick & Miller, 2005). A greater linguistic distance makes learning a foreign language relatively more difficult. Hence higher linguistic distance is likely to affect subsidiary performance negatively.

H1b: Foreign subsidiary performance is negatively related to the linguistic distance between the home and host country of the MNE.

In the absence of a common language, a lingua franca can be used as a vehicle language connecting the home and the host operations of an MNE (Cuypers et al., 2015). A majority of MNEs currently operate in English, and more and more MNEs that come from non-English-speaking countries opt to use English as their corporate language (Welch et al., 2001). This is linked to the dominant position of English in its general use. The worldwide spread of the English language has increased exponentially, particularly due to globalization and the variety of cultures using English, which has led to the laissez faire nature of English transactional use (Selmier & Oh, 2013). English is the most widely learned L2 (Forbes Insights, 2011) and the bulk of human knowledge is stored in English publications, while in many countries people are now able to switch from their vernacular to English (Nunan, 2003). English facilitates cross-border activities not only between English-speaking countries (the intra-language effect of English), but also between countries that have different

¹ Language family affiliations are constructed based on language trees that trace the evolution of languages.

languages (the inter-language effect or lingua franca effect) (Hejazi & Ma, 2011), hence widespread English usage in a host country can benefit subsidiary performance. From the perspective of LD between a host country language and English, this can be captured in two ways. The first is whether the host country is an English-speaking country (Golesorkhi et al., 2019; Hejazi & Ma, 2011). The second is to operate along the line of linguistic distance and consider the distance between the host country's major language and English (Golesorkhi et al., 2019; Hejazi & Ma, 2011; Schomaker & Zaheer, 2014). This measure would not only take account of the presence of English in the host country but also the ease/difficulty of learning English since a larger linguistic distance makes learning English relatively difficult.

H1c: English usage in the host country of the MNE positively affects foreign subsidiary performance.

2.3 The Interplay between Language Difference and Cultural Distance

Part of the reason that language has been “a forgotten factor” in organizational performance research is because language has been bundled into the broader term of culture. The relationship between language and culture is a hotly debated topic in multiple disciplines including anthropology, linguistics, psychology, philosophy and sociology (Sharifian, 2014). On one side of the spectrum is the strong deterministic form of the principle of linguistic relativity, or the so-called Sapir-Whorf hypothesis, which argues that language and culture are two sides of the same coin, therefore inseparable (Penn, 1972). On the other hand, language and culture are considered to be separable, therefore should be investigated separately (Gumperz & Levinson, 1996). To some extent, these different views may reflect the different theoretical perspectives researchers undertake with the former from linguistic practice, or the sociological perspective, and the latter from linguistic resources, or the psychological perspective (Byram, 2012). As the argument and analysis are complex (Sharifian, 2014), therefore beyond the scope of the current paper, we follow the recent studies of language in business and management. While recognizing their interlink to a certain extent, we treat LD and CD as two separate constructs (Karhunen et al., 2018; Schomaker & Zaheer, 2014; Tenzer et al., 2017) with their working definitions provided in the Introduction.

Our position is that LD and CD each have a role to play in subsidiary performance and they also interact with each other and produce joint effects with LD acting as a boundary condition on the impact of CD on subsidiary performance. Below we shall first summarize the conflicting views on the CD-subsidary performance relationship, then discuss the interplay between LD and CD.

There are ample studies debating whether CD is “a bane or a boon” for performance (Beugelsdijk et al., 2018; Magnusson et al., 2008; Morosini et al., 1998; Tihanyi et al., 2005). CD leads to increased strategic and operational difficulties for MNEs because of the unfamiliarity with, or the lack of understanding of, social norms, values, beliefs and assumptions in the host country. CD also causes a high level of uncertainty and complexity that is derived from cross-cultural intra-organizational and inter-organizational conflicts. Adapting to a different cultural environment and dealing with cross-cultural conflicts would be time-consuming and costly, which in turn, could negatively affect subsidiary performance. In contrast, a positive relationship between CD and firm performance is also presented. First, a firm’s routines and repertoires are shaped by national cultures, and differences in culture provide a basis for differentiation (Morosini et al., 1998). MNEs combine different routines and repertoires in different markets, which can be a source of competitive advantage, and this enhances performance. Second, firms are likely to perceive a higher level of risk when working with counterparts from culturally distant markets (He & Wei, 2013). This risk perception provokes a strong desire for learning and acquiring information about, and knowledge of, the other parties concerned, adopting diligence processes and undertaking intensive cross-cultural communication, so as to reduce uncertainties and avoid potential conflicts (Estrin et al., 2009; Pisani & Ricart, 2018). The integration of newly acquired information and knowledge with a firm’s existing resources can lead to unique resource and capability combinations and, consequently, enhance performance (Evans & Mavondo, 2002). In line with the contrasting theoretically expected effects of CD, empirical evidence has been mixed (Beugelsdijk et al., 2018; Magnusson et al., 2008; Rottig, 2017; Tihanyi et al., 2005).

We propose, to better understand the role of CD, that we need to account for LD effects. LD can reinforce the negative CD effects and diminish the positive CD effects. First, in terms of the negative effects of CD, adapting to different cultural environments is time-consuming and costly, but adapting to different cultures as well as different language environments is even more challenging. LD affects communication and interaction, and disturbs information flow, which can lead to poor understanding of social norms, values, beliefs and assumptions in a host country culture. When it comes to dealing with intra- and inter-organizational cross-cultural conflicts, LD manifests itself in problems of miscommunication, mistrust, frustration, and resistance, as well as relationship development and trust building among co-workers in the MNE, and between the MNE’s personnel and those of their business partners (Barner-Rasmussen & Björkman, 2005; Harzing & Feely, 2008; Schomaker & Zaheer, 2014; Tenzer et al., 2014; Vidal-Suárez & López-Duarte, 2013). On the other hand, adapting to a different cultural environment can be easier when there is no, or only a minimal, language barrier. For example, expatriates/inpatriates host country language proficiency is often linked to better cross-

cultural adjustment (Froese et al., 2016). As a result, the interplay between LD and CD heightens the uncertainty and complexity associated with MNE's host country operations and magnifies transaction costs faced by subsidiaries. Thus, LD strengthens the negative performance effects of CD.

With regard to the positive effects of CD due to different routines and repertoires in different markets, combining and utilizing these routines and repertoires, which are usually of an intangible and tacit nature, requires the use of language (Liu et al., 2015; Schomaker & Zaheer, 2014; Welch & Welch, 2008). Language "determines aspects such as who has the information and knowledge, whether and how it is articulated, when and if it is shared, and in what form" (Welch & Welch, 2008). Liu et al. (2015) show that international knowledge transfer is a dynamic recursive process with a feedback loop involving continuous and extensive interaction, communication, relationship development, trust building and information coding, decoding and clarification. LD therefore adds an extra layer of complexity and uncertainty when MNEs attempt to utilize new routines and repertoires coming from a different cultural context, as well as to understand complex, equivocal information and handle multiple, conflicting interpretations of such information.

Second, the benefits derived from a higher level of risk perception when working with counterparts from culturally distant markets also depend on language. One may have a strong desire to learn and to acquire information and knowledge, to adopt diligence process and to undertake intensive cross-cultural communication, nevertheless, the effectiveness of such means for managing CD requires the use of language to gain a more realistic and cognitive understanding of a different culture. It is through the effective use of language that MNEs immerse themselves deeply in a different cultural environment, acquire greater understanding, enact culturally appropriate behavior and develop a more realistic perspective from which to assess and benefit from CD.

H2: Language difference negatively moderates the performance effects of cultural distance in such a way that if the cultural effects are negative, language difference reinforces the negative effects; if the cultural effects are positive, language difference diminishes the positive effects.

2.4 The Moderating Effects of Host Country Market Size

The market environment, particularly market size, influences firm strategy and performance (Cavusgil & Zou, 1994; Ellis, 2008; Luo, 2003; Malhotra et al., 2009; Ojala & Tyrväinen, 2007; Rothaermel et al., 2006). Countries with larger market size offer firms more opportunities for business development and expansion, which in turn increase economies of scale and economic returns

(Christmann et al., 1999). In contrast, countries with smaller market size tend to have a lower ability to absorb additional productive capacity, making firms cautious when undertaking further investment. As a result, from a managerial perspective, it is a widely supported view that managers favor countries with large market size in internationalization (Ellis, 2008; He & Wei, 2013; O'Farrell & Wood, 1994; O'Donnell, 2000; Ojala & Tyrväinen, 2007). Specific to subsidiaries, larger market size provides them the leverage to secure more support, commitment and resources from parents than their counterparts in host countries with smaller market size (Luo, 2003). From a resource-based perspective, this puts subsidiaries in large markets in an advantageous position, driving up their performance. As summarized by Ellis (2008), “[r]emove all the uncertainties of internationalization and managers will prefer large markets to small ones” (p. 356). However, LD introduces uncertainties and works as a constraint on a firm’s market orientation (Ellis, 2008; He & Wei, 2011).

A market-oriented firm proactively and systematically acquires and evaluates market intelligence and integrates it into their strategic decision-making process in R&D, production, distribution, marketing and/or sales. LD affects information flow, communication and coordination, thus creating barriers for MNEs seeking to understand and appreciate the nature of the host market environment and market intelligence acquired. As a result, it creates problems for MNEs when assessing the value of opportunities, and creates challenges in designing strategies that align practices with the market, thus hindering subsidiaries from fully, effectively serving the local market and realizing their performance potential. However, a large host country market would motivate MNEs to invest in resources and infrastructure to overcome language barriers and the associated challenges, and enhance subsidiary performance, including offering subsidiaries control flexibility, strategic assets and intra-network information (Luo, 2003), and proactively supporting subsidiaries on the set of issues confronting them in the marketplace. On the other hand, a small host country market is likely to erode this motivation. Therefore, the effects of heightened opportunities due to large market size should mitigate the negative effects of LD on subsidiary performance. In a smaller market, one would expect parents to have reduced commitment, which would limit subsidiaries scope to render the negative effects of LD on subsidiary performance less of an issue. Therefore, we expect that market size is a contextual condition for the effects of LD.

H3: The effects of language difference on subsidiary performance are less pronounced in larger markets than in smaller markets.

3. Research methods

3.1 Sample

This study uses a firm-level dataset collected from Bureau van Dijk's OSIRIS to examine the language-performance relationship. OSIRIS provides data on listed and major unlisted/delisted companies around the world. We track 1,751 foreign subsidiaries in 57 host countries whose parent MNEs come from 60 home countries², over the period of 2002-2013. Altogether, there are 10,855 firm-year observations in the sample.

3.2 Key Variables

Subsidiary performance (Performance) is measured by return on equity (ROE), calculated as profit before tax divided by shareholder capital. ROE has been widely used in the literature (e.g. Beugelsdijk et al., 2018; Chang & Lu, 2012; Shirodkar & Konara, 2017).

Language overlap (LO) is measured as the incidence of the home country's dominant language(s) in the host country (i.e. the proportion of population (p) in the host country who are able to speak the major language(s) of the home country). We reverse-coded a 5-point language distance indicator (incidence of one country's major language(s) in other countries (L2)) used in Dow and Karunaratna (2006), so that a higher value reflects a higher level of LO (1= $p < 1\%$; 2= $1\% \leq p < 5\%$; 3= $5\% \leq p < 50\%$; 4= $50\% \leq p < 90\%$; 5= $p \geq 90\%$).

Linguistic distance (LID) captures the extent to which the main home and the main host country language differ from each other and is operationalized using linguistic distance (distance between major languages (L1) for each pair of countries) in Dow and Karunaratna (2006). *LID* takes the value of 5 if the two languages are from different families, 4 if they are from the same family but different branches, 3 if they are from the same branch but different at the first sub-branch level, 2 if they are from the same sub-branch at the first level but different at the second level, and 1 if they are same. The higher the value of *LID*, the larger the degree of difference between the home and the host country language. *Linguistic Distance to English (LIDE)* captures the extent to which the main host country language differs from English.

² The list of countries is not reported for brevity but is available upon request.

English as official language (English) reflects English proficiency in the host country. This is a binary variable capturing whether English is an official language of the host country. The variable is constructed based on Central Intelligence Agency (CIA)'s World Factbook.

Cultural Distance (CD) between the home and the host country is measured by a composite variable constructed using the Euclidean method based on Hofstede's four cultural dimensions: power distance, uncertainty avoidance, individualism, and masculinity.

$$CD_{ij} = \left(\sum_{k=1}^4 \frac{(I_{ki} - I_{kj})^2}{V_k} \right)^{1/2}$$

where CD_{ij} is the CD between country i and country j . I_{ki} and I_{kj} are the values of cultural dimension k ($k=1$ to 4) for country i and country j , respectively. V_k is the variance of the cultural dimension k .

To measure the moderating effects of host country market size, we used host country *GDP* (constant 2005 US\$) from World Development Indicators (WDI) and split sample into two based on the mean.

3.3 Control variables

The literature has shown the roles of firm, industry and country are all central to the variability in firm performance (Chan et al., 2008; Christmann et al., 1999; Goldszmidt et al., 2011; Ketelhöhn & Quintanilla, 2012). At the subsidiary-level, we include *Size*, *Age*, *WOS*, *Board Directors* and *R&D*. *Size* and *Age* are measured by the logarithm of total assets and that of (1+ the number of years since the subsidiary was founded), respectively. To control for the subsidiary ownership strategy, we include a dummy variable, *WOS* (1 if the subsidiary is fully owned (more than 90% stake); 0 if partially owned (between 10% and 90% stake)). *Board Directors* and *R&D* are measured by the number of directors in the board and R&D intensity, respectively. At the industry-level, we include *Competition* which is measured by the logarithm of (1 + the number of firms in the industry). The industry is defined at the 2-digit level of the NAICS 2012 classification. Industry fixed-effects are also included to control for unobserved industry-specific effects. At the country-level, we control for GDP growth rate (*GDPG*), *GDP per capita at constant 2005 US\$ (GDPPC)*, *Infrastructure* and *Human Capital (HC)* of the host country using WDI. *Human Capital* and *Infrastructure* are proxied by secondary school enrolment rate (% gross) and mobile cellular subscriptions per 100 people, respectively. To capture the degree of *Market Freedom (MF)*, following Meyer et al. (2009), we focus on market efficiency and choose the following from Heritage Foundation's Economic Freedom

Index: (1) business freedom (2) trade freedom (3) property rights (4) investment freedom and (5) financial freedom. We then took the average of the five categories. The dummy variable *Legal Origin* identifies whether a country has a common-law system or a civil law system. The literature has argued that legal origin determines economic outcomes and common-law countries tend to put greater emphasis on private property rights, are more protective of outside investors and are less associated with government ownership and regulation (La Porta et al., 2008; La Porta et al., 2000). Finally, we control for *Geographic Distance (GD)* using data from Rose and Spiegel (2011).

4. Results

Table 1 presents summary statistics and correlation coefficients. The estimation is based on a panel data random effects model (GLS estimator), controlling for host-country, home-country, year and industry fixed effects. As an MNE may have multiple subsidiaries, subsidiary-level observations may not be independent, and thus we include a robust variance estimate that adjusts for within-cluster (subsidiaries of the same parent) correlation. The baseline results are presented in table 2. Specifications 2.1 to 2.4 differ in the use of different language variables – *LO*, *LID*, *English* and *LIDE*. *LO* is positive and significant in (2.1). *LID* is negative and significant in (2.2). Turning to the English language variables in (2.3) and (2.4), the coefficients on both variables are statistically insignificant at the 10% level. Therefore, H1a and H1b are supported and H1c is not. Table 2 also reveals that *CD* positively affects *Performance*.

<TABLES 1 & 2 HERE>

We then examine control variables. The coefficients on *Size* in all specifications have the expected positive sign and are statistically significant, thus larger subsidiaries tend to perform better than smaller ones. *Board Directors* has a negative sign and is statistically significant, suggesting that a subsidiary with a larger board performs worse than one with a smaller board. This could be due to larger overheads associated with maintaining a larger board and the possible conflicts between directors with different backgrounds and from different countries. The coefficients on *Competition* are positive, indicating the positive effects of competition on subsidiary performance. As expected, the coefficients on *GD* are negative and statistically significant, reflecting the costs associated with HQ-subsidiary coordination and collaboration. Other control variables are largely insignificant.

Next, we look at the interplay between *LD* and *CD* on *Performance*. We use the partition approach to differentiate the effect of *CD* on *Performance* between various conditions of different language measures. This approach effectively partitions the effect of an explanatory variable (*CD*) on the dependent variable (*Performance*) for the different categories of the moderating variable (i.e. different language variables) by employing multiplicative terms that are mutually exclusive and exhaustive. The results are reported in table 3.

In (3.1), the impact of *CD* is positive across all five levels of *LO*. However, the magnitude of the coefficients on *CD* show an overall upward trend when the scale of *LO* moves from low to high. In (3.2), *CD* is positive across all five levels of *LID*. The magnitude of the coefficients of *CD* show an overall downward trend when *LID* increases. In (3.3), the coefficients of *CD* are positive in the presence and in the absence of English as an official language in the host country, but the magnitude is larger for the former case than for the latter. In (3.4), the coefficients of *CD* are positive, albeit all statistically insignificant. However, the magnitude of the coefficients of *CD* show an overall downward trend when *LIDE* increases. Also, compared to the other four categories, *CD* has a considerably larger positive coefficient when *LIDE* is equal to one, i.e., when the main host country language is English, and this is only marginally insignificant³. In summary, across all language variables, the impact of *CD* on *Performance* becomes more positive when *LD* gets smaller. Thus, H2 is supported.

<TABLES 3 & 4 HERE>

Finally, we examine the impact of market size as a contingency factor on the language-performance relationship. (4.1) and (4.2) show the results of two split samples by the mean of host country GDP when *LD* is measured by *LO*. The results indicate that H1a still holds in the sample of small market size but is rejected in the sample of large market size. H3 is therefore supported. When *LD* is measured by *LID*, the results show that H1b holds in the small-market sample (4.3) but is rejected in the large-market sample (4.4). H3 is again supported. In (4.5) and (4.6) when *English* is used, H1c is rejected. Lastly, when *LD* is measured by *LIDE*, H1c holds in the small-market sample (4.7) but is rejected in the large-market sample (4.8). H3 is again supported.

We carried out a robustness analysis by splitting the sample based on the mean of the market size variable reported in Global Competitiveness Index (GDI). This variable takes into account domestic

³ This is significant if a one-tail test is used.

market size as well as the value of all goods and other market services received from the rest of the world. The market demand served by the rest of the world is sometimes considered when assessing the market potential of a host country (Sakarya et al., 2007) as this demand can be potentially tapped into by the firms operating in the host-market. Additionally, we split the sample on the domestic market size reported in GDI. The qualitative results remain intact⁴. We also re-estimated models by employing CD measures that include the 5th and 6th dimensions (i.e. long- versus short-term orientation, and indulgence versus restraint). Since data for these additional two dimensions are available only for a smaller set of countries, the number of host countries in our sample reduced from 57 to 44 when we use 5 dimensions, and to 43 when we use 6 dimensions. The qualitative findings remain largely intact.

5. Discussions and Conclusion

This study sheds light on the role of language in foreign subsidiary performance. Drawing upon the extant studies on language in MNEs and those on foreign subsidiary performance, we take a stepwise approach in hypothesis development by first hypothesizing the effects of LD on a general level, then taking into account the fact that not only host country languages can be directly used by MNEs but also can be acquired by MNEs, and operationalizing LD using four constructs: language overlap, linguistic distance, English as official language and linguistic distance to English. We further consider the interplay of LD with CD and market size. These two antecedents are selected in an attempt to capture the societal and economic aspects of opportunities provided by the business environment. CD is a frequently considered variable in subsidiary performance research and its role is hotly contested. It is recognized that CD represents opportunities, in addition to challenges to MNEs. Given different cultures between the home and the host country, MNE subsidiaries can have access to resources and capabilities that are different, and as a result having the potential to develop better/innovative ideas and multiple solutions for problems and create new knowledge. Such benefits can offset the impediments, leading to net positive effects of CD. Such net positive effects are negatively moderated by LD. Meanwhile, international expansion is the key growth strategy for MNEs, and subsidiary strategies are often formulated in such a way to take advantage of economic opportunities of host countries. We develop a hypothesis on LD effects being conditional on the host country market size, arguing that the effects of LD on subsidiary performance are less pronounced in larger markets than in smaller markets.

⁴ Results of the robustness tests are not reported for brevity, but are available upon request.

Testing these hypotheses using large-scale, multi-year, multi-country panel data, we find the significant role that language overlap and linguist distance play in the variability of foreign subsidiary performance. CD is shown to have positive effects on foreign subsidiary performance, but these effects are negatively moderated by LD. Therefore, MNEs wanting to benefit from cross-cultural differences must bridge LD between their home and host countries. Finally, in small market settings, LD significantly and negatively affects subsidiary performance. But the opportunities offered by large markets mitigate against challenges associated with language barriers. Our theoretical discussions and empirical evidence are useful in terms of enhancing the understanding on whether and how language matters to foreign subsidiary performance.

Theoretical Implications

Investigating foreign subsidiary performance continues to be one of the fundamental research questions. MNEs face the liability of foreignness, mainly arising as the result of cross-national differences (or distance) between their home and host country. The extant research has examined the effects of cross-national differences on foreign subsidiary performance, but most have focused on institutional, psychic or cultural differences (Hutzschenreuter et al., 2016). Although the importance of language in international business has been increasingly evaluated, its role in subsidiary performance is surprisingly neglected. Our research lays a theoretical foundation on which further inquiries can be based. It has accentuated the channels through which language can affect subsidiary performance: communication, information flow, knowledge transfer and diffusion, decision-making and the HQ-subsiary relationship. Additionally, it has focused on language's interplay with CD and market size that capture societal and economic opportunities. The examination highlights that even in the midst of globalization and the technological revolution, cross-national differences do not wither away and LD is an important factor that needs to be accounted for, independently as well as jointly together with CD and market size in MNEs' strategy and performance management.

Consideration of the extant literature indicates that studies tend to focus on the independent effects of language. Although this provides useful demonstrations of its direct and transformative effects, situating language in the broad environmental context by considering its joint effects with other environmental factors would provide a more nuanced understanding of its role. For example, Sheng and Mullen (2011) show, from a US firm's perspective, that language distance and market size are strong predictors of export market attractiveness, and CD is not. Considering the joint effects of language with market size or CD would have provided more insights.

Managerial Implications

This research offers managerial insights to MNEs and their subsidiaries. MNEs face an increasingly diverse employee, customer and supplier base due to global sourcing, global supply chain and changing demographics in many countries as a result of immigration and the growth of certain ethnic groups (Holmqvist et al., 2019). An MNE's language strategy could include adopting the local language, parent's language or a third language as the corporate functional language (Luo & Shenkar, 2006). In these scenarios, a proportion of employees in the subsidiaries will require new language skills. Language competency is a key ingredient of employee performance. Success and rewards may depend on linguistic skills, in addition to the non-linguistic skills required to carry out the functions and operations of the company. For example, in the survey of Forbes Insights (2011), nine in ten respondents agreed that English fluency is required for high-potential employees who want to win promotion. Some of the skilled (and experienced) employees who are not conversant with the corporate language become less competitive in the work they carry out, and risk being marginalized by both co-workers as well as their superiors, subsequently impacting their productivity. On a related note, when firms value language skills more than other functional competencies, this could have an adverse effect on a firm's functional capabilities. For example, some foreign investors prefer to recruit graduates from language programs rather than those with subject-specific skills (Peng & Meyer, 2011). This has generated much debate.

Nevertheless, it is often difficult to find/recruit employees with both functional and language competencies (Peltokorpi & Vaara, 2012). Monolingual staff can be ill-equipped to help the organization compete effectively (Forbes Insights, 2011). Firms therefore must make investments in order to bridge LD, e.g., using translators, employing multi-lingual employees or undertaking language training and development (Luo & Shenkar, 2006). Although using a translator is a quick solution, it can be costly and there is a risk of miscommunication. Employing multi-lingual employees is more of a medium-term solution but reliance on these employees places an extra workload on them, which could compromise their performance in their formal functions (Feely & Harzing, 2003). Language training is a longer-term solution since it can be time-consuming and expensive (Feely & Harzing, 2003). For example, in Volkswagen Group's professionally managed training programs, it takes a minimum of three years of fairly intensive training to produce an accountant, engineer, buyer or salesperson capable of working effectively in a foreign language (Feely & Harzing, 2003). This prolongs the time required to recover the costs of human capital investments and significantly increases the operational costs of the subsidiary. In spite of the costs and risks, such investment is

broadly beneficial for MNEs and their subsidiaries as the implication of our results is that reducing LD would not only affect subsidiary performance directly but also indirectly through the interplay with CD and market size. Nevertheless, we caution the generalization of bridging LD to specific marketing areas such as services marketing. For example, a recent study of Holmqvist et al. (2019) shows evidence that switching to the customers' first language may backfire if customers are motivated to pursue the interaction in other languages.

Our results also suggest that MNEs incur a performance penalty when they cross language boundaries and such penalties are larger in host countries with smaller market size. This raises the interesting question of whether MNEs should limit their international expansion by concentrating their operations within certain language boundaries until they can reach a critical mass (market size) in a new language domain. MNEs may have to rethink their strategies for penetrating (or operating in) smaller countries where only vernacular languages are spoken.

Limitations and Future Research Directions

Although LD can impede performance in many ways, as discussed in the paper, we acknowledge the argument by Luring and Selmer (2011) which perceives LD to have beneficial effects. Language diversity can be associated with cognitive diversity, which expands a group's knowledge resources and enhances its problem-solving capacity, stimulates information processing, creativity and group performance, and broadens the range of information, perspectives and heuristics necessary for recognizing strategic opportunities and considering various strategic alternatives. Nevertheless, we would argue that the above is more associated with cultural diversity. Once cultural diversity is accounted for, as we have done here, the net negative effect of LD becomes clear.

We acknowledge the study's limitations and discuss avenues for future research. The first limitation is related to measuring LD at the country level, which does not take into account, for example, some MNEs which choose to work in a corporate language different from their home country languages. However, measuring LD at parent-subsidary dyads is not an easy task, particularly for a large sample. This is a common limitation in previous studies of cross-national differences; for example, national CD would not necessarily capture the firm-specific CD between an MNE and its subsidiaries. Also related to this is the measurement of language overlap and linguistic distance which are categorized into groups, and information could be lost from such a categorization. To better understand the dynamics of LD, future empirical research could consider a variable that is firm-specific, or even function-specific. It could also consider other lingua franca than English, such as French, Spanish and

Portuguese, given their popularity in global commerce. Such studies may further validate our findings. Second, simultaneous consideration of LD and environmental factors elucidate conditions under which language matters to MNEs and their subsidiary performance. We have only assessed CD and market size. Future studies could focus on other aspects of the environmental context. For example, in an attempt to delineate market potential in international market selection, Ozturk et al. (2015) argue for the consideration of country responsiveness, industry growth rate and industry-relevant macro measures and assert that they “provide refined insights for businesses than country-level macro models (e.g. market size and market development)” (p. 127). These factors could be included in future research.

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Table 1: Descriptive statistics and correlation matrix

| Variable | Mean | s.d. | Correlation coefficients | | | | | | | | | | | | | | | | | |
|-------------------|----------|----------|--------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|-------|-------|-----|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |
| 1 ROE | -9.54 | 555.08 | | | | | | | | | | | | | | | | | | |
| 2 LO | 2 | 1.27 | 0 | | | | | | | | | | | | | | | | | |
| 3 LID | 2.94 | 1.68 | 0 | -0.69 | | | | | | | | | | | | | | | | |
| 4 English | 0.45 | 0.5 | -0.02 | 0.29 | -0.35 | | | | | | | | | | | | | | | |
| 5 LIDE | 2.62 | 1.71 | 0.03 | -0.27 | 0.52 | -0.81 | | | | | | | | | | | | | | |
| 6 CD | 2.22 | 1.12 | 0.02 | -0.53 | 0.52 | -0.05 | 0.09 | | | | | | | | | | | | | |
| 7 Size | 12.02 | 2.01 | 0.05 | -0.12 | 0.07 | -0.15 | 0.13 | 0.03 | | | | | | | | | | | | |
| 8 Age | 3.03 | 0.97 | 0.02 | -0.09 | 0.04 | -0.17 | 0.13 | 0.07 | 0.19 | | | | | | | | | | | |
| 9 Board Directors | 17.21 | 16.22 | 0.02 | -0.06 | 0.04 | -0.03 | 0 | 0.13 | 0.36 | 0.11 | | | | | | | | | | |
| 10 R&D | 0.26 | 5.51 | -0.01 | 0.03 | -0.03 | 0.03 | -0.04 | -0.03 | -0.03 | -0.04 | -0.01 | | | | | | | | | |
| 11 WOS | 0.23 | 0.42 | 0 | 0.01 | -0.04 | 0.04 | -0.12 | -0.02 | -0.02 | -0.1 | 0.06 | 0 | | | | | | | | |
| 12 Competition | 0.86 | 0.28 | 0.01 | -0.02 | 0.02 | 0 | -0.03 | -0.02 | 0.11 | 0.1 | 0.03 | 0 | 0.11 | | | | | | | |
| 13 GD | 2966.3 | 2572.95 | -0.03 | 0.05 | -0.02 | 0.47 | -0.36 | 0.22 | -0.08 | -0.02 | -0.04 | 0.02 | -0.05 | -0.02 | | | | | | |
| 14 GDPG | 3.54 | 3.54 | 0.02 | -0.07 | 0.12 | 0.02 | 0.13 | 0.11 | -0.08 | 0.06 | -0.08 | -0.03 | -0.13 | -0.07 | 0.11 | | | | | |
| 15 GDPPC | 22944.45 | 17893.02 | -0.03 | 0.16 | -0.32 | 0.22 | -0.46 | -0.23 | 0.06 | -0.21 | 0.03 | 0.05 | 0.24 | 0.08 | -0.05 | -0.54 | | | | |
| 16 HC | 92.97 | 21.56 | -0.03 | 0.14 | -0.21 | -0.01 | -0.18 | -0.17 | 0.07 | -0.15 | 0.06 | 0.01 | 0.2 | 0.07 | -0.05 | -0.49 | 0.67 | | | |
| 17 Infrastructure | 82.63 | 35.44 | -0.01 | -0.03 | 0.03 | -0.23 | 0.08 | -0.04 | 0.2 | -0.05 | 0.14 | -0.01 | 0.13 | 0.04 | -0.2 | -0.44 | 0.45 | 0.55 | | |
| 18 MF | 68.83 | 16.38 | -0.04 | 0.19 | -0.27 | 0.25 | -0.42 | -0.19 | 0.07 | -0.2 | 0.08 | 0.04 | 0.23 | 0.1 | -0.03 | -0.61 | 0.88 | 0.75 | 0.59 | |
| 19 Legal Origin | 0.56 | 0.5 | -0.02 | 0.25 | -0.17 | 0.8 | -0.62 | 0.09 | -0.16 | -0.14 | -0.06 | 0.02 | 0 | -0.01 | 0.47 | 0.09 | 0.03 | -0.16 | -0.19 | 0.1 |

s.d. = standard deviation

Table 2: Baseline estimations

| | (2.1) | (2.2) | (2.3) | (2.4) |
|-----------------|----------------------|----------------------|----------------------|----------------------|
| LO | 15.391** (0.039) | | | |
| LID | | -18.301* (0.093) | | |
| English | | | 30.134 (0.304) | |
| LIDE | | | | -5.881 (0.307) |
| CD | 27.009** (0.045) | 28.690* (0.063) | 15.886* (0.061) | 15.022* (0.052) |
| Size | 14.944*** (0.000) | 14.857*** (0.000) | 14.192*** (0.000) | 14.431*** (0.000) |
| Age | 1.888 (0.881) | 1.802 (0.887) | 2.779 (0.802) | 2.005 (0.863) |
| Board Directors | -0.578** (0.032) | -0.596** (0.036) | -0.319* (0.095) | -0.293* (0.096) |
| R&D | -0.887 (0.350) | -0.864 (0.362) | -0.865 (0.376) | -0.874 (0.370) |
| WOS | 16.758 (0.246) | 17.041 (0.234) | 21.614 (0.160) | 21.819 (0.158) |
| Competition | 31.470** (0.021) | 34.136** (0.016) | 23.692* (0.050) | 23.477* (0.052) |
| GD | -0.009** (0.046) | -0.009** (0.044) | -0.010** (0.035) | -0.009** (0.031) |
| GDPG | -1.440 (0.329) | -1.425 (0.332) | -0.353 (0.809) | -0.240 (0.862) |
| GDPPC | -0.011 (0.205) | -0.011 (0.210) | -0.001 (0.133) | -0.001 (0.117) |
| HC | 1.167 (0.291) | 1.159 (0.295) | 0.208 (0.824) | 0.188 (0.839) |
| Infrastructure | 0.669 (0.319) | 0.670 (0.318) | 0.476 (0.105) | 0.388 (0.113) |
| MF | 1.740 (0.219) | 1.688 (0.229) | -1.546** (0.013) | -1.294*** (0.008) |
| Legal Origin | 199.095 (0.338) | 184.995 (0.361) | -10.492 (0.528) | -1.629 (0.876) |
| Observations | 10,855 | 10,855 | 10,855 | 10,855 |
| Firms | 1,751 | 1,751 | 1,751 | 1,751 |

Notes: p-values based on robust standard errors in parentheses. *p<0.1. **p<0.05. ***p<0.01.
Country, industry and year fixed-effects included but not reported for brevity.

Table 3: The interplay between LD and CD on Performance

| | (3.1) | (3.2) | (3.3) | (3.4) |
|------------------|----------------------|---------------------|--------------------|-------------------|
| (LO=1) x CD | 21.835** (0.017) | | | |
| (LO=2) x CD | 26.249** (0.027) | | | |
| (LO=3) x CD | 41.019* (0.099) | | | |
| (LO=4) x CD | 112.595** (0.018) | | | |
| (LO=5) x CD | 75.037 (0.312) | | | |
| (LID=1) x CD | | 38.551 (0.189) | | |
| (LID=2) x CD | | 24.972 (0.113) | | |
| (LID=3) x CD | | 29.256** (0.017) | | |
| (LID=4) x CD | | 18.758* (0.092) | | |
| (LID=5) x CD | | 21.132 (0.137) | | |
| (English=1) x CD | | | 26.331* (0.067) | |
| (English=0) x CD | | | 6.391 (0.293) | |
| (LIDE=1) x CD | | | | 26.617 (0.112) |
| (LIDE=2) x CD | | | | 11.051 (0.376) |
| (LIDE=3) x CD | | | | 2.543 (0.914) |
| (LIDE=4) x CD | | | | 3.753 (0.633) |
| (LIDE=5) x CD | | | | 3.482 (0.196) |
| Observations | 10,855 | 10,855 | 10,855 | 10,855 |
| Firms | 1,751 | 1,751 | 1,751 | 1,751 |

Notes: See notes of Table 2. Results for control variables are qualitatively similar to Table 2 and are not presented for brevity.

Table 4: The moderating effects of market size

| | (4.1) | (4.2) | (4.3) | (4.4) | (4.5) | (4.6) | (4.7) | (4.8) |
|-----------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|
| | Small-market | Large-market | Small-market | Large-market | Small-market | Large-market | Small-market | Large-market |
| LO | 23.162** (0.033) | 3.097 (0.722) | | | | | | |
| LID | | | -25.001* (0.093) | -1.397 (0.893) | | | | |
| English | | | | | 34.520 (0.427) | 1,213.118 (0.161) | | |
| LIDE | | | | | | | -103.149** (0.013) | -312.774 (0.195) |
| CD | 31.459* (0.092) | -7.297 (0.627) | 32.812 (0.111) | -9.073 (0.478) | 22.081 (0.162) | -10.319 (0.314) | 22.081 (0.162) | -10.319 (0.314) |
| Size | 11.388*** (0.000) | 21.966*** (0.000) | 11.516*** (0.000) | 21.924*** (0.000) | 11.248*** (0.000) | 21.942*** (0.000) | 11.248*** (0.000) | 21.942*** (0.000) |
| Age | -5.823 (0.777) | 3.750 (0.472) | -5.402 (0.792) | 3.702 (0.481) | -4.407 (0.828) | 3.716 (0.479) | -4.407 (0.828) | 3.716 (0.479) |
| Board Directors | -0.498 (0.141) | -0.898** (0.028) | -0.505 (0.145) | -0.909** (0.025) | -0.444 (0.168) | -0.906** (0.028) | -0.444 (0.168) | -0.906** (0.028) |
| R&D | -0.320 (0.413) | -0.833 (0.489) | -0.244 (0.518) | -0.830 (0.490) | -0.301 (0.439) | -0.833 (0.489) | -0.301 (0.439) | -0.833 (0.489) |
| WOS | 15.795 (0.469) | 17.512 (0.109) | 14.682 (0.499) | 17.444 (0.109) | 15.288 (0.485) | 17.274 (0.115) | 15.288 (0.485) | 17.274 (0.115) |
| Competition | 28.123 (0.178) | 41.991* (0.100) | 32.062 (0.138) | 42.426* (0.096) | 24.367 (0.235) | 42.199* (0.096) | 24.367 (0.235) | 42.199* (0.096) |
| GD | -0.009* (0.070) | -0.002 (0.571) | -0.009* (0.060) | -0.002 (0.648) | -0.011* (0.055) | -0.002 (0.619) | -0.011* (0.055) | -0.002 (0.619) |
| GDPG | -1.349 (0.424) | 6.483 (0.274) | -1.337 (0.427) | 6.526 (0.271) | -1.313 (0.434) | 6.520 (0.270) | -1.313 (0.434) | 6.520 (0.270) |
| GDPPC | -0.009 (0.343) | -0.023 (0.351) | -0.009 (0.351) | -0.023 (0.350) | -0.009 (0.337) | -0.023 (0.350) | -0.009 (0.337) | -0.023 (0.350) |
| HC | 1.206 (0.405) | -0.691 (0.658) | 1.209 (0.406) | -0.680 (0.666) | 1.136 (0.429) | -0.682 (0.664) | 1.136 (0.429) | -0.682 (0.664) |
| Infrastructure | 1.309 | 1.416 | 1.286 | 1.417 | 1.312 | 1.417 | 1.312 | 1.417 |

| | | | | | | | | |
|--------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | (0.247) | (0.585) | (0.251) | (0.585) | (0.246) | (0.585) | (0.246) | (0.585) |
| MF | 4.861* | -7.331 | 4.685* | -7.334 | 4.862* | -7.344 | 4.862* | -7.344 |
| | (0.076) | (0.165) | (0.078) | (0.166) | (0.076) | (0.164) | (0.076) | (0.164) |
| Observations | 7,432 | 3,423 | 7,432 | 3,423 | 7,432 | 3,423 | 7,432 | 3,423 |
| Firms | 1,223 | 539 | 1,223 | 539 | 1,223 | 539 | 1,223 | 539 |

Notes: See notes of Table 2. *Legal Origin* not included as control as it is highly correlated with *English* in the Large-market sample.