



# How does regional institutional complexity affect MNE internationalization?

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**Abstract**

International business research is only beginning to develop theory and evidence highlighting the importance of supranational regional institutions to explain firm internationalization. In this context, we offer new theory and evidence regarding the effect of a region's "institutional complexity" on foreign direct investment decisions by multinational enterprises (MNEs). We define a region's institutional complexity using two components, regional institutional diversity and number of countries. We explore the unique relationships of both components with MNEs' decisions to internationalize into countries within the region. Drawing on semiglobalization and regionalization research and institutional theory, we posit an inverted U-shaped relationship between a region's institutional diversity and MNE internationalization: extremely low or high regional institutional diversity has negative effects on internationalization, but moderate diversity has a positive effect on internationalization. Larger numbers of countries within the region reduces MNE internationalization in a linear fashion. We find support for these predicted relationships in multilevel analyses of 698 Japanese MNEs operating in 49 countries within 9 regions. Regional institutional complexity is both a challenge and an opportunity for MNEs seeking advantages through the aggregation and arbitrage of individual country factors.

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## INTRODUCTION

Multinational enterprises' (MNEs) decisions to locate or expand operations into foreign markets are among their most important strategic decisions (e.g., Goerzen & Beamish, 2003; Hitt, Hoskisson, & Kim, 1997) and have been studied from a number of theoretical perspectives. Recently, new streams of research – home region orientation (HRO) (e.g., Rugman & Verbeke, 2004) and semiglobalization (Ghemawat, 2003, 2007) – have focused on the role of geographic regions, demonstrating that they play important roles in MNEs' internationalization (e.g., Arregle, Miller, Hitt, & Beamish, 2013; Banalieva & Dhanaraj, 2013; Banalieva & Santoro, 2009; Collinson & Rugman, 2008; Flores, Aguilera, Mahdian, & Vaaler, 2013; Oh, 2009). For instance, companies such as Nikon, Mizuho Holdings, and Yamaha have followed a regional approach (Nikon, 2015; Rugman & Brain, 2004; Yamaha, 2015). From this research, we know that a region's formal institutions matter in an MNE's decision

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to internationalize (Arregle et al., 2013). In this study, we focus on an attribute of these regions: their institutional complexity, exploring its effects on MNE internationalization. We develop the concept of a region's institutional complexity and investigate the different effects of its two components (i.e., region's institutional diversity and number of countries in a region) on MNEs' decisions to locate their foreign direct investments (FDIs) into a country.

In the existing literature, complexity has been recognized as an important attribute of firms' environment, influencing strategies, decisions, and performance as well as other goal-directed behaviors (Aldrich, 1979; Dess & Beard, 1984; Greenwood, Raynard, Kodeih, Micelotta, & Lounsbury, 2011; Locke, Shaw, Saari, & Latham, 1981; Palmer & Wiseman, 1999). As a result, research has explored the concept of environmental complexity, represented by the number of firms in an industry (concentration) along with any disparities among them (heterogeneity/homogeneity) (Aldrich, 1979; Boyd, 1990; Dess & Beard, 1984; Keats & Hitt, 1988). International business (IB) research employing institutional theory has shown that institutional complexity, represented by conflicting tensions arising from multiple and incompatible institutions, affects MNEs (Kostova & Zaheer, 1999; Kostova, Roth, & Dacin, 2008). Applying these ideas to regional strategy, formal and cultural institutions within regions can contribute to conflicting demands that create significant challenges for MNEs. Hence, we conceptualize regional institutional complexity as a subset of conflicting demands due to both the number of institutional environments (number of countries) and the degree of differences among the environments (institutional diversity) in a region.

Exploring this aspect of regions is central to understanding why and how MNEs decide to internationalize. We know that regions are attractive to MNEs when designing their international strategies because they can exploit their region-bound firm-specific advantages (RFSAs) across a region (Rugman & Verbeke, 2004). Through their prior internationalization within a region, MNEs develop resources that they can redeploy for alternative uses at a low cost in other countries within the same geographic region, due to the proximity and similarities of their country-specific advantages (CSAs) (Flores & Aguilera, 2007; Rugman & Verbeke, 2005). Hence, MNEs can use regional aggregation and arbitrage, the two main drivers of semiglobalization (Arregle et al., 2013). However, the institutional complexity of countries

within a region has a crucial influence on an MNE's opportunity to use these two advantages. Thus, it plays a role in MNEs' decisions to internationalize in a region as well as in the corresponding institutional attractiveness of a region. Importantly, both components of a region's institutional complexity are likely to have different effects on MNEs' decisions to internationalize because of their different influences on the mechanisms of semiglobalization. Focusing on one dimension while ignoring the other can result in a partial and biased analysis. In response, this research addresses the following questions: What are the effects of the two components of a region's institutional complexity on an MNE's decision to internationalize in a particular country within a region? Does the level of formal or cultural institutional diversity among the countries within a region attract or repel MNEs' internationalization? Do MNEs prefer to invest in regions with a smaller number of countries?

To explore these questions, we consider the different effects of the number of countries within the region and the country's regional formal or cultural institutional diversity on MNEs' propensity to internationalize in a country, controlling for their mutual effects in the same model. The effects of formal institutions are, alone, important in the IB field and differentiated from the study of cultural institutions. For instance, many IB empirical studies have examined formal and cultural institutional constructs separately to explore the impact of institutional distance on internationalization, entry mode strategy, and international acquisitions (e.g., Gomez-Mejia & Palich, 1997; Guler & Guillén, 2010; Hutzschenreuter, Voll, & Verbeke, 2011; Morosini, Shane, & Singh, 1998; Tihanyi, Griffith, & Russell, 2005). Some exceptions exist within this literature that investigate both formal and informal institutional distance (e.g., Chao & Kumar, 2010; Estrin, Baghdasaryan, & Meyer, 2009; Gaur & Lu, 2007), allowing for the exploration of more complicated relationships between the two types of institutions (e.g., Abdi & Aulakh, 2012; Lewellyn & Bao, 2014). While formal and informal institutions are different (though related), applying the concept of regional institutional complexity to each one is relevant as they create challenges for the MNE and are sources of institutional complexity (Kostova & Zaheer, 1999). We test these models using a sample of MNEs' internationalization into 49 countries spread across 9 geographic regions, applying a multilevel methodology.

This study makes several contributions to our knowledge of MNEs' strategic decisions regarding



FDI and the effects of institutions and regions. First, we investigate the different effects of an important characteristic of regions on MNEs' choices for internationalization in specific countries, namely institutional complexity. Specifically, we examine the different influences of institutional diversity, within formal and cultural institutions, and number of countries in a region on the propensity to internationalize into countries within that region. These effects on MNEs' internationalization in a given country are underexplored and a material issue because they deal with the core argument and mechanisms of semiglobalization. Second, we show that both variables must be considered if we are to fully understand their effects within the context of institutional complexity. Recent studies of regional internationalization have focused on the idea of institutional diversity (heterogeneity), hence, taking into account only one dimension of environmental complexity originally developed in the strategic management research. Their conclusion is that institutional diversity is bad for an MNE's internationalization in a region. We show that accounting for the number of institutional actors (i.e., concentration) and an unbiased measure of diversity results in a very different estimate of its effects on MNEs' internationalization. Therefore, we study the components of a new institutional variable: the complexity of institutions at the region level. We provide a comprehensive perspective in order to offer a novel understanding of how regional formal and cultural institutions affect the mechanisms of semiglobalization and the internationalization decisions made by MNEs, thereby complementing the current literature.

### THEORETICAL DEVELOPMENT

Internationalization, or expanding the location of operations into foreign countries, challenges firms to learn, overcome liabilities of foreignness, and manage the complexity of international operations (Hitt et al., 1997; Lu & Beamish, 2004; Zaheer, 1995). Country-level institutional approaches have been helpful in understanding the location patterns of internationalization, but recently, an alternative approach, namely the study of semiglobalization, has been developed. It is based on the assumption that the focus on global and country-level subsidiary concerns may not accurately represent MNEs' strategic practices because geographic regions play a significant role in MNEs' internationalization (Arregle, Beamish, & Hebert, 2009; Flores et al., 2013; Ghemawat, 2003; Rugman, 2005; Rugman & Verbeke, 2004). These geographic regions are important for MNEs' international

strategies because regional integration and aggregation help to maintain local responsiveness and exploit RFSAs (Arregle et al., 2009; Enright, 2005; Ghemawat, 2003). For example, Nikon recently announced that it is pursuing a regional approach to internationalization in order to maximize efficiency in its operations and promote learning regionally (Nikon, 2015).

Two key mechanisms exist to explain semiglobalization and the value of geographic regions: regional aggregation and regional arbitrage (Arregle et al., 2009; Enright, 2005; Ghemawat, 2003). First, MNEs benefit from their prior internationalization within a region by developing resources that are fungible in countries within the same geographic region (i.e., RFSAs) (Rugman & Verbeke, 2004, 2005).<sup>1</sup> Within the same region, these resources enable learning across countries and reduce the psychic distance faced by managers. Here, an MNE benefits from the relative similarities existing between countries in the same geographic region and favors regional aggregation. Second, regional arbitrage implies exploiting differences among countries in a region (Ghemawat, 2003) while using RFSAs: MNEs relocate their subsidiaries (i.e., make arbitrage decisions) to countries in the same region to optimize their international strategy at the region level. Hence similar to the findings of research on subnational regions, MNEs gain from learning effects through regionalization (Beugelsdijk, McCann, & Mudambi, 2010; McCann & Mudambi, 2005).

This approach highlights the importance of regions' characteristics, and especially regional institutions (see Arregle et al., 2013). However, the question of their complexity has received negligible attention. Therefore it is important to understand how the institutional complexity of these regions influences MNEs' decisions to make investments. In the next section, we present this new concept before specifically examining its effects on MNEs' internationalization in the following sections.

### Regional Institutional Complexity and Its Two Components

Strategic management literature has examined the effects of environmental and institutional complexity on organizations. Early strategic management studies recognized that environmental complexity has a strong impact on firm behavior by defining the amount and type of resources available in a firm's environment and producing uncertainty in decision making (Dess & Beard, 1984; Downey, Hellriegel, & Slocum, 1975; Keats & Hitt, 1988). For instance, industry complexity has an effect on the strategic activities of the firms and, thereby, on industry

profitability (e.g., Palmer & Wiseman, 1999; Porter, 1980). Environmental complexity is defined as “heterogeneity in the environment and the concentration of resources” (Boyd, 1990: 421). Complexity represents the number of alternatives that must be considered, along with the differences in attributes of each alternative (i.e., diversity) (Payne, 1976). With roots in March and Simon (1958), complexity is viewed as varying along with the number of subcomponents that contribute to new uncertain alternatives, means–ends connections, and negotiating routes. As a result, environmental diversity was originally a component of the broader dimension of environmental complexity along with the number of actors (e.g., firms in the industry) (Boyd, 1990). Both variables were conceptually different and measured separately in the same analytical models in order to more accurately reflect environmental complexity. Then, the use of indexes, such as the Herfindahl index or Gibbs–Martin formula, allowed for the measurement of both effects with one variable and became the dominant measure (e.g., Boyd, 1990; Dess & Beard, 1984).

Scholars in IB have suggested that MNEs experience institutional complexity through the multiple formal and cultural institutions with which they interact (Kostova & Zaheer, 1999; Kostova et al., 2008; Meyer, Mudambi, & Narula, 2011). Institutions provide the foundation for a society and guide behavior within it (North, 1990). Following North’s institutional tradition, researchers have examined the impact of two different but related types of country institutions: formal and informal (Holmes, Miller, Hitt, & Salmador, 2013). Formal institutional structures produce and enforce the policies, regulations, and laws regarding how people, systems, and organizations behave (North, 1991). According to North (1990), political, regulatory, and economic structures allow formal institutions to establish these controls. Informal institutions, such as culture, are relatively persistent collective understandings of behavior and meaning that help construct reality (Scott, 1995, 2005). Culture constitutes an important component of the shared values and standards of a society (North, 1990; Scott, 1995). Thus, MNEs must deal with differences in diverse political, regulatory, and cultural prescriptions across locations, resulting in a formal and a cultural institutional complexity (Kostova et al., 2008).

Research in IB has long acknowledged the importance of formal and cultural institutions for MNEs’ decisions regarding internationalization by studying country-specific institutional factors (e.g., Ronen &

Shenkar, 2013; Wan & Hillman, 2006). Recently, with the emphasis on geographic regions for understanding MNEs’ internationalization (Arregle et al., 2009; Flores et al., 2013; Ghemawat, 2003; Rugman & Verbeke, 2004), the role of a region’s formal institutions in MNEs’ internationalization has been validated (Arregle et al., 2013). As a result, at the region level, institutional complexity can be expected to play a critical role in an MNE’s internationalization.

Regional institutional complexity reflects the conflicting formal or cultural institutional demands faced by MNEs when operating across countries within a geographic region. Complexity exists within regions because of both the number of institutional environments (number of countries) and differences between the institutions of the countries within the regions (institutional diversity) that an MNE has to consider in its decisions related to semiglobalization. The diversity in institutions creates divergent pressures, prescriptions, goals, and practices for organizations, which can be experienced to varying degrees. The effects of a region’s institutional diversity (Banalieva & Dhanaraj, 2013; Goerzen & Beamish, 2003) must be managed by the MNE in developing its internationalization and semiglobalization profile. Additionally, the number of countries in a region contributes to the amount of information processing undertaken by managers because of governance costs, and to the level of coordination required across operations in countries within that region (Hitt et al., 1997; Tallman & Li, 1996). Each country in a region requires independent focused decisions because each has its own institutions and domestic culture. Therefore, both institutional diversity and the number of countries contribute to the institutional complexity with which MNEs must deal when operating in geographic regions. In the following sections, we develop hypotheses regarding the different effects of each of these two components of institutional complexity on MNEs’ internationalization. First, we discuss the effects of regional institutional diversity on regional aggregation and arbitrage, the two drivers of semiglobalization, separately before presenting its overall effect.

### **Regions’ Institutional Diversity and MNEs’ Internationalization**

#### ***A region’s institutional diversity and regional aggregation***

A major premise of semiglobalization is that MNEs can develop RFSAs that are regionally exploitable,

not limited to the country level. Thus, they are fungible at the regional level because of the relative similarities between the countries and their CSAs within a region (Rugman & Verbeke, 2005); thereby, justifying an MNE's regional aggregation of its subsidiaries. Given the importance of institutions for CSAs and MNEs' internationalization, managing operations located in different countries within the same region is strongly affected by the institutional diversity of the countries in a region. High levels of institutional diversity bound the use of RFSAs, reducing the usefulness of aggregating investments within a region in several ways.

First, an increase in a region's institutional diversity heightens the potential costs of developing fungible resources at the regional level due to the lower level of institutional similarities within the region. At high levels of institutional diversity, the rules for the use of and expected returns from capabilities are unclear because of questions about their usefulness and redeployability across countries in the region (Ostrom, 2005). As a result, it will be more difficult to identify or develop region-level assets that are fungible across more diverse institutional settings (in order to gain economies of scope). This occurs because an MNE that is trying to exploit its RFSAs in an institutionally diverse region will experience pressure to respond to diverse institutions, with challenges to redeploy its governance and management capabilities into countries with dissimilar institutional profiles (Kostova & Zaheer, 1999; Hutzschenreuter et al., 2011; Zahra, Ireland, & Hitt, 2000). This creates a number of managerial and organizational problems in coordinating and integrating operations at the region level, likely requiring some idiosyncratic practices to adjust to country-level institutional contexts (Hutzschenreuter et al., 2011; Jackson & Deeg, 2008; Meyer et al., 2011). Therefore for MNEs, the difficulties involved in environmental and internal governance when operating within institutionally diverse regions challenge the development and exploitation of RFSAs and their corresponding regional aggregation.

Second, MNEs often face barriers to replicating and exploiting fungible resources from foreign countries because of their intangible nature and the lack of established strategies for dealing with the idiosyncratic characteristics of each foreign market (Kumar, 2009). As such, they must understand the critical institutional characteristics of these markets through experiential knowledge, organizational learning (Johanson & Vahlne, 2009), and a process of search and deliberation (Rangan, 2000). Institutional

similarities among countries within a region allow the MNE to more easily accumulate experiential knowledge, facilitate search and deliberation processes, and learn from its previous experience in the region. Conversely, a higher level of institutional diversity across countries within a region will make these processes more difficult. The greater the institutional diversity, the greater the psychic distance between countries (Johanson & Vahlne, 2009) and the harder it is to create the knowledge needed to institute similar practices across the different operations. Finally, due to the limitations of absorptive capacity (Cohen & Levinthal, 1990), an MNE's knowledge development is path dependent and cumulative, necessitating a level of similarity in competences that are both new and old. As a result, high regional institutional diversity increases transaction costs and heightens the uncertainty and risk involved in MNEs' decisions (Banalieva & Dhanaraj, 2013), making the creation of RFSAs more difficult and regional aggregation less relevant.

#### ***A region's institutional diversity and arbitrage***

MNEs can take advantage of low to moderate levels of institutional diversity between countries within a region through intraregional arbitrage. Arbitrage involves exploiting differences between countries (Ghemawat, 2003) by relocating the firm's subsidiaries among countries in the same region in order to optimize their international strategy at the region level; thereby, benefiting from these intraregional differences. In the process, they release resources by closing subsidiaries in a region but reinvest in the same region, using their RFSAs in other countries within the region (Arregle et al., 2009). When a foreign subsidiary closes, often there is inadequate flexibility and little opportunity to gain value by relocating it to another area within the same country because of the substantially same formal and cultural institutional and competitive environment. Rather, the opportunity for arbitrage exists at the regional level when the countries within that region have some diversity (Arregle et al., 2009). Such behavior embodies the crucial role of flexibility in FDI activity (Buckley & Ghauri, 2004; Ghemawat, 2003). Because significant uncertainty often exists in the process of making international localization decisions, flexibility and diversity are often prized. For example, using a real options approach, there is value for MNEs in the ability to maintain flexibility during times of uncertainty by having a diverse portfolio with which to respond to changes in the environment (e.g., Lee & Makhija, 2009). Therefore,

regional institutional diversity can be beneficial as MNEs can make use of intraregional institutional dissimilarities. It may also offer new opportunities to learn as national structural differences have shaped the trajectory of national innovation systems (Furman, Porter, & Stern, 2002; Kogut & Zander, 1993). In addition, as with some benefits of operational diversity in product markets (e.g., Amit & Livnat, 1988; Bettis & Hall, 1982), regional institutional diversity may help to balance the level of risk (Kim, Hwang, & Burgers, 1993) in response to future economic or environmental shocks. Hence, arbitrage in semiglobalization benefits MNEs most when there is low up to moderate levels of formal and cultural institutional differences across countries within a region, where institutional diversity is a potential source of value rather than merely a source of difficulty (Ghemawat, 2003). Thus, these intraregional arbitrage mechanisms support a positive relationship between a region's institutional diversity and MNEs' internationalization for low to moderate levels of diversity.

Still, we expect this effect to be non-linear. For high levels of institutional diversity, the exponential challenges of dealing with and arbitraging between highly diverse formal or cultural institutional options can become very difficult for managers, resulting in very high demands made on managerial capabilities (Hutzschenreuter et al., 2011). The complexity of managing this process can offset the flexibility benefits (Lee & Makhija, 2009; Rugman & Verbeke, 2004). The ability to create arbitrage is only possible if the countries have a certain amount of relatedness that allows for transferability of capabilities, making high levels of diversity unattractive. Therefore, we expect that high levels of regional institutional diversity will be less attractive than moderate levels.

#### ***A region's institutional diversity, regional aggregation and arbitrage***

Given the effects of regional institutional diversity on regional aggregation and arbitrage, we expect an inverted U-shaped relationship between a region's institutional diversity and MNEs' internationalization. For low to moderate levels of regional institutional diversity, the costs and difficulties involved in developing RFSAs increase with the level of diversity. These difficulties moderately hinder the exploitation of fungible resources across countries and the effect of regional aggregation. Alternatively, these levels of diversity allow MNEs to use arbitrage decisions and develop real options. The benefits involved in

arbitrage increase with the level of regional diversity, for low to moderate values, as it allows the MNE to change its risk profile across institutions according to the diverse characteristics of the countries within the region. We expect this beneficial effect due to arbitrage to be stronger than the negative effect related to regional aggregation. As a result, a moderate level of institutional diversity in a region is highly attractive for an MNE's internationalization as the firm can use this diversity to make arbitrage decisions in the region without being overwhelmed by the challenges of diversity.

However, with high levels of institutional diversity, the aforementioned problems in developing RFSAs, and their corresponding regional aggregation, are more severe. At the same time, the value of real options is not necessarily greater for high levels of diversity than for moderate levels and arbitrage becomes increasingly difficult. Therefore, the negative effect of diversity on RFSAs and aggregation will be large, and the positive effect of a region's institutional diversity linked to arbitrage will plateau or disappear relative to a moderate level of institutional diversity. As a result, for higher levels of diversity, overall, we expect a negative relationship between a region's institutional diversity and MNEs' internationalization. Additionally, these effects and the shape of the overall relationship imply that an optimal level of regional, formal or cultural, institutional diversity should exist for MNEs' internationalization at moderate values.

Therefore, given the effects of regional formal and cultural institutional diversity on RFSAs and arbitrage, we expect an inverted U-shaped relationship between a region's diversity of each type of institution, formal or cultural, and MNEs' internationalization.

**Hypothesis 1a:** An inverted U-shaped relationship exists between a region's formal institutional diversity and the propensity of MNEs to internationalize into a specific country within that region.

**Hypothesis 1b:** An inverted U-shaped relationship exists between a region's cultural institutional diversity and the propensity of MNEs to internationalize into a specific country within that region.

#### **Number of Countries in a Region and MNEs' Internationalization**

As a component of institutional complexity, the diversity among formal and/or cultural institutional rules creates tension. However, the number of separate countries is an important (though as yet

underexplored) dimension of complexity, which must be examined to fully understand the complexity that exists and to avoid potentially underestimating it. Semiglobalization and HRO research showed that the structure of the whole region has an effect on MNEs internationalization (Arregle et al., 2009; Banalieva & Dhanaraj, 2013), suggesting that the total number of countries in a region is important for MNEs' internationalization. For instance, regional aggregation and arbitrage mechanisms are used at the region level involving all possible countries within a region (Arregle et al., 2009). Given our focus on formal and cultural regional diversity, the number of countries in a region reflects two slightly different characteristics. For formal institutions, it embodies the number of state-level formal institutional actors existing in a region. For cultural institutions, it reflects the number of domestic cultures found in a region.

In several conceptualizations of complexity, such as environmental complexity (Boyd, 1990; Dess & Beard, 1984), task complexity (Campbell, 1988), structural complexity (Espinosa, Slaughter, Kraut, & Herbsleb, 2007), and configuration complexity (Larsen, Manning, & Pedersen, 2013), the number of items represents a distinct aspect of complexity that reflects the multiple path – goal connections, end-state alternatives, and inexact means–ends connections. In fact, Simon (1962: 468) described complexity as a “large number of parts that interact in a nonsimple way.” For example, in their study of structural complexity of software, Espinosa and colleagues (2007: 602) suggest that “as the number of modules affected increases, it becomes more difficult to understand how the parts being modified will affect other parts of the system.” Similarly, when the number of countries in a region is high, the information processing load that an MNE has to manage is also high if it decides to internationalize across countries in the region. In turn, the costs and challenges involved in managing operations in multiple countries within a region can be significant.

The number of countries in a region contributes to the regional institutional complexity due to (1) negotiation and legitimization challenges, (2) interdependency risks across countries, and (3) unpredictability in operations. First, the number of countries increases complexity because of the increase in negotiating parties with which to interact in regional internationalization. Each country's government represents an independent decision center. Thus the greater the number of countries,

the more an MNE will need to monitor or negotiate with different actors and respond to independent institutions in its current and future regional expansion. As with fewer firms active in a particular industry (Palmer & Wiseman, 1999) and fewer partners in alliances (Gulati & Singh, 1998; Phene & Tallman, 2012), fewer countries in a region lower MNEs' information processing and negotiating burdens when using semiglobalization mechanisms. This is because fewer countries reduce the number of parties with which the MNE must interact in order to establish, maintain and develop operations in a region. Similarly, a larger number of cultures mean that there are multiple norms and values with which managers must be familiar to avoid violating them. Therefore, the coordination costs of developing and managing subsidiaries at the region level (i.e., developing RFSAs and conducting regional arbitrage) are higher for an MNE faced with a larger number of formal institutional actors or cultural institutions in the region, regardless of the level of institutional diversity.

Second, the number of countries within a region influences risk because regions are composed of independent (though regionally interrelated) institutional country actors and/or cultural norms that provide prescriptions for behavior. Countries in a region represent multiple rule-setting centers (Ostrom, 2010) that interact and result in a level of institutional uncertainty, political risk, and economic risk, within which MNEs seek to enact strategy. Political risk can be a source of instability in rule-setting, changes in executive leadership, and variability in enforcement of regulations, all of which have been shown to impact the attractiveness of localization (Busse & Hefeker, 2007; Henisz, 2000; Jensen, 2008). Economic risk hinders MNEs through major currency fluctuations and inflation, which influence the value of a firm's investments (Frankel & Rose, 1996). As described by Banalieva and Dhanaraj (2013), governance hazards in one country can create havoc not only in operations located in a particular country but also at the regional level (Zhou & Poppo, 2010), and this problem increases with the number of countries in a region. Both political and economic risks become potentially greater with each additional country within a region. These challenges are not related to diversity, which may benefit learning, but are derived from the uncertainty, risk, and costs created by the number of countries (i.e., number of institutional actors) with which an MNE must deal as it internationalizes and tries to implement the drivers of semiglobalization.

Third, the number of countries in a region increases the unpredictability of countries' reactions to the MNE's operations within the region when it seeks to benefit from redeploying similar capabilities across the region. As countries can act unilaterally, the potential costs and challenges and number of combination of reactions is greater in a region with more countries. Such enhanced unpredictability has been recognized in the competitive dynamics literature which suggests that as the number of rivals in an industry increases, so does the possibility of novel reactions (Nelson & Winter, 1982). Each country represents a possible source of reactions through social, regulatory, and other institutional means, potentially influencing the MNE's outcomes that can hinder the redeployment of capabilities.

These effects explain why the number of participants is particularly important for analyzing changes involving institutional actors (Ostrom, 2005). It is a crucial structural variable for institutional analysis because it has important effects on the outcomes of institutional interactions and the level of risk and uncertainty (Ostrom, 2005).

Hence given these arguments, the number of countries in a region (i.e., the number of decision-making government bodies and national cultural institutions) negatively influence MNEs' internationalization.

**Hypothesis 2:** The number of countries within a region has a negative effect on the propensity of MNEs to internationalize into a country within this region.

## METHODOLOGY

### Data Source and Sample

We utilized data from *Kaigai Shinshutsu Kiyō Souran* (Japanese Overseas Investments), a resource that includes reliable Japanese FDI-related data and information on Japanese MNEs' overseas activities (e.g., Delios & Henisz, 2003; Goerzen & Beamish, 2005). Following listwise deletions, 698 Japanese MNEs with 5792 foreign subsidiaries in 49 countries during the period of 2001–2007 were included in our sample, 89% of which are stock-listed.<sup>2</sup>

### Levels of Analysis

Our hypotheses were tested using models with three levels of analysis and measures: (1) firms' choices

regarding foreign subsidiaries and country-level location characteristics (Level 1); (2) firms' choices regarding foreign subsidiaries and region-level location characteristics (Level 2); and (3) firms' corporate variables (headquarters, Level 3). The effects of firms' variables at the country and corporate levels are controlled using Levels 1 and 3. Level 2 contains our variables of interest.

Following previous studies, regions were conceptualized as physically connected or close country groups (Aguilera, Flores, & Vaaler, 2007; Arregle et al., 2009; Banalieva & Dhanaraj, 2013; McNamara & Vaaler, 2000; Rugman & Verbeke, 2004). We used geographic regions rather than the other available operationalizations (see Flores et al., 2013) as this practice is consistent with the semiglobalization research. It is appropriate for the focus of this study on foreign subsidiary localization (Aguilera et al., 2007) and is closely connected to the international strategies employed by firms (Buckley & Ghauri, 2004; McNamara & Vaaler, 2000; Rugman & Verbeke, 2007). A firm's international operations and the primary drivers of semiglobalization are all affected by physical distance (Arregle et al., 2013; Nachum & Zaheer, 2005). Nine geographic regions were created from the 49 countries used in this study (see Appendix 1) and adapted from the United Nations Statistics Division (2008) region classification to include other relevant characteristics for semiglobalization such as strong trade agreements.<sup>3</sup>

### Dependent Variable

The objective of this study is to explain MNEs' decisions to internationalize in a country measured by an *MNE's degree of internationalization into a country* over the period 2002–2007. This degree of internationalization into country *c* is measured as: (number of foreign subsidiaries established (i.e., inflows) by the MNE in country *c* during the period 2002–2007) × (relative importance or size of these subsidiaries over the period 2002–2007). For the MNE, the score for "relative importance over the period 2002–2007" for country *c* is measured by its percentage of employees in new foreign subsidiaries established in country *c* from 2002 to 2007:

$$\left[ \frac{\text{Total number of employees in new foreign subsidiaries established in country } c \text{ (2002 – 2007)}}{\text{Total number of employees in all of the firm's foreign subsidiaries (2002 – 2007)}} \right] \times 100$$

While unidimensional measures (e.g., number of subsidiaries or sales) are problematic given their narrow focus on only one aspect of internationalization (Asmussen, 2009; Hitt et al., 1997; Sanders & Carpenter, 1998), multidimensional measures can more accurately capture an MNE's internationalization into a country by addressing both breadth and depth (Hitt et al., 1997; Lu & Beamish, 2004). Using such a measure results in less error than exists in a unidimensional measure (Boyd, Gove, & Hitt, 2005). For instance, Hitt, Bierman, Uhlenbruck, and Shimizu (2006) used a similar measure. The MNE was scored for each of the sample countries with high scores indicating high internationalization levels.<sup>4</sup>

### Independent Variables

To investigate the effects of the number of institutional actors, we measured this variable within a region by *number of countries* within the region.

We then measured the formal institutional diversity existing among countries within the same region. We employed comprehensive and composite measures of formal institutions (e.g., Chan, Isobe, & Makino, 2008; Gaur, Delios, & Singh, 2007) following the method created and validated by Holmes et al. (2013). Factor scores were obtained based on 34 broad indicators of formal institutions in our 49 countries (see Holmes et al., 2013). Four factors were then extracted applying Kaiser's criterion and the scree test, following previous theory. The final factor solution was composed of 20 variables, accounting for 70.8% of the total variance in those items. The results generated four constructs (political democracy, regulatory control, capital availability, and market liquidity) that serve as clear proxies for the three areas of formal institutions considered in the literature (e.g., North, 1990): political, regulatory, and economic.<sup>5</sup>

*Political democracy* refers to a government's level of discretion and power over its people and is measured by looking at political rights, civil liberties, political constraints, and executive political restrictions (Henisz, 2000; Li & Resnick, 2003; Jensen, 2008). The level of legal, regulatory, and policy involvement a government has in business is measured by the *regulatory control* factor (Busenitz, Gomez, & Spencer, 2000); these actions limit business activities using rule-setting, monitoring, and sanctions (Scott, 1995). Factors 3 and 4 relate to the capital investment capability in a country; *capital availability* is the availability of domestic entities' capital for commerce within a country (Schneider & Frey, 1985), and *market liquidity* reflects how much a country

limits or manages the rapid growth of money and assets. A higher score in market liquidity indicates a lack of available assets for reinvestment in the market, resulting in fewer capital investments (Frankel & Rose, 1996; Grilli & Roubini, 1992).

For the measure of cultural institutional diversity existing among countries within the same region, we used data on three cultural dimensions from Hofstede's (2001) cultural index (uncertainty avoidance, power distance, and individualism),<sup>6</sup> chosen for their importance in MNEs' internationalization decisions (see Noorderhaven & Harzing, 2003; Shenkar, 2001).<sup>7</sup>

To test our hypotheses, we computed a measure of regional formal institutional diversity from political democracy, regulatory control, capital availability, and market liquidity along with a measure of regional cultural institutional diversity based on the three cultural variables. For each region, we computed the bias-corrected weighted mean Euclidean distances (see next paragraph) of its component countries on the four formal institutional variables or three cultural institutional variables, resulting in two diversity scores per region: a formal institutional and a cultural institutional diversity score. GDP was used to weight same-region countries' institutional scores (country's GDP/sum of the regional countries' GDPs) to address differences in economic importance among countries located within the same region (e.g., Hejazi, 2007).

As we had regions with different numbers of countries, thus creating a bias when comparing diversity scores (see Biemann & Kearney, 2010), we followed the method proposed by Biemann and Kearney (2010) to obtain an unbiased measure of diversity and computed a bias-corrected weighted mean Euclidean distance with the following formula:

Regional (formal or cultural) institutional diversity,

$$= \sum_{c=1}^N W_c \frac{\sum_{j=1}^N \sqrt{(x_c - x_j)^2}}{N - 1}$$

With  $N$  number of countries in region  $r$ ,  
 $W_c$  GDP of country  $c$  in region  $r$ /GDP of all countries in region  $r$   
 $X_c$  score of country  $c$  on formal or cultural institutions

In this way, we more accurately compare regions having different numbers of countries without creating a bias and isolating the effects of the number of

countries within a region and its institutional diversity. The scores for the regions on these variables are listed in Table 1.

### Control Variables

We included control variables at each level of analysis. A firm's *prior internationalization into a country* was controlled at the country level and measured using the number and relative importance of foreign subsidiaries it already had in a country (in 2001). The following percentage was used to measure "relative importance in 2001" for country *c*:

$$\left[ \frac{\text{Total number of employees in existing foreign subsidiaries in country } c(2001)}{\text{Total number of employees in all of the firm's existing foreign subsidiaries (2001)}} \right] \times 100$$

To estimate institutional isomorphism (mimetic) effects, we developed a logged measure of the *country experience of all Japanese firms* as the number of subsidiary years of other Japanese firms within a country (Henisz & Delios, 2001; Lu, 2002). The log of the sum of subsidiary years of a firm in the focal country in 2001 was used to measure that firm's *experience in the country* (Lu, 2002). Country-specific variables, namely *population* (the number of individuals in a country in 2001), *per capita income* (the log of per capita GDP in 2001), *culture*, and *formal institutions* were controlled. To compute a country's *culture* score, we averaged three dimensions of Hofstede (2001) (uncertainty avoidance, power distance, and individualism). For the *formal institution* score, we averaged a country's scores on political democracy, regulatory control, capital availability, and market liquidity (see Asmussen & Goerzen, 2013; Holmes et al., 2013).

An MNE's *prior internationalization into a region*, measured using the same method as that used for

the country level, was controlled for at the region level. Depending on the models, we also controlled for a *region's formal institutions profile* or a *region's cultural institutions profile*. They are measured, respectively, as the weighted average institutional scores on the four formal institutional variables or the three cultural institutional variables for all countries in a region (weights based on a country's GDP/sum of the GDPs of countries in the same region) (Arregle et al., 2013).

Firms' *research and development intensity* (1997–2001 average R&D expenses divided by total sales), *total international experience* (log of the number of subsidiary years across all countries in a firm's history) (Delios & Henisz, 2003), *advertising intensity* (1997–2001 average expenditures for advertising divided by total sales) (Delios & Henisz, 2003), and *firm size* (log of 1997–2001 average annual sales) were measured at the firm level.

### Model Estimation

This study is cross-sectional. Our dependent variable is a non-negative skewed outcome. Following previous studies about the best statistical method for this type of variable, we applied a Poisson model (pseudo-maximum likelihood with robust standard errors) as it is appropriate for analysis of this type of data and has been shown to be superior to alternative methods (see Santos Silva & Tenreyro, 2006, 2011; Winkelmann, 2010; or Nichols, 2010).<sup>8</sup> Given our data structure and our research question's hierarchical nature (Arregle, Hebert, & Beamish, 2006; Hitt, Beamish, Jackson, & Mathieu, 2007; Peterson, Arregle, & Martin, 2012), we used three-level Poisson models and the multilevel software HLM 7 (Raudenbush, Bryk, Cheong, Congdon, & du Toit, 2011). These multilevel models address the potential statistical problems inherent in multilevel data (e.g., problems of disaggregation, intraclass

**Table 1** Regions' institutional diversity scores

Region	Formal institutional diversity	Cultural institutional diversity
Eastern Asia	2.62	39.47
Southeastern Asia	3.48	33.16
Western Asia	1.22	42.00
Europe	1.58	41.89
Central Europe	1.00	35.40
NAFTA	5.56	47.90
South America	1.75	23.81
Oceania	0.39	17.92
Eastern Europe	1.02	28.86

correlation, and misestimated precision) and allow for the correct identification of effects occurring at each level and across levels (Peterson et al., 2012). A Wald test was used in order to compare our nested models and check for the actual contribution of our variables of interest (Hox, 2010; Raudenbush & Bryk, 2002). For instance, we compared Model 2 with Model 1 to verify that Model 2 is better (i.e., with the two additional variables *region's formal institutional diversity* and its squared term) than Model 1 with the control variables. For the other models, we compared each model with the previous model.

## RESULTS

Table 2 shows the variables' intercorrelation matrix and descriptive statistics. Models 1–3 in Table 3 present multilevel model results predicting degree of an MNE's internationalization into a country considering regional formal institutional diversity. In Model 1, we only consider control variables, and then we add the variables of interest in the other models. Model 2 includes *region's formal institutional diversity* without *number of countries*. Model 2 is presented to illustrate the results involved in testing for the effect of *region's formal institutional diversity* without controlling for *number of countries*. Finally, Model 3 is the full model used to test our hypotheses with *number of countries* and *region's formal institutional diversity*. The Wald tests in Table 3 clearly indicate that Model 3 is the best compared with Models 1 and 2, and is used to validate or reject our hypotheses. We also provide the incidence rate ratios [i.e., Exp (coefficient)] of Model 3 as they can be more convenient for interpreting the results of a Poisson model.

In Models 4–6 shown in Table 4, we present the results predicting the degree of an MNE's internationalization into a country considering regional cultural institutional diversity. Model 4 is the model with control variables. In Model 5, we add *region's cultural institutional diversity*. Finally, in Model 6, we add *number of countries* in order to test our full model. The Wald tests clearly indicate that Model 6 is the best model as shown in Table 4. Therefore, we also provide the incidence rate ratios of Model 6.

First, Hypothesis 1a suggests a curvilinear effect of a region's formal institutional diversity on an MNE's subsequent internationalization in a country. We find in Model 3 (Table 3) a positive coefficient for its main term ( $b = 1.30$ ,  $p < 0.01$ ) and a negative coefficient for its squared term ( $b = -0.37$ ,  $p < 0.001$ ), providing support for Hypothesis 1a. As mentioned, the Wald tests strongly indicate that Model 3 is the

best model compared with the others, also providing support for Hypothesis 1a. The incidence rate ratios indicate that, holding all other variables constant, each additional unit of *region's formal institutional diversity* is associated with an estimated 369% increase in the expected level of an MNE's subsequent internationalization into a country and a decrease by 32% for each additional unit of its squared term.<sup>9</sup>

Then, Hypothesis 1b proposed a curvilinear effect of a region's cultural institutional diversity on an MNE's subsequent internationalization in a country. The results in Model 6 (Table 4) indicate a positive coefficient for its main term ( $b = 0.76$ ,  $p < 0.001$ ) and a negative coefficient for its squared term ( $b = -0.01$ ,  $p < 0.001$ ), providing support for Hypothesis 1b. The incidence rate ratios show that holding all other variables constant, each additional unit of *region's cultural institutional diversity* is associated with a 214% increase in the expected level of an MNE's subsequent internationalization into a country within this region and a decrease by 2% for each additional unit of its squared term.

Finally, Hypothesis 2 considers the negative effect of the number of countries in a region on an MNE's internationalization into a country. The coefficient for *number of countries* is negative and statistically significant in both Models 3 and 6, which control separately for formal and cultural institutions (respectively,  $b = -0.12$ ,  $p < 0.001$  and  $b = -0.07$ ,  $p < 0.001$ ). Hypothesis 2, therefore, receives support. Considering the corresponding incidence rate ratios, each additional increase of one country in a region decreases the expected level of an MNE's internationalization into a country within this region by 12% in Model 3, controlling for the other variables, and 7% in Model 6.

Comparing the results of Model 3 with those of Model 2, and Model 6 to Model 5, reveals other interesting insights. For Hypotheses 1a and 1b, respectively in Models 2 and 5, the coefficients of the main and squared terms of *region's formal institutional diversity* and *region's cultural institutional diversity* confirm an inverted U-shaped effect ( $b = 1.17$ ,  $p < 0.05$  and  $b = -0.30$ ,  $p < 0.01$ ;  $b = 0.65$ ,  $p < 0.001$ ; and  $b = -0.008$ ,  $p < 0.001$ ). However, these effects are weaker than the actual effects measured in the best models (i.e., Models 3 and 6), underestimating the effect of formal or cultural institutional diversity, with flatter inverted U-shaped effects.

Due to the characteristics of limited range dependent multilevel models, it is important to complete a number of additional analyses in order to precisely

**Table 2** Descriptive statistics and correlations

	Mean	s.d.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Degree of internationalization in a country	1.42	16.15																
2. Prior internationalization in a country	2.93	19.85																
3. Experience in a country	0.31	0.93	0.42**															
4. Other Japanese firms' country experience	7.66	1.90	0.21**	0.36**														
5. Per capita income	9.16	1.35	-0.00	0.07**	0.24**													
6. Population (per 1,000,000)	99.26	242.00	0.17**	0.13**	0.27**	-0.34**												
7. Culture	56.42	10.18	-0.08**	-0.11**	-0.28**	0.04**	-0.14**											
8. Formal institutions	0.02	0.47	0.15**	0.20**	0.39**	0.27**	0.04**	-0.24**										
9. Prior internationalization in a region	26.37	78.63	0.38**	0.39**	0.25**	-0.00	0.04**	-0.17**	0.14**									
10. Formal institutions – region's average	0.07	0.56	0.16**	0.24**	0.53**	0.47**	0.01**	-0.13**	0.48**	0.18**								
11. Cultural institutions – region's average	58.57	8.26	-0.13**	-0.22**	-0.56**	0.22**	-0.26**	0.52**	-0.28**	-0.28**	-0.25**							
12. Number of countries in a region	5.44	4.17	-0.09**	-0.08**	-0.06**	0.56**	-0.27**	0.02**	0.15**	-0.04**	0.11**	0.14**						
13. Region's formal institutional diversity	2.06	1.51	0.19**	0.26**	0.50**	-0.05**	0.09**	-0.24**	0.37**	0.26**	0.44**	-0.50**	-0.22**					
14. Region's cultural institutional diversity	34.49	9.06	0.06**	0.11**	0.25**	0.35**	0.14**	-0.06**	0.21**	0.10**	0.52**	-0.06**	0.36**	0.33**				
15. R&D intensity	1.72	2.77	0.01**	0.08**	0.00	0.00	0.00	0.00	0.00	0.04**	0.00	0.00	0.00	0.00	0.00			
16. Advertising expenditure	0.87	1.84	0.00	0.06**	0.00	0.00	0.00	0.00	0.00	0.08**	0.00	0.00	0.00	0.00	0.00	0.27**		
17. Firm size	11.38	1.58	0.04**	0.21**	0.00	0.00	0.00	0.00	0.00	0.16**	0.00	0.00	0.00	0.00	0.00	0.03**	0.09**	
18. Total international experience	3.97	1.39	0.05**	0.34**	0.00	0.00	0.00	0.00	0.00	0.23**	0.00	0.00	0.00	0.00	0.00	0.17**	0.15**	0.48**

\* $p < 0.05$ ; \*\* $p < 0.01$ .  $n$  (listwise) = 34,202.

**Table 3** Results with region's formal institutional diversity explaining an MNE's degree of internationalization into a country

Variable	Model 1	Model 2	Model 3	Model 3 Incidence rate ratios
Intercept	-10.84***	-12.18***	-11.44***	
<i>Level – Firm's headquarters</i>				
Advertising expenditure	-0.06	-0.06	-0.07	0.93
R&D intensity	0.01	0.01	0.01	1.01
Total international experience	0.44***	0.50***	0.50***	1.65
Firm size	-0.05	0.07	0.08	1.08
<i>Level – Firm/region</i>				
Prior internationalization in a region	0.002*	0.002*	0.002*	1.002
Formal institutions – region	-0.19	1.99***	2.61***	13.63
Number of countries – region			-0.12***	0.88
Region's formal institutional diversity		1.17*	1.30**	3.69
(Region's formal institutional diversity) <sup>2</sup>		-0.30***	-0.37***	0.68
<i>Level – Firm/country</i>				
Prior internationalization in a country	0.005*	0.004*	0.005*	1.005
Experience in a country	-0.12	-0.12	-0.12	0.88
Other Japanese firms country experience	0.84***	0.84***	0.84***	2.32
Population	0.02***	0.02***	0.02***	1.01
Per capita income	-0.49***	-0.50***	-0.50***	0.61
Culture	0.02	0.02	0.02	1.02
Formal institutions	0.73***	0.73***	0.74***	2.10
Models comparison – Wald test		(M2 vs M1)*	(M3 vs M2)***	

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .

Robust standard errors.

evaluate an explanatory variable's effect on the dependent variable (Cameron & Trivedi, 2013; Lee & Nelder, 2004). To do so, we adapted the method presented by Hilbe (2011) for Poisson to random-effect models following the method developed by the UCLA statistical group (see UCLA, 2014)<sup>10</sup> in order to compute the adjusted predictions and marginal effects (i.e., the additive effect on the outcome variable of a unit change in an independent variable).<sup>11</sup> For each of our three variables of interest, we plotted these adjusted predictions of an MNE's internationalization into a country at different representative values (Williams, 2012). In addition, for a region's formal or cultural institutional diversity, due to the curvilinear effects, it is also relevant to plot the average marginal effects at different representative values in order to better visualize their inflection points (Williams, 2012). We chose the representative values 2–16 for *number of countries*, 0.3, 1, 2, 3, 4, 5, and 6 for *region's formal institutional diversity* and 15, 20, 25, 30, 35, 40, 45, and 50 for *region's cultural institutional diversity*. These values reflect the range of values actually measured in our

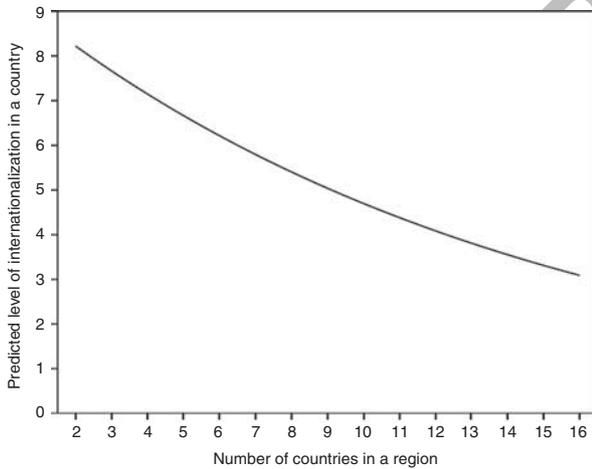
sample (e.g., our region with the lowest score on *region's formal diversity* was close to 0.3 and the highest score was 6). These plots are presented in Figures 1–5 and illustrate the effects of these three explanatory variables on an MNE's internationalization into a country.

As shown in Figure 1, the average predicted levels of an MNE's internationalization in a country decrease regularly for the number of countries. In Figure 2, the average predicted levels of an MNE's internationalization in a country increase for regional formal institutional diversity scores up to a value close to 2. Then, they decrease for diversity scores higher than 2 with a sharp decline for high values. Due to the curvilinear relationship, Figure 3 is more instrumental for interpreting and assessing the effect of a region's formal institutional diversity. It plots the average marginal effect, which is positive up to a value of diversity close to 2 (i.e., from 0.3 to 2, an increase of one unit of *region's formal institutional diversity* has a positive effect on an MNE's expected level of internationalization in this region's countries). Then, above 2, it becomes

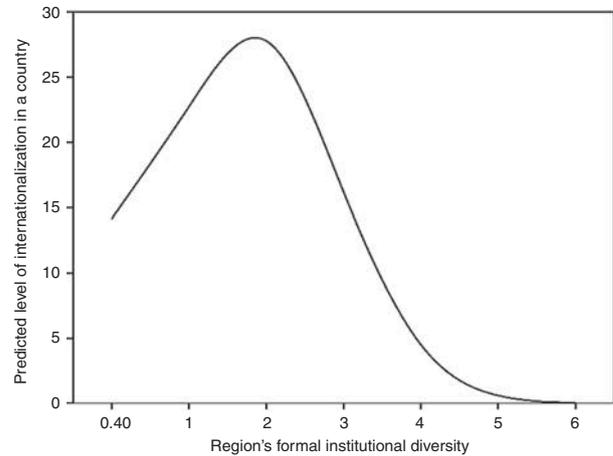
**Table 4** Results with region’s cultural diversity explaining an MNE’s degree of internationalization into a country

Variable	Model 4	Model 5	Model 6	Model 6 Incidence Rate ratios
Intercept	-8.74***	-22.26***	-24.74***	
<i>Level – Firm’s headquarters</i>				
Advertising expenditure	-0.06	-0.06	-0.06	0.94
R&D intensity	0.01	0.01	0.01	1.01
Total international experience	0.47***	0.48***	0.46***	1.59
Firm size	0.07	0.07	0.07	1.07
<i>Level – Firm/region</i>				
Prior internationalization in a region	0.002*	0.002*	0.002*	1.002
Culture – region	-0.05	-0.01	0.01	1.01
Number of countries – region			-0.07***	0.93
Region’s cultural institutional diversity		0.65***	0.76***	2.14
(Region’s cultural institutional diversity) <sup>2</sup>		-0.008***	-0.01***	0.98
<i>Level – Firm/country</i>				
Prior internationalization in a country	0.005*	0.005*	0.005*	1.005
Experience in a country	-0.12	-0.12	-0.12	0.88
Other Japanese firms country experience	0.83***	0.84***	0.84***	2.32
Population	0.02***	0.02***	0.02***	1.02
Per capita income	-0.47***	-0.47***	-0.47**	0.62
Culture	0.02	0.02	0.02	1.02
Formal institutions	0.73***	0.74***	0.74***	2.10
Models comparison – Wald test		(M5 vs M4)***	(M6 vs M5)***	

\* $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ .  
Robust standard errors.



**Figure 1** Adjusted predictions of number of countries in a region.

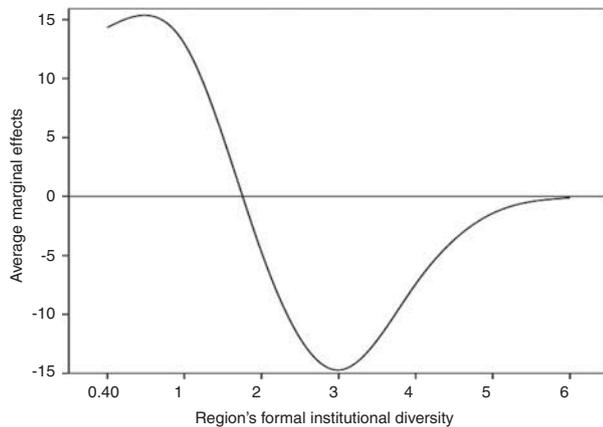


**Figure 2** Adjusted predictions of region’s formal diversity.

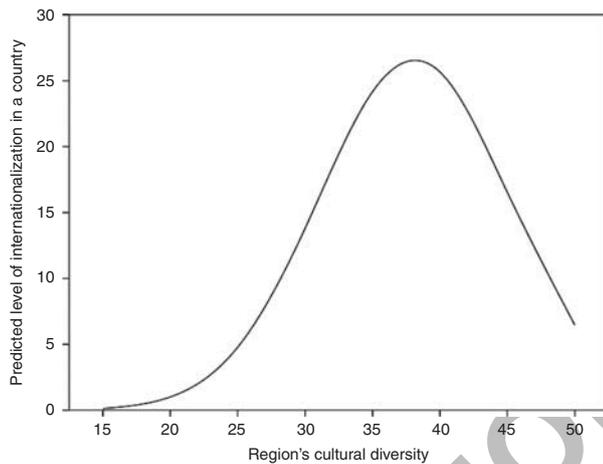
negative as an MNE is no longer attracted by these levels of diversity. The same general effect holds for regional cultural institutional diversity as presented in Figures 4 and 5. The average predicted levels of an MNE’s internationalization in a country increase

for region’s cultural institutional diversity’s scores up to a value of 37 and the average marginal effect becomes negative for scores above 37.

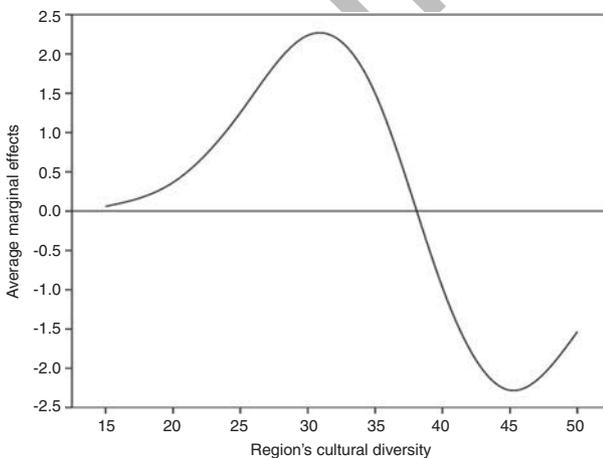
Finally, we conducted a number of additional robustness checks. First, we explored the possibility



**Figure 3** Average marginal effects of region's formal diversity at representative values.



**Figure 4** Adjusted predictions of region's cultural diversity.



**Figure 5** Average marginal effects of region's cultural diversity at representatives values.

of a curvilinear relationship for the number of countries in a region, testing another model by adding the squared term of *number of countries*. The squared term coefficient was not statistically significant ( $p > 0.10$ ). Second, the number of countries in a region could be related to other regional variables such as the GDP (and GDP per capita), population, or area of the region, creating spurious effects. We computed the correlations between a region's number of countries and the aforementioned variables, but none of these correlations was statistically significant ( $p > 0.10$ ). We also tested additional models adding a region's population and a region's geographic area as control variables in Models 3 and 6. We obtained qualitatively the same results for our hypotheses. The effects that we measured for *number of countries* and *region's formal or cultural diversity* are not influenced by the size of the region. Third, due to the uniqueness of our Europe region, composed of countries belonging to the European Union and European Free Trade Agreement, we tested the possibility that the relationship between the number of countries and our dependent variable could be different (i.e., weaker) for this region. To do so, we tested other models, adding in Models 3 and 6 an interaction effect between *number of countries* and a dummy variable coded 1 for our Europe region. These interaction effects were not statistically significant ( $p > 0.10$ ), confirming the robustness of our results. Then, based on Models 3 and 6, we also tested additional models, controlling for MNEs' industry and found the same results for our hypothesis.<sup>12</sup> We also checked whether having the stock of an MNE listed could change the effects measures in Models 3 and 6 adding a dummy variable "stock-listed" and its interaction effects with *number of countries*, *region's formal institutional diversity*, and *region's cultural institutional diversity*. The main effects of "stock-listed" were positive and statistically significant in the different models but none of the interaction effects were statistically significant ( $p > 0.10$ ). Therefore even if stock-listed MNEs internationalize more, it does not change the relationships that we observed. Finally, as the definition of geographic regions used can have an effect on the results, it is important to test several alternative definitions of these regions in order to check the robustness of the results (Arregle et al., 2013; Flores et al., 2013). As the method proposed by Flores et al. (2013) was not available for our data (i.e., due to our need to use multilevel models), we followed their recommendation (Flores et al., 2013: 468) and used the method proposed in Arregle et al. (2013). We

tested six alternative definitions using the regions proposed by Flores et al. (2013) and Arregle et al. (2013) as well as additional definitions using different groupings of European countries and compared them. All regions and their results are presented in Appendix 2 confirming that the geographic regions used to test our models are the best ones.

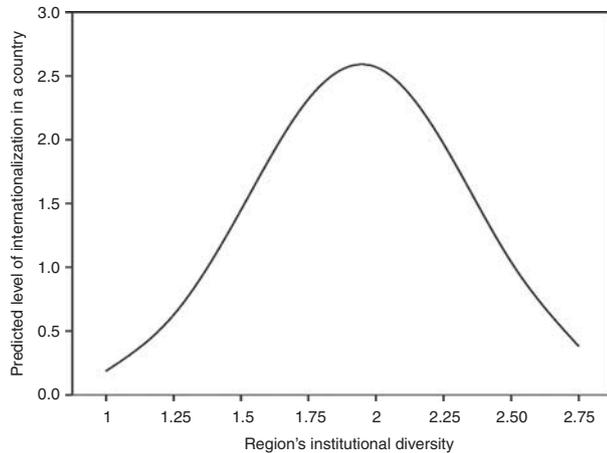
## DISCUSSION

This study complemented and extended previous research on regions, institutions, and MNE internationalization, examining the effects of components of regional institutional complexity on the international subsidiary location choices made by MNEs. We theoretically proposed and tested the effects of institutional complexity of a region by examining the impact of regional institutional diversity and number of countries on internationalization by an MNE. MNEs take a strategic approach that integrates country institutional environments at the region level, a process that can be influenced by the two components of a region's institutional complexity.

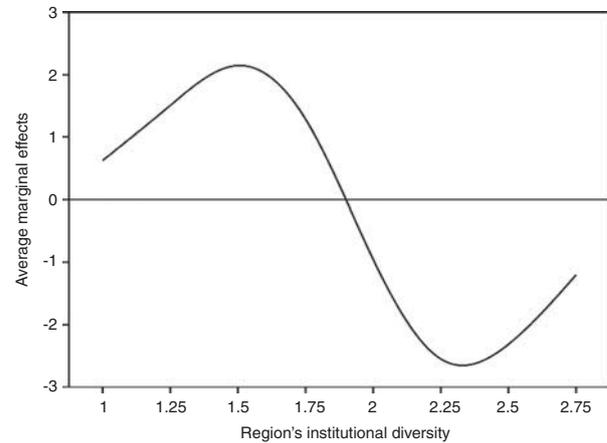
First, we proposed different effects of a region's formal or cultural institutional diversity on the two mechanisms of semiglobalization, namely regional aggregation and arbitrage. While previous studies usually considered a region's institutional diversity solely as a problem for MNEs, we show that its effects are more complex and can even have attractive features for MNEs' internationalization strategy. On the one hand, a region's formal or cultural institutional diversity may have a negative effect on MNEs' internationalization into countries within that region because it increases the challenges and costs of developing RFSAs among more heterogeneous countries. On the other hand, it provides opportunities for an MNE to benefit from arbitrage decisions and real options, among institutionally diverse countries, and to minimize its institutional risks across a portfolio of diverse countries within the same geographic region. We find an inverted U-shaped effect of a region's formal or cultural institutional diversity on MNEs' propensity to internationalize into countries within that region supporting these opposite effects. The optimal levels of a region's diversity to attract an MNE's internationalization are moderate for both formal and cultural institutions (see Figures 2 and 4). An MNE can use this diversity when making arbitrage decisions within a region, and the problems it encounters in managing or developing its RFSAs remain relatively minor. Therefore, our research suggests that the overall effect of institutional diversity is not exclusively negative as

suggested in prior research. However, beyond these moderate levels of diversity, the complexity and difficulty of using regional aggregation and arbitrage among highly institutionally diverse countries increase, resulting in declining benefits from diversity and, thus, in a negative effect on an MNE's internationalization. Though, our results indicate that the optimal level of institutional diversity is not the same for formal and cultural institutional diversities. The optimal value of a regional formal institutional diversity is relatively lower than the optimal value of a regional cultural diversity. Therefore, the negative effects of regional institutional diversity on MNEs' internationalization occur earlier for formal institutions than for cultural institutions. These different shapes or skewness of both inverted U-shaped relationships also suggest that the advantages derived from intraregional arbitrage probably appear more rapidly and intensively for low to moderate values of formal institutions than for cultural institutions.

Based on these measured inverted U-shaped effects for a region's formal and cultural diversities, we explored their combined effect.<sup>13</sup> Cultural and formal institutions were combined into a new variable: a *region's institutional diversity*. This was computed applying the same diversity formula, but considering simultaneously the four formal institutions variables and the three cultural institutions variables.<sup>14</sup> Then, we replaced in Model 6 a region's cultural diversity and its squared term by this new variable and its squared term, controlling for *region's formal institutions profile* and *region's cultural institutions profile*. The results indicate a positive coefficient for the main term *region's institutional diversity* ( $b = 11.38$ ,  $p < 0.001$ ) and a negative coefficient for the squared term ( $b = -3.12$ ,  $p < 0.001$ ). Therefore, these results also suggest an inverted U-shaped effect; its adjusted predictions and average marginal effects at representative values are presented in Figures 6 and 7. In many IB studies, both institutions are examined separately, as we did in the other models, and the question of the interrelated effects of both institutions is still an open question. Additionally, the different optimal levels of institutional diversity for formal and cultural institutions indicate that combining both institutions is a methodological challenge if we wish to identify the most accurate effects. Therefore these results, which combine both types of institutions, should be considered as preliminary and exploratory. These results suggest future research questions about the joint effects of formal and cultural institutions and the need to further



**Figure 6** Adjusted predictions of region's institutional diversity.



**Figure 7** Average marginal effects of region's institutional diversity at representative values.

explore them by considering configurations or more sophisticated methods to combine them.

For the second component of institutional complexity, the number of countries in a region, the effect on MNEs' internationalization was negative. Everything else held equal, regions with a smaller number of countries attracted more MNEs' internationalization than regions with more countries. The interpretation of this effect proposed in this article is that the more countries within a region, the more managers must resolve problems that are caused by greater uncertainty and risk. Resolving these problems require significant managerial capabilities for making effective decisions because of the larger number of institutional entities involved in its current and future regional expansion. A region with fewer countries is likely easier to monitor and has lower uncertainty than a region with more countries.

MNEs have the option of entering regions with different levels of institutional diversity and different numbers of countries. One dimension provides potential benefits that the firm can receive (up to a certain level of diversity), while the other results in costs and risks firms experience while trying to create value through their internationalization strategies. Based on prior work (e.g., Ostrom, 2005), both dimensions influence MNEs' internationalization decisions. Thus, these arguments and our findings suggest that prior research that only examined one of these dimensions did not provide a full or unbiased understanding of its effect or of institutional complexity. Diversity should be considered along with the number of actors for a more complete

understanding of the influence of institutional complexity. Importantly, the very different effects of a region's institutional diversity and number of countries explain why aggregated measures of a region's institutional complexity (e.g., *region's institutional diversity*  $\times$  *number of countries*) should not be used to assess the impact of regional institutional complexity on MNEs' internationalization. Both the curvilinear effect of regional diversity and the linear effect of number of countries would be mixed in one score, leading to an inexact interpretation.<sup>15</sup> Region A with four countries and a regional diversity of two is not the same for MNEs as region B with two countries and a regional diversity of four, even if they can have the same level of regional institutional complexity (e.g., same aggregated score). By considering the two independent variables in the same model, it is possible to more precisely measure their effects along with the resulting impact of regional institutional complexity.

The inverted-U shaped effect of regional institutional diversity on MNEs' internationalization is also interesting for governments within the same region. They cannot modify regional cultural institutional diversity in order to better position their region on the continuum of low-high diversity due to the nature of these institutions, in which beliefs and values must be changed (Inglehart & Baker, 2000; North, 1994). Additionally, cultural convergence does not seem to materialize even for cultural clusters (Ronen & Shenkar, 2013). Alternatively, formal institutions are better candidates for potential changes, with trade agreements as an important means of achieving their goals. However, even for

these formal institutions, changes are generally slow to materialize and likely unfold over a long period of time, especially if they need to be large enough to modify a region's formal institutional diversity. Moreover, a recent empirical study (Berry, Guillen, & Hendi, 2014) found that such attempts to create convergence among countries of the same region or trade bloc are usually unsuccessful. The authors suggest that "[t]he predictions that institution-building and joint decision making would produce convergence in these types of blocs do not seem to have materialized" (399). Nevertheless, our results indicate that having low regional formal institutional diversity (i.e., higher institutional convergence) compared with other regions does not necessarily result in higher attractiveness; in fact, it could have the exact opposite effect, depending on where a region is positioned on the  $x$ -axis in Figure 2.

Our findings also contribute to an understanding of the roles of institutions in IB strategies. Prior research suggests that host countries' and host regions' institutions matter for MNEs' internationalization in a country (e.g., Arregle et al., 2013; Chan et al., 2008; Kostova & Roth, 2002; Wan & Hillman, 2006). However, the institutional complexity of a region also plays a key role in international strategy decisions by adding another institutional focus to the analysis of institutions' and MNEs' international strategy. In this respect, Ostrom (2005) developed the concept of institutional polycentrism where "polycentricity" refers to a spontaneous order in which multiple and independent actors make mutual adjustments to order their relations within a general framework of rules and norms (see also Ostrom, 1999a, 1999b). Countries within the same region, which represent an action arena (Ostrom, 2005), behave in this way as they face a co-opetition (Brandenburger & Nalebuff, 1996) problem and adjust their formal institutions in an effort to attract MNEs (Naya & Plummer, 1997; Oxelheim & Ghauri, 2004). As an outcome of institutional polycentricity, a region's institutional complexity has an effect on the decisions of these MNEs.

This study has limitations and opens future research opportunities. First, the Japanese MNEs used for hypothesis testing may have been influenced in their strategies or most relevant geographic regions by their home institutional environment. Alternatively, MNEs based in other countries or regions may focus on different geographic regions. Thus, there is an opportunity for future research to further enrich our understanding of how home-country institutions influence a

firm's strategic decisions by examining MNEs from multiple other countries to check the stability of the role of a region's institutional complexity, especially for emerging economy countries' MNEs. Second, it should be noted that we do not explicitly study how managers within MNEs assess the characteristics of regions in their decision-making processes or if they do so temporally before considering a potential location. Based on our results, future research should examine their implications for this MNE decision-making process. Such research requires data from MNE decision-makers (e.g., Maitland & Sammartino, 2015), beginning with the first stage of a decision up to the final stage of locating a foreign subsidiary in a country to identify the influence of regional institutional complexity. Third, due to the limited availability of precise measures of formal institutions, we had to consider 49 countries in 9 geographic regions. These countries do not represent the entire world, thus limiting the broad generalizability of our results. However, they represent much of the world economy, a variety of formal or informal institutions, and cover most of the international activity of Japanese MNEs and the main regions commonly studied in research on semiglobalization or HRO. It would be useful to conduct future studies including a greater number of countries and regions to check how these additions would influence the effects found in this study. For example, similar to prior research, this study had missing institutional data for Middle East and African countries and, thus, could not include these countries. Studies concentrating on regions such as these could be valuable given the projected importance of those regions to the future global economy. Fourth, even if 89% of our MNEs are stock-listed, we could not access the data to determine whether an MNE was a family firm and, thus, could not test if family firms address regional institutional complexity in different ways from non-family firms. Next, as our *post-hoc* analysis indicates, given their relatedness, we found support for a combined regional diversity score of formal and cultural institutions, although the two are often considered as different in IB with complex interactions. Hence, there is an opportunity for future research to focus on this question and develop more sophisticated measures to reflect configurations of formal and cultural dimensions in institutional diversity. Next, due to data limitations, it was not possible to differentiate the entry motivation of MNEs for their subsidiaries, even

though we control through robustness checks for industries that might have similar expansion motivations. For instance, the four major FDI types (i.e., resource seeking, market seeking, efficiency seeking, and strategic asset seeking (Dunning, 1993)) could be influenced to different extents by a region's formal or cultural diversity as they do not benefit from regional aggregation and arbitrage effects in the same way. A region's cultural diversity may have greater negative effects on market seeking FDI relative to the other types, because it causes more challenges in aggregating or integrating the FDI at the region level. Efficiency seeking FDI could especially benefit from a region's formal or cultural diversity due to the arbitrage mechanisms. As a result, the shape of the inverted U-shaped relationships presented in Figures 2 and 4 could change according to an MNE FDI's motivations suggesting the need for future research on this issue. Our results induce another related, but different, question about the exploration of how the evolution of a region's institutional complexity affects changes in the roles of subsidiaries in an MNE's network.<sup>16</sup> As semiglobalization can change the roles of subsidiaries (see Rugman, Verbeke, & Yuan, 2011), a region's institutional complexity evolution over time can change the configuration of the roles of an MNE's subsidiaries (e.g., a subsidiary in a country can change its role from asset seeking to efficiency seeking). To study the effects of these changes would require a longitudinal design; it could build on the six patterns of changes proposed in Rugman, Verbeke, and Yuan (2011) to study and explain how they are influenced by the dynamic of regions' institutional complexity. Lastly, although we focused on region-level institutional complexity, future research could extend the notion of institutional complexity at the country level, in addition to the region level, taking into account, for example, the institutional polycentricity existing in countries (Batjargal et al., 2013). However, this approach would be mainly relevant for large countries with a certain level of variance in the institutions within their national borders such as China, India, or the United States. For smaller countries or those with a more homogeneous institutional fabric (e.g., France, Chile, South Korea), such a country-level focus is unlikely to be relevant.

### CONCLUSION

This study explored a region's institutions in a new way, thus complementing previous research.

Using the original concept of environmental complexity, we examine the effects of two dimensions of complexity (a region's formal or cultural institutional diversity and the number of countries in a region) on MNEs' propensity to internationalize. We propose and measure very different effects of these two components. Moreover, we find an inverted U-shaped relationship between a region's institutional diversity and MNEs' internationalization using a sample of Japanese MNEs, applying the semiglobalization concepts of RFSAs and regional arbitrage. Importantly, we find that moderate levels of institutional diversity in a region attract the highest amount of MNE internationalization into countries within that region. However, the number of countries within a region has a negative effect on internationalization.

### NOTES

<sup>1</sup>Fungibility is "the extent to which resources can be deployed for alternative uses at low cost" (Sapienza, Autio, George, & Zahra, 2006: 924).

<sup>2</sup>The inclusion of firms with subsidiaries in only one country could mask potential region and corporate effects, leading to biased results in the models at Levels 2 and 3 (see Bowman & Helfat, 2001; Makino, Isobe, & Chan, 2004). Therefore all our models were also tested on a subsample of 547 MNEs with foreign subsidiaries in more than one country. The results were similar to those based on the full sample, thus confirming that such bias did not exist in our results.

<sup>3</sup>Asia typically houses the largest number of Japanese MNEs' foreign subsidiaries (Beamish, Delios, & Lecraw, 1997). Therefore, Asia was further divided to get a more detailed view of MNEs' foreign investment dynamics. Using a geographical approach based on the ASEAN region, a region considered highly relevant for Japanese MNEs' FDI decisions in Asia (Belderbos & Zou, 2006), we divided Asia into three regions. Countries east of the ASEAN region were categorized as "East Asia," ASEAN trading bloc countries as "Southeast Asia," and countries northwest of the ASEAN region as "West Asia."

<sup>4</sup>Measures of MNE-level degree of internationalization, or scope, such as the firm's asset dispersion entropy score (Goerzen & Beamish, 2003) would create a bias in this study whereby we would explain a firm-level variable by firm-level independent variables, ignoring the different levels of analysis and measures.

<sup>5</sup>These scores are available for 49 countries, so we consider 49 countries in our geographic regions. However, these countries cover 96% of all the subsidiaries made by Japanese MNEs in *Kaigai*

*Shinshutsu Kiyou Souran* over the period 2002–2007 and include countries and regions commonly examined in the literature on semiglobalization or FDI activities of MNEs (e.g., Arregle et al., 2013; Banalieva & Dhanaraj, 2013; Chan, Makino, & Isobe, 2008; Rugman & Verbeke, 2004).

<sup>6</sup>While Hofstede's highly cited research has been instrumental in moving forward cross-cultural research (Kirkman, Lowe, & Gibson, 2006), many have noted the limitations with using his scores. First, there have been challenges made to the theoretical grounding of the dimensions of culture, which may view culture as oversimplistic (Baskerville, 2003; Kirkman et al., 2006). In addition, culture is viewed as changing over time, and some dimensions may be more stable than others (Sivakumar & Nakata, 2001; Tang & Koveos, 2008). Third, his work is criticized because of the interchangeability between country and culture, failing to recognize subnational cultures and the degree to which inconsistent adoption of cultures exists within countries (McSweeney, 2002; Sivakumar & Nakata, 2001). Finally, there are criticisms of the survey-response methodology and aggregation methodology used to produce the results (Javidan, House, Dorfman, Hanges, & de Luque, 2006; McSweeney, 2002). Despite these criticisms, his work continues to have great importance and usefulness within international business studies (Kirkman et al., 2006).

<sup>7</sup>As we had no scores for Slovenia on these three variables, we replaced its missing values by the average scores of its region.

<sup>8</sup>We thank Professor J. Santos Silva for his help on this question.

<sup>9</sup>More precisely, as the coefficients and their corresponding incidence rate ratios are estimated with a multilevel method (i.e., with random effects at Levels 1 and 2), they are "conditional" effects where parameters  $\beta$ , and their incidence rate ratios, measure the change in expected value of response controlling for other covariates and the random effects (Fitzmaurice, Laird, & Ware, 2004; Rabe-Hesketh & Skrondal, 2012).

<sup>10</sup>This method has the major advantage of considering subject-specific (i.e., an MNE in our case) behaviors measured in a multilevel model and not population-average results. When non-linear multilevel models are used, population-average models and their parameters ignore the random effects existing at Level 1 and Level 2, with the risk of measuring population-average effects that do not necessarily reflect or exist at the subject level (risk of "ecological fallacy"; see Fitzmaurice et al., 2004; Lee & Nelder, 2004).

<sup>11</sup>Limited range-dependent variable models (such as Poisson regression) are non-linear, which implies that the value of a variable's marginal effect is not equal to the model's coefficient of the variable. This varies with all the model's variable values (see Hilbe, 2011; Wiersema & Bowen, 2009).

<sup>12</sup>We had no MNEs in the natural resources and mining industries in our sample.

<sup>13</sup>We thank an anonymous reviewer for suggesting that we explore this question.

<sup>14</sup>The four formal institutions are measured on the same scale, and this is also true for the three cultural variables. However, the scales of the formal and cultural variables are very different with much larger values for cultural variables. To avoid biases, all these variables were rescaled between  $-1$  and  $+1$  (using their standardized value and range). These rescaled values are used to compute this new diversity score.

<sup>15</sup>The same problem exists for measures of regional institutional diversity that would not control for a different number of countries (e.g., standard deviation). A bias exists when these are used with groups of different sizes, implicitly taking into account the number of observations in a group (see Biemann & Kearney, 2010). Therefore, the effects they measure would be explained by the institutional diversity *and* the number of countries, not exclusively by the diversity.

<sup>16</sup>We thank an anonymous reviewer for mentioning this research question.

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**APPENDIX 1**

**Table A1** Composition of regions and number of subsidiaries (2001–2007)

Regions	Countries	Regions	Countries
NAFTA (1080 subsidiaries)	Canada The United States Mexico	South America (150 subsidiaries)	Colombia Venezuela Peru
Europe (945 subsidiaries)	The United Kingdom The Netherlands Germany Sweden Portugal Spain Italy Finland Austria Greece Belgium Denmark Ireland France Switzerland Norway	Oceania (159 subsidiaries) Eastern Asia (2021 subsidiaries)  Western Asia (77 subsidiaries)  South East Asia (1247 subsidiaries)	Chile Brazil Argentina Paraguay Uruguay Australia New Zealand China Taiwan Hong Kong South Korea India Pakistan Bangladesh Thailand Vietnam Singapore
Eastern Europe (25 subsidiaries)	Turkey Russia		Malaysia Philippines Indonesia
Central Europe (159 subsidiaries)	Bulgaria The Czech Republic Hungary Poland Romania Slovenia		

## APPENDIX 2

Table B1 Robustness checks – Alternative definitions of geographic regions<sup>a,b</sup>

Country	Region membership						
	A Final regions	B Trading blocs (UNCTAD)	C Trade and investments (Flores et al., 2013)	D United Nations (Flores et al., 2013)	E Final with E. Europe divide	F Final with European divide	G Final with European merge
Argentina	7	1	1	1	7	7	7
Australia	8	2	1	2	8	8	8
Austria	4	4	3	4	4	4	4
Bangladesh	3	3	1	3	3	3	3
Belgium	4	4	3	4	4	4	4
Brazil	7	1	1	1	7	7	7
Bulgaria	9	4	1	5	5	9	4
Canada	6	6	6	6	6	6	6
Chile	7	1	4	1	7	7	7
China	1	5	5	7	1	1	1
Colombia	7	1	4	1	7	7	7
The Czech Republic	9	4	3	5	9	9	4
Denmark	4	4	3	8	4	4	4
Finland	4	4	3	8	4	4	4
France	4	4	3	4	4	4	4
Germany	4	4	3	4	4	4	4
Greece	4	4	3	10	4	10	4
Hong Kong	1	5	5	7	1	1	1
Hungary	9	4	3	5	9	9	4
India	3	3	1	3	3	3	3
Indonesia	2	5	2	9	2	2	2
Ireland	4	4	3	8	4	4	4
Italy	4	4	3	10	4	10	4
Malaysia	2	5	2	9	2	2	2
Mexico	6	6	6	1	6	6	6
The Netherlands	4	4	3	4	4	4	4
New Zealand	8	2	1	2	8	8	8
Norway	4	4	1	8	4	4	4
Pakistan	3	3	1	3	3	3	3
Paraguay	7	1	1	1	7	7	7
Peru	7	1	4	1	7	7	7
Philippines	2	5	2	9	2	2	2
Poland	9	4	1	5	9	9	4
Portugal	4	4	3	10	4	10	4
Romania	9	4	1	5	5	9	4
Russia	5	1	1	5	5	5	5
Singapore	2	5	2	9	2	2	2
Slovenia	9	1	1	1	9	9	4
South Korea	1	5	1	7	1	1	1
Spain	4	4	3	10	4	10	4
Sweden	4	4	3	8	4	4	4
Switzerland	4	4	1	4	4	4	4
Taiwan	1	1	1	1	1	1	1
Thailand	2	5	2	9	2	2	2
Turkey	5	1	1	1	5	5	5
	4	4	3	8	4	4	4

Table B1: (Continued)

Country	Region membership						
	A Final regions	B Trading blocs (UNCTAD)	C Trade and investments (Flores et al., 2013)	D United Nations (Flores et al., 2013)	E Final with E. Europe divide	F Final with European divide	G Final with European merge
The United Kingdom							
The United States	6	6	6	6	6	6	6
Uruguay	7	1	1	1	7	7	7
Venezuela	7	1	1	1	7	7	7
Vietnam	2	5	2	9	2	2	2
AIC Model 3	11344	11471	11556	11507	11406	11412	11597
BIC Model 3	11430	11557	11642	11593	11492	11498	11685
AIC Model 6	11220	11384	11332	11495	11320	11311	11539
BIC Model 6	11306	11470	11418	11506	11406	11397	11627

<sup>a</sup>Region Membership Models:

- Region A "Final Regions": The region grouping as used in our final analysis; also in Appendix 1.
- Region B "Trading Blocs": regions as used in the robustness check by Arregle et al. (2013, 933).
- Region C "Trade and Investments": region grouping for our countries as in Flores et al. (2013, 470).
- Region D "United Nations": region grouping for our countries as in Flores et al. (2013, 469).
- Region E "Final with E. Europe divide": geographic regions as in our final models but with Bulgaria and Romania in Eastern Europe.
- Region F "Final with European divide": geographic regions as in our final models but with European countries divided in three geographic regions.
- Region G "Final with European merged": geographic regions as in our final models but with all the European countries grouped in one region.
- I = Independent country (not included in a region).

<sup>b</sup>Robustness Check Methodology:

These robustness checks were made using three-level negative binomial regressions (with the software SuperMix (Hedeker, Gibbons, Du Toit, & Cheng, 2008)) to compare these non-nested models with their Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) (Burnham & Anderson, 2004). The individual AIC and BIC values are not interpretable and the relevant information to select the best model is the difference ( $\Delta$ ) between models' AIC and BIC (Burnham & Anderson, 2004). The model with the lowest AIC and BIC values is the best one. Both criteria are reported in Appendix 2 for each model.

To assess the merits of an AIC difference between two models, a difference  $\Delta \leq 2$  is a small difference and both models have similar advantages, a  $4 \leq \Delta \leq 7$  indicates a large difference and that the lowest AIC model is considerably better, and a  $\Delta > 10$  is a very large difference indicating that the model with the highest AIC has no support compared with the other one with the lowest AIC (Burnham & Anderson, 2004).

Negative binomial regressions are also relevant to explain non-negative numbers (e.g., Gould, 2011; Hilbe, 2008), even if Poisson regressions could be considered as slightly better (Santos Silva & Tenreyro, 2011). We also tested the same models to explain non-negative integers, as usually done with negative binomial regressions, by rounding our dependent variable. We obtained the same results. As a robustness check, these analyses were also repeated measuring the three variables relative to an MNE's internationalization only with the count of foreign subsidiaries. Again, Region A has the best models.

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