XIX SEMEAD
Seminários em Administração

novembro de 2016
ISSN 2177-3866

WITHIN-COUNTRY LOCATION CHOICE FOR R&D SUBSIDIARIES: Building a model

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Introdução
In this article, we propose that institutions are mostly asymmetric within countries, varying between cities and regions due to different economic, social and governmental backgrounds. We propose that these differences will have an impact on the innovativeness of regions and thus will determine international R&D subsidiary location-choice. We contribute to international business theory by building a model to explain within-country location choice of Research and Development-driven subsidiaries.

Problema de Pesquisa e Objetivo
Our objective in this paper is to propose that institutional and economic contexts are asymmetrical across regions within the same country, affecting innovativeness, and point out propositions of how these asymmetries can affect subsidiary location-choice. We therefore produce a series of propositions of how these differences may affect international strategies of firms. We contribute to international business theory by proposing a model that integrates economic factors, institutional factors, innovativeness factors and geographic factors to explain within-country location choice.

Fundamentação Teórica
Themes such as subnational region variations (Dai et al., 2013), global cities (Goerzen et al., 2013) and microfoundations of spatial perception (Piscitello, 2011) have been explored in IB and EG theories. In an innovation perspective, national innovation systems have been studied (Nelson, 1993, Lundvall, 2007), as well as regional innovation systems (Cooke et al., 1997). In this paper, we build on Institutional Theory, Economic Geography and Innovativeness to propose a model to explain within-country international R&D subsidiary location choice.

Metodologia
Our paper is conceptual.

Análise dos Resultados
Clusters will be impacted by geographic factors, since firms will more likely agglomerate near natural resources and geographic centers, economic agglomeration will also become attractive, bringing more firms to agglomerate (Winters, 2013), this agglomeration will change institutional context by isomorphic behavior and by changing local policy, which will also change the innovativeness of the locality. This has important impacts for firms since clusters are important to the understanding of location choice (Kim & Aguillera, 2015).

Conclusão
Within-country location choice is a topic that is still understudied in International Business and should receive more attention. Differences amongst regions are due to several factors and all these factors contribute to a different outcome in location choice. It is important for researchers to not only consider border effects when studying location choice, but also the regional effects, as these seem to be highly neglected in literature. Country and border effects are very important, but we suggest that regional effects must also be taken on account.

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WITHIN-COUNTRY LOCATION CHOICE FOR R&D SUBSIDIARIES: Building a model

ABSTRACT

In this article we propose a model to explain location choice of R&D subsidiaries exploring the question of why R&D subsidiaries choose one region of a country over another to locate. Based on an institution-based view, Economic Geography and the theories of International Business, we propose that the institutional and economic asymmetries that exist across regions within a country are likely to generate differences in innovativeness. These differences will have an impact on international R&D subsidiary location choice. While IB theory usually observes country-level factors on the location choice of international R&D subsidiaries, a regional-level analysis is likely to better explain location choices based on the differences within an host-country innovativeness variations.

Keywords: Location choice, Regional differences, Innovation.

ESCOLHA DE LOCALIZAÇÃO DENTRO DO PAÍS PARA SUBSIDIÁRIAS DE P&D: Construindo um modelo

Neste artigo, propomos um modelo para explicar a escolha de localização de subsidiárias de P&D, explorando a escolha de uma região de um país em detrimento de outra para a localização. Com base em Teoria Institucional, Geografia Econômica e as teorias de Negócios Internacionais, propomos que as assimetrias institucionais e econômicas que existem entre as regiões dentro de um país geram diferenças na capacidade de inovação. Estas diferenças terão impacto na escolha de localização das subsidiárias de P&D. Enquanto as teorias de Negócios Internacionais normalmente observam fatores a nível nacional na escolha da localização das subsidiárias internacionais de P&D, uma análise a nível regional pode explicar melhor a escolha de localização.

INTRODUCTION

Research on innovation-driven multinational enterprises has been increasingly significant in International Business over the last decades (Cano-Kollmann et al., 2016). Meanwhile, location choice has also been highlighted as one of the key areas of International Business, (Kim & Aguillera, 2015). The institution-based theory in international business (Peng, 2002) brought the institutional context to the attention of International Business (IB) scholars. Measures as institutional distances (Berry et al., 2010) have been used to analyze location choice and governance factors at country-level. On the other hand, a stream of research defends that countries are not homogeneous amongst their internal regions, so the different environments inside a country will also play a role on international business alongside border differences (Beugelsdijk & Mudambi, 2013). In this article, we propose that institutions are mostly asymmetric within countries, varying between cities and regions due to different economic, social and governmental backgrounds. We propose that these differences will have an impact on the innovativeness of regions and thus will determine international R&D subsidiary location-choice. We contribute to international business theory by building a model to explain within-country location choice of Research and Development-driven subsidiaries.

The effects of the institutional context have been an integrated topic to international business ever since Hymer (1960) proposed that firms would have greater information costs when operating overseas. Institutional contexts have increasingly received attention in recent years (Kim & Aguillera, 2015), due to a focus on an institution-based view (Peng, 2002) especially in emerging countries (Peng et al., 2008). Studies have investigated the effects of the institutional context on acquisitions (Pinto et al., 2015; Dow et al., 2016), subsidiary performance (Brouthers, 2013; Brannen et al., 2014) and location choice (Ma et al., 2013; Lu et al., 2014) of international operations. Most studies assume nation-level characteristics for their analysis, meanwhile, some researchers of Economic Geography (EG) have pointed out that countries have asymmetries and discontinuities amongst their internal regions (Beugelsdijk & Mudambi, 2013). Themes such as subnational region variations (Dai et al., 2013), global cities (Goerzen et al., 2013) and microfoundations of spatial perception (Piscitello, 2011) have been explored in IB and EG theories. In an innovation perspective, national innovation systems have been studied (Nelson, 1993, Lundvall, 2007), as well as regional innovation systems (Cooke et al., 1997). In this paper, we build on Institutional Theory, Economic Geography and Innovativeness to propose a model to explain within-country international R&D subsidiary location choice.

Our objective in this paper is to propose that institutional and economic contexts are asymmetrical across regions within the same country, affecting innovativeness, and point out propositions of how these asymmetries can affect subsidiary location-choice. We therefore produce a series of propositions of how these differences may affect international strategies of firms. We contribute to international business theory by proposing a model that integrates economic factors, institutional factors, innovativeness factors and geographic factors to explain within-country location choice.

This paper is divided into four sections other than this introduction. First, we propose a literature review about institutional context, location choice, differences within countries and region innovativeness. We follow with a section of propositions and their arguments. In the discussion section, we propose the consequences to international R&D subsidiary location-choice. We finish this paper by providing research venues.

THEORY REVIEW

One of the key elements of international business is the border. Countries are essentially different from one another (North, 1990). Beugelsdijk and Mudambi (2013) have theorized that contexts may vary depending on home and host region since countries are not homogeneous within their borders. As the authors suggest, the nation-level effects are very important, but regional-level effects cannot be neglected. Geographical and economic differences among regions of the same country are very clear, in this paper, we propose that these differences, along with institutional and innovativeness differences will determine R&D subsidiary location choice. Hence we build our framework on Institutional Theory and Economic Geography.

Geographical discontinuities

The economic differences between regions of the same country can be interpreted by the Economic Geography. This stream of research intends to analyze the distribution and spatial organization of economy, the "locations of factors of production in space" (Krugman, 1991, p. 483). When paired with international business it analyzes the location aspect of Dunning's (1998) eclectic paradigm, using the concepts of "space" and "place" (Beugelsdijk et al., 2010; Beugelsdijk & Mudambi, 2013).

"Place" and "Space" are dominant concepts that can be used to understand the asymmetries among country regions as well as their impacts to the firms operating in these regions (McCann, 2011). "Place" is the specific geographic unit of analysis, not restricted to country level but also being representative of a specific region or even city, "Space" on the other hand, refers to the characteristics that generates variations and differences among places (Beugelsdijk & Mudambi, 2013). Hence, "Place emphasizes location-specific characteristics, while space emphasizes geographical distance and network characteristics" (McCann, 2011, p. 310).

The differences between regions of the same country are remarkable, as centers and peripheries form in most countries, presenting highly populated and economically larger centers in a region as well as rural peripheries in other regions (Krugman, 1991). Examples are abundant. São Paulo and Mexico City are two of the most populated cities in the world since the 1900's, being economic and social centers to their nations, while other regions of their countries as the Amazon rainforest and the Chihuahuan desert are majorly unpopulated. The same applies in developed countries, the United States has the bulk of its population living in the East Coast despite having fertile land in most of its territory (Krugman, 1991) and major employment and wage differences across regions (Winters, 2013).

Urban development is the main reason for regions to become centers or peripheries (Krugman, 1991). People agglomerate in cities due to urban benefits but are not agglomerated in only one city due to the urban costs, these benefits and costs grow with the scale of the city (Combes, 2011). Urban regions will also grow based on the consumption potential that they generate, thus attracting firms to explore the agglomeration (Glaeser et al., 2001).

Centers are created in countries due to the agglomeration of firms and resources (McCann, 1995). The reasons for the development of agglomerations of firms in countries are basically three. The concentration of firms from the same industry in a region offers more employment possibilities to workers with industry-specific skills, this agglomeration can also support the production of specialized inputs that are not tradable, and the possible information spillovers in agglomerations can increase performance of clustered firms (Krugman, 1991).

The differences between places in the same country have consequences to general population. Even some developed countries have large differences in in wages, labor force participation and employment across places in their territory (Winters, 2013). Some places are historically and culturally more prone to entrepreneurship (Andersson & Henrekson, 2014) and thus sprawling a higher concentration of firms and consequently, human capital. The differences in employment, labor force participation and wages are largely determined by the concentration of human capital, which acts as a positive externality due to intellectual spillovers (Winters, 2013).

The microfoundations of economic differences between regions can be traced to historical antecedents. The rate of entrepreneurship in a region is path-dependent and can be rooted to a random historical event or a natural asset (Andersson & Larsson, 2016). The process of development of a place as a center also seems to be circular. Firms will prefer to cluster due to information spillovers and the supply of industry-specific skilled workers (Krugman, 1991) which will generate human capital due to the development of the place (Winters, 2013). Human capital will attract firms and the agglomeration will grow until the costs of agglomeration overcome the benefits (Combes, 2011). Public policy also plays a role on the creation of agglomeration and centers, since policy-makers develop incentives to attract "talents" and lure industrial facilities (Combes, 2011).

Changes in the institutional framework impact the economic context and the economic context has an impact on society and politics, which will affect the institutional framework in a form that Giddens (1998) would identify as the institutions being a structure and society (as well as its economic members) being the agents in a struturactional view. Different economic and social developments that regions have will generate in different institutional contexts across regions, especially because regions vary greatly across each other in history (Combes, 2011), economy (Krugman, 1991; Andersson & Henrekson, 2014) and reasons that sparkled agglomeration (Winters, 2013). These differences across regions of the same country will generate variations of the institutional context, not only from center to periphery but from one center to another and one periphery to another periphery. This notion of institutional contexts being nested and delimited by places (cities, regions, countries), is present in institutional economic geography (Dixon, 2012).

Institutions

Countries are essentially different in many aspects, possessing different cultures, laws, ways of living and doing businesses (North, 1990). The institutional settings have a strong impact on how firms will operate, since they need to deal with legislation, their peers and what is expected of them (DiMagio & Powell, 1983). Hence, institutional framework may sometimes have a greater impact in the choice of FDI location than other classical explanations, as the economic environment (Kang and Jiang, 2012).

It is essential to understand the institutional systems in international business; moreover, this need is leading scholars towards an institutional-based view (Peng et al., 2006). As "Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction" (North, 1990, p. 3) firms need to take on account the institutional constraints, inefficiencies and particularities of a country in the decisions of internationalization (Chan & Makino, 2007). Consequently, the institutional context in which firms are immersed has decisive implications to the international strategies of firms (Kostova & Zaheer, 1999).

All firms are susceptible to the institutional pressures that may arise from their environment, which may lead to three kinds of isomorphism, mimetic (mimicking successful firms in search of success and legitimacy), coercive (bending through legislation pressures) and normative (professional norms and lore of doing things) (DiMagio & Powell, 1983). Firms need to cope with these pressures in order to deal with their environment and operate properly, many times engaging in isomorphic behavior (Hillman & Wan, 2005). This isomorphic behavior is higher in contexts where the institutional environment is very different from the one in the home-country, and lower where the environment is more similar with the home-country (Salomon & Wu, 2012). Evidences suggest that isomorphism can take decisive roles in the behavior of firms engaging in international business, commanding entry modes (Lu, 2002), financial decisions (Henisz, 2003), legitimacy-seeking behavior (Meyer et al., 2014).

There are countries where the formal institutions are highly enforced while others will have very loose rule of law, meanwhile, some countries have very assertive informal institutions contrasting others which are dominated by informal constraints (North, 1990). The lack of functioning institutions was later labeled as institutional voids, referring to the difficulties of guaranteeing property rights, information problems, imperfect contract enforcement and flawed regulatory structures (Khanna & Palepu, 2000). Hence, in countries where the institutions are weak and uncertain, firms will have to deal with these uncertainties by mitigating the risk, for instance, Demirbag et al. (2010) point out that, when entering in countries that have high ethical-societal uncertainties, firms will more often opt for a joint-venture with a local partner in order to better understand the environment and reduce uncertainties.

A key concept of institutional theory is legitimacy. Legitimacy is conferred by social actors (Ashford & Gibbs, 1990) and is defined as the congruency between the organization and the values and actions expected by the social actor (Pfeffer & Salancik, 1978). Firms will look for legitimacy primarily from two social actors, the government regulators (which are represented by legislation and legal definitions) and the general public (Deephouse, 1996). There are three primary forms of legitimacy, pragmatic (which relies upon audience self-interest), moral (narrative approval) and taken-for-grantedness (Suchman, 1995).

Great part of the isomorphic behavior of firms can be explained by the search for legitimacy (DiMagio & Powell, 1983). Firms will mimic more traditional (and thus more legitimate) firms, will abide to sector norms and government legislations in order to be considered legitimate (Deephouse, 1996). Hence, the search for legitimacy can largely influence strategic choices of the firm (Pfeffer & Salancik, 1978).

Researchers have pointed some strategic choices that contribute to firm legitimacy. Dacin et al. (2007) pointed out that firms will engage in strategic alliances in order to secure legitimacy by associating with firms that are considered more legitimate. Deephouse (1996) proposes that firms will engage in isomorphic behavior looking to become more legitimate, and tested this assumption, building an empirical bridge by proving that isomorphism brings legitimacy. Bitekine and Haack (2015) propose that firms will have strategic responses to institutional change, seeking legitimacy.

Local innovativeness

Countries have different settings regarding innovation incentives and support, wich result in different innovativeness environments, largely due to different National Innovation Systems (or NIS) (Lundvall, 2010). National innovation systems are formed by public

policies and firms initiatives that guide and support innovation efforts in a country (Nelson, 1993). The innovation system has two main dimensions, economic and institutional (Lundvall, 2010). The economic side of national innovation systems rely on the firms that act in the country and how they approach and fund innovation. On the other hand, the institutional dimension is determined by public policies, as institutional pressures (legal, cultural, isomorphic, legitimacy) that drive the innovation in the country.

Research regarding national innovation systems has gone hand in hand with policy-making in countries since its beginnings (Lundvall, 2007). Historically, the innovativeness of a nation has been studied as a factor of international competitiveness (Mowery & Oxley, 1995). Hence, there are three factors that must be taken on account when analyzing national innovation systems. The "nation", the "innovation" and the "system" (Lundvall, 2007).

The main focus of national innovation systems is at nation-level, but some research streams have considered other approaches (Lundvall, 2007). Although broadly debated, the innovation system can be different depending the region inside the country that is being analyzed, not being homogeneous in the whole territory (Cooke, 1997). Economic sectors also can develop their own innovation systems, based on the norms and practices inside the sector (Breschi & Malerba, 1997). These evidences point out that the innovation system (or innovation systems) is not uniquely determined by the borders of a country, but can interchange and differ inside the country and throughout economic sectors.

The development of innovation is highly institutional. As Etzkowitz and Leydesdorff (2000) propose, there must transactions and the building of networks between government, industry and universities in order to develop a competitive and sustainable innovation environment, this union is called the triple-helix. While national innovation systems will build on the proposition that the industry must drive innovation (Nelson, 1993), the triple-helix approach will propose that innovation must be driven by the universities (Etzkowitz & Leydesdorff, 2000).

The innovativeness of a country is highly determined by its culture. Mueller and Thomas (2001) suggest that countries with low uncertainty avoidance (one of Hofstede's (1983) culture dimensions) will have more innovative entrepreneurs than countries with a high uncertainty avoidance. Since there are evidences that culture has variations within countries, from region to region (Hofstede et al., 2010), it is possible to conclude that innovativeness can be different from one region of the country to another.

Consumers also have an impact on the innovativeness. The innovation of firms in a country is influenced by the market conditions and consumer demands in that country (Steenkamp et al. 1999). Some countries are more receptive to innovation than others, due to cultural and economic reasons (Tellis et al. 2003). Hence, when consumers demand highly innovativeness products and accept innovations more easily, firms will perform more efforts in innovation, contributing to the innovativeness of the country or region they operate in.

The analysis of the innovation ambient at regional level has been studied as Regional Innovativeness. Regional innovativeness can be measured by the density, specifically the number of patents per capita, of a determined region (Beugelsdijk, 2010). These regional differences will impact the agglomeration of firms that search for innovative capabilities. Locations with high regional innovativeness will become attractive for firms and the agglomeration of firms will likely form a cluster, which is defined by Porter (1998, p. 1) as "critical masses—in one place—of unusual competitive success in particular field".

Location choice

Location, for firms, is an issue more important than ever (Porter, 1998). Although Dunning (1998) has perceived location as an underdeveloped and neglected factor in international business, the field has received considerable attention over the last decades. Works as Ma et al. (2013), Lu et al., (2014) and Kim and Aguillera (2015) have shown that the location issue is as important today as it was on the end of the 20th century.

Location choice has a link to many International Business sub-areas because it is a central concept to any international strategy decision (Dunning, 1998). In recent research, location choice has been tightly linked to Institutional Theory and Economic Geography, and has recently given more attention to issues of Emerging Markets and Strategic Asset Seeking behavior or firms (Kim & Aguillera, 2015). Most papers that analyze location choice will seek to understand what makes a firm choose a country over another (Beugelsdijk & Mudambi, 2013).

At a risk of oversimplification, firms choose to internationalize to countries that have shorter institutional distances in order to face less liabilities of foreignness (Berry et al., 2010). These distances are usually calculated from one country to another, regardless of where in the target country the subsidiary will be installed (Beugelsdijk & Mudambi, 2013). However, some researchers have called for the attention to taking on account the specific characteristics of the location where the subsidiary will operate (city or region) rather than just the effects of border (see Dai et al. 2013; Goerzen et al. 2013; Piscitello, 2011). The basic assumption is that the border effects (the country-level distances and characteristics) are important, but the micro-level characteristics of the location should not be completely neglected (Beugelsdijk & Mudambi, 2013).

Firms are driven to locations by their strategy (Lamin & Livanis, 2013). Although most research treat location choice as a matter of the target location (Alcácer et al. 2013), the characteristics of firm or subsidiary also has some influence on location choice. For instance, Doh et al. (2008) propose that location choice will be different for different types of offshoring services (interactive, repetitive or innovative). Location choice not only acts as strategy but also has consequences for firms, since depending on the location firms may use different entry modes (Agrawall & Ramaswami, 1992).

The industrial organization and competitive environment also have effects on location choice. Firm rivalry can affect location choice, since firms will sometimes enter markets to limit their rivals' growth potential and to increase their competitive advantages (Alcácer et al. 2013). Firms, especially innovation-driven multinational companies will also enjoy effects of knowledge connectivity when co-locating with other firms in specific locations (Cano-Kollmann et al., 2016). Firms will co-locate in clusters of specific sectors or industries looking forward to potential knowledge spillovers (Lamin & Livanis, 2013).

Theory suggests that firms will prefer centers rather than peripheries inside a country in order to reduce costs when locating. Firms will be reluctant to locate in places that would represent high governance costs and information costs. Hence, travel time from host to target country is an important issue in defining location, since low travel time will reduce governance costs (Boeh & Beamish, 2012). Locating in large centers (or even global cities) is an alternative for firms to reduce information costs and the liabilities of foreignness, since these global cities grant firms an ambient of global interconnectedness, cosmopolitanism, and abundance of advanced producer services.

PROPOSITIONS ON R&D SUBSIDIARY INTRA-COUNTRY LOCATION CHOICE

As seen in the past section, there are several factors that determine location choice. In this section, we argument propositions that together construct a model to explain why firms will choose a region over another in the same country in order to locate their R&D intensive subsidiaries. We propose that there are four major factors that will determine this choice. These factor are highly correlated and interplay with each-other, since they may be antecedents and outcomes of one another.

Geographic factor

The geographic factor is determined by characteristics specific to the region in a geographic sense. Regions have been distinct from each other due to several historic and geographic differences (Andersson & Larsson, 2016). Regions in the same country may have very different natural settings and these differences will result in a different environment for the society and firms operating in these regions (Krugman, 1991).

Natural resources are important to R&D subsidiaries to develop their products and locating in regions that have easier access to these natural resources reduces costs. The effect of natural resources on the economic development of regions has been historical (Andersson & Larsson, 2016). On the other hand, regions with specific natural resources will have suppliers and other firms that are based on that resource, offering a better supply pool (Krugman, 1991). Hence, we propose that when a region has a specific natural resource that another region does not, a firm that seeks to use that natural resource will chose to locate near the font of that resource in order to have cheaper and easier access to the natural resource.

Proposition 1. International R&D subsidiaries are more likely to choose locations within a country that have specific natural resources needed for their operations.

Countries will have centers and peripheries, centers being social and economic hubs that connect the regions to other regions of the country and the country to other countries (Krugman, 1991). Centers result of the agglomeration of firms and resources (McCann, 1995). These centers are generally large cities that combine scale and urban benefits (as well as liabilities) that are characteristic to these cities (Combes, 2011). These centers attract firms to explore the agglomeration and its advantages (Glaeser et al., 2001). The agglomeration of firms in these centers will produce an environment that leverages the human capital due to intellectual spillovers (Winters, 2013). On the other hand, as peripheries are less interconnected than centers (Goerzen et al., 2013) and hence pose more time of travel from home country to host country which increases governance costs (Boeh & Beamish, 2012). Firms will choose economic centers or locations close to economic centers due to human capital that is more present in these centers and governance costs, as both factors are important for R&D subsidiaries, that would be higher in peripheries due to high travel time. Hence, we propose that firms will choose to locate their R&D subsidiaries in regions that are centers or close to centers rather than choosing peripheries.

Proposition 2. International R&D subsidiaries are more likely to choose locations within a country that are centers or close to centers.

Economic factor

Economic factors are highly influenced by geographic and historical determinants (Andersson & Larsson, 2016), but also play a major role on location choice. Regions of the same country with very similar natural conditions have very different economic and social

settings (Krugman, 1991). Thus, we expect that firms will also observe the economic factor when deciding which region of a country they will locate their R&D subsidiaries.

Clusters, or agglomerations of firms possess some important advantages (Porter, 1998), and these advantages make regions that possess clusters more suitable for location choice than others. Previous research has proven that clusters can reduce liabilities of foreignness and also bring potential knowledge spillovers (Lamin & Livanis, 2013). Regions with high agglomerations of firms will also possess more suitable suppliers and a greater concentration of human capital dedicated to the specific sector that most firms of the agglomeration belong to (Winters, 2013). Hence, we expect that firms will more likely choose regions that have some agglomeration of firms in the same sector, or even related sectors, due to technological spillovers, human capital and abundance of suppliers.

Proposition 3. International R&D subsidiaries are more likely to choose locations within a country that have agglomerations of firms from the same sector.

Regions have different consumer profiles (Glaeser et al. 2001). Some regions have consumers that are more open to innovations and demand more innovative products while other regions are less likely to adopt innovation (Tellis et al. 2003). Hence, the innovativeness of a region will be, in part, determined by the firms that operate in that region but also by the market, the consumer that accepts or not the innovativeness of the local firms' products (Steenkamp et al., 1999). Firms will prefer to locate their R&D subsidiaries in regions that have consumers that prefer innovative products when they plan to sell these products in the target market.

Proposition 4. International R&D subsidiaries are more likely to choose locations within a country that have consumers that are more open to innovative products.

Institutional factor

Institutional contexts are different from one region to another, along with geographic and economic contexts (Beugelsdijk & Mudambi, 2013). We propose that will observe the regional aspects just as national aspects when deciding the location of an international subsidiary. Regions have different institutional factors regarding innovation, especially, policy-making can be different amongst regions from the same country supporting innovation initiatives, talent formation and attraction (Combes, 2011). On the other hand, firms will avoid institutional environments that pose threats to their operations through high criminality, low rule of law and low protection of property rights, labeling these environments as "weak" institutional contexts (Khanna & Palepu, 2000). Firms will choose intranational contexts that are more suitable for their operations (Beugelsdijk & Mudambi, 2013). R&D firms will enjoy better institutional settings regarding innovation and need protection of laws in order to avoid copycatting and technology theft, hence, we propose that firms will choose to locate in regions that have legal supports regarding innovation initiatives; just as well, firms will avoid locations where there have problems with rule of law (less rule of law than the average of the country) and low intellectual protection.

Proposition 5. International R&D subsidiaries are more likely to choose locations within a country that have institutional systems that will support R&D and will not hinder the operations of the firm.

Firms often seek legitimacy in their international operations according to the institutional contexts they internationalize to (Meyer et al., 2014). Firms need to abide to the

actions expected by the social actors to achieve more legitimacy (Ashford & Gibbs; Pfeffer & Salancik, 1978). One of the major alternatives for firms to achieve legitimacy is to engage in isomorphic behavior (DiMagio & Powell, 1983; Deephouse, 1996). We propose that isomorphic behavior will have an effect over region location choice from R&D subsidiaries, especially in the case of firms that do not already have legitimacy in the country. For instance, a new technology firm entering the United States will locate their R&D subsidiary in the Silicon Valley, not only due to cluster spillovers of technology and human capital, but also because of isomorphism, since technology firms from the Silicon Valley will be perceived as more legitimate in their sector than in other parts of the country. Hence, we propose that firms will co-locate due to mimetic and normative isomorphism, in search of legitimacy.

Proposition 6. International R&D subsidiaries are more likely to choose locations within a country that are common to firms in their sector due to isomorphic pressures.

Innovation factor

Some regions of a country are more innovative than others (Cooke, 1997). We expect that R&D subsidiaries will rather choose locations that have more innovativeness than other regions. Innovativeness is highly determined by culture (Mueller and Thomas, 2001), and culture is a national factor that has some differences amongst regions (Hofstede et al. 2010). hence, we propose that firms will choose locations within a country to locate their R&D subsidiaries where there is a culture that values and supports innovation, most likely as Mueller and Thomas (2001) propose, have a low uncertainty avoidance trait.

Proposition 7. International R&D subsidiaries are more likely to choose locations within a country that have cultural traits that support and value innovation.

Innovative in a region will be shaped not only by firms, economic factors and culture,, but also by the universities that operate in that region. Universities are the base of the triple-helix perspective (Etzkowitz & Leydesdorff, 2000) and leverage the local human capital skills which are of uttermost importance for firms, especially in R&D (Winters, 2013). Hence, universities produce human capital by training researchers and produce technology that, through partnerships, can be used by the firms locating near universities that focus on R&D.

Proposition 8. International R&D subsidiaries are more likely to choose locations within a country that are closer to universities, especially universities that support research and development.

Our integrated model is presented on figure 1:

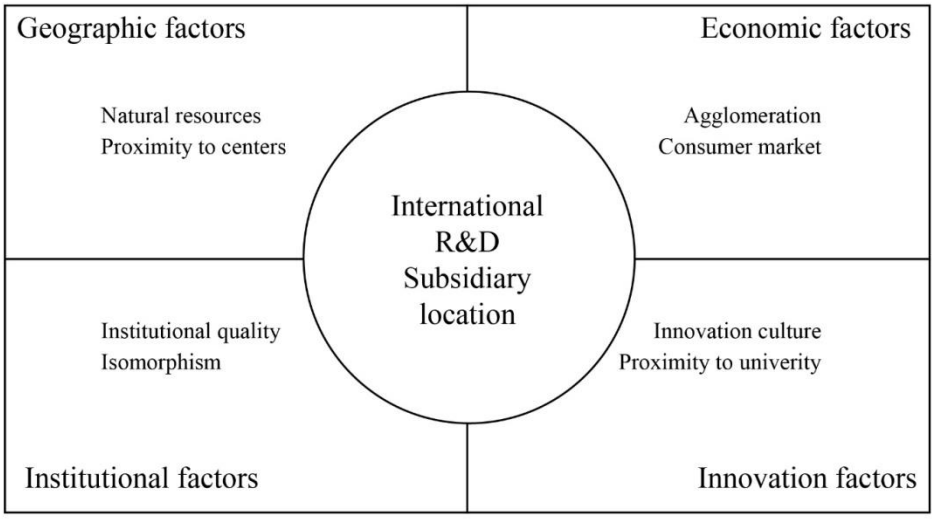

Figure 1: Integrative model of within-country international R&D subsidiary location choice.

Source: The authors (2016).

DISCUSSION

In this article, we discussed the factors that determine location choice of R&D subsidiaries in International Business. We specifically build a model of four determinants through eight propositions that will explain international R&D subsidiary location choice within regions of the same country. The main motivation for this study is the call from Beugelsdijk and Mudambi (2013) for a more detailed explanation of the differences between regions of the same country and their impact on location choice. Most studies, for instance Dow et al. (2016) Brouthers (2013) Brannen et al. (2014) and Lu et al. (2014) have observed the effects of country-level factors in performance and location choice of firms. We contribute to International Business theory by providing a series of explanations that, together may explain why firms will pick one region over the other for their R&D subsidiaries.

Location choice is an issue that has lined International Business studies for the last decades (Kim & Aguillera, 2015). Although highly important, location had been an underdeveloped area in IB (Dunning, 1998). We follow Beugelsdijk and Mudambi (2013) and highlight the importance of not looking only at border factors, but also inner-border factors. This is a bridge from Economic Geography to International Business that is highly understudied and deserves more attention from researchers of both areas.

Our study brings a perspective for researchers to interpret factors that make firms decide for one region over the other. Past research has greatly debated the cluster effects over international subsidiaries (Lamin & Livanis, 2013). But differences in geographic centrality, institutional factors and innovativeness of the region are still very understudied topics. Our study suggests that firms will not only choose a location based on one factor or another but on a construct of four factors, geographic, economic, institutional and innovational. Hence, we expect this paper to assist researchers to observe inner-country location choice in an integrative perspective rather than an isolationist one.

Our paper brings some insights to clustering and agglomeration. As Porter (1998) has highlighted, clusters are nowadays vary important in business strategy, and our perspective

may bring some insight not only to subsidiary location choice, but also to the formation of clusters. Clusters will be impacted by geographic factors, since firms will more likely agglomerate near natural resources and geographic centers, economic agglomeration will also become attractive, bringing more firms to agglomerate (Winters, 2013), this agglomeration will change institutional context by isomorphic behavior and by changing local policy, which will also change the innovativeness of the locality. This has important impacts for firms since clusters are important to the understanding of location choice (Kim & Aguillera, 2015).

Our contributions have also consequences to the development of regions. As firms choose one region over another, there will be agglomeration of certain types of firms in certain types of regions. This has the potential to change the settings of these regions, as well as represent important challenges to policy-makers to adapt local laws in order to become attractive and better suit the agglomerations of firms that will generate in their regions.

Limitations

There are limitations to our logic, which are related to the basic concepts that we use. As explained before, there are high correlations between our factors in our model. Geographic determinants will influence economic factors which will influence institutional factors which will therefore make a region more innovative or less. Hence it is not possible to isolate any of the factors here presented in order to comprehend location choice. Future research can build on these facts and through empirical models using good control variables could bring light to the individual effects of our model.

The second limitation is due to bounded rationality. Simon's (1965) concept of bounded rationality proposes that executives will not be rationally able to think of all factors regarding a decision. Our model is based in several factors that may not be taking on account by managers when deciding location choice, but will have an impact as a whole. Hence, it is not possible to generalize that all these factors will be considered by decision-makers, but the satisficing of some of these factors will make it possible to determine within-country location choice.

CONCLUDING REMARKS

Within-country location choice is a topic that is still understudied in International Business and should receive more attention. Differences amongst regions are due to several factors and all these factors contribute to a different outcome in location choice. It is important for researchers to not only consider border effects when studying location choice, but also the regional effects, as these seem to be highly neglected in literature. Country and border effects are very important, but we suggest that regional effects must also be taken on account. The use of region-level data could bring some important contributions to International Business both in theory and in empirical tests, as independent and control variables.

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