INTRA-REGIONAL DIVERSIFICATION AND INDIVIDUAL SUBSIDIARIES

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ABSTRACT

This study examines the relationship between intra-regional geographic diversification of a multinational enterprise (MNE) and the performance of subsidiaries in the region. Most empirical studies on regional diversification as well as international diversification have examined the effect of an MNE's geographic diversification on the performance at the entire MNE level. How intra-regional diversification affects individual subsidiaries within the region has not been explored. Using the panel dataset consisting of MNEs' investments in five geographic regions, this study finds that subsidiaries having more expatriate managers receive larger benefit from intra-regional diversification. It also finds that wholly owned subsidiaries receive larger benefit from regional diversification than joint ventures with local firms. In addition, this study shows that the relationship between regional diversification and subsidiary performance takes a U-shaped relationship. These results indicate that under which conditions, subsidiaries in the region are positively or negatively affected by an MNE's intra-regional diversification. They also make us understand the unexplored process from regional expansion to individual subsidiaries' performance to the MNE-level performance.

Keywords: **multinational corporation, regional diversification, regional expansion, subsidiary performance**.

INTRODUCTION

Countries in a geographic region tend to share similar characteristics (Qian, Li, and Rugman, 2013). Culture and language, for example, can be similar among countries in the same region (Dow and Karunaratna, 2006; Harzing and Pudelko, 2016; Ronen and Shenkar, 2013). In addition, regional economic integration such as EU or ASEAN may foster institutional similarity and integration throughout the region. These similarities within a region can lower cost that accrues when multinational corporations (MNEs) expand to other countries in the same region (Qian, Li, Li, and Qian, 2008). Because of geographic and institutional similarities, subsidiaries in a region can connect each other and share knowledge and resources with relatively low cost (Phene and Almeida, 2008). In comparison, diversification beyond a region may incur additional cost owning to a lack of institutional similarities and integration and geographic proximity (Qian et al., 2013). Thus, intra-regional expansion may influence the performance of MNEs in a different manner from expansion beyond a region (Qian, Khoury, Peng, and Qian, 2010).

Several studies have investigated the effect of intra-regional expansion on MNE performance (Qian et al., 2008; Qian et al., 2010). However, they have used performance of the entire MNE, such as an MNE's ROA, as a dependent variable (Banalieva, Santoro, and Jiang, 2012). Intra-regional expansion could directly affect individual subsidiaries within the region (Arregle, Miller, Hitt, and Beamish, 2013; Banalieva and Dhanaraj, 2013). Accumulated impacts on individual subsidiaries would eventually affect the performance of the entire MNE. Every subsidiary may not be affected in the same manner by regional diversification. For some subsidiaries, benefit from regional expansion outweighs its cost, while for other subsidiaries, the cost outweighs the benefit. However, previous studies have not investigated how the performance of individual subsidiaries is affected by an MNE's intra-regional expansion. Exploring conditions under which individual

subsidiaries are positively or negatively affected by regional expansion will advance our knowledge as to international and regional diversification. Thus, this study investigates the relationship between intra-regional diversification and the performance at the subsidiary level. In doing so, it will explore the unknown process from regional expansion to individual subsidiaries' performance to the MNE-level performance.

This study is organized as follows. The next section reviews the literature on internationalization and regionalization and their effect on firm performance. Then, the hypotheses predicting the relationship between regional diversification and subsidiary performance are developed, followed by the description of the dataset and the analytical method. After a report on the results of the empirical analysis, implications of this study, along with its limitations, are discussed.

LITERATURE REVIEW

Previous studies on international geographic diversification have implicitly assumed that MNEs establish a network of globally dispersed subsidiaries (Rugman and Verbeke, 2004). They have contended that MNEs benefit from geographically expanding their businesses (Bobillo, López-Iturriaga, and Tejerina-Gaite, 2010; Hitt, Tihanyi, Miller, and Connelly, 2006; Wang, Chen, and Chang, 2011). Advantages of international diversification are derived from resource exploitation, scale economies, access to local resources, learning, and risk reduction (Barkema and Drogendijk, 2007; Contractor, Kundu, and Hsu, 2003; Hennart, 2007; Hitt et al., 1997; Li and Yue, 2008; Wang et al., 2011). Recent studies have contended that MNEs have a propensity to expand regionally rather than globally (Collinson and Rugman, 2008; Rugman and Verbeke, 2004). They

tend to concentrate their business activities within a region, develop region-bound firm-specific assets, and generate sales from the region (Arregle et al., 2013; Collinson and Rugman, 2008; Rugman and Verbeke, 2004; Verbeke and Kano, 2016). The arguments about intra-regional expansion have directed researchers to investigate antecedents, strategies, and outcomes of MNEs' regional activities (Delios and Beamish, 2005; Hitt et al., 2006; Osegowitsch and Sammartino, 2008; Verbeke and Kano, 2016).

Studies on regional diversification have argued that MNEs' resources are differentiated between location-bound and non-location-bound (Grøgaard, 2012; Rugman and Verbeke, 2008). Although geographic diversification is considered to benefit MNEs, the scope of MNEs' diversification is often constrained by the limited transferability of their firm-specific assets (Jensen and Szulanski, 2004; Kostova, 1999; Rugman and Verbeke, 2004). Firm-specific assets that have been developed in either the home country or the host country are compatible with and more valuable under institutional settings of the country (Brouthers, Brouthers, and Werner, 2008; Kostova, 1999). Such firm-specific assets may be relatively easily transferred to other countries that have similar institutional settings to the country where the assets have been originally developed (Jensen and Szulanski, 2004; Kostova, 1999). These firm-specific assets are considered location-bound and may not be able to yield the desirable level of economic rents in countries outside of a certain geographic scope. These arguments imply that location-bound firm-specific assets enable MNEs to expand within a region but simultaneously constrain their businesses within the region. In addition, when entering countries in the same region, MNEs may not encounter serious liabilities of foreignness because of similarities in institutional environments within the region (Arregle, Beamish, and Hébert, 2009; Arregle, Miller, Hitt, and Beamish, 2016; Qian et al., 2013). Institutional similarities lower costs for communication and cooperation between sister

subsidiaries in the region, which may orient MNEs to intra-regional expansion (Arregle et al., 2013; Qian et al., 2008).

Drawing on the theoretical development of regional expansion, several studies have investigated the way in which intra-regional expansion affects firm performance (Banalieva and Dhanaraj, 2013; Barkema and Drogendijk, 2007; Qian et al., 2008; Qian et al., 2010; Qian et al., 2013). Qian et al. (2010), for example, found that intra-regional diversification has a positive effect on firm performance, using the data consisting of MNEs from U.S. They posited that similarities and spatial proximities within a region reduce the cost of coordination, communication, and knowledge sharing (Qian et al., 2010). Similarly, Qian et al. (2013) found a positive relationship between intra-regional diversification and firm performance, using the data of Canadian firms. They also found that the relationship between the two constructs is mediated by the costs of doing business across countries within a region (Qian et al., 2013). Barkema and Drogendijk (2007) examined FDI of Dutch firms in Central and Eastern Europe (CEE) and found that the firm's experience in CEE has a positive impact on subsidiary performance. Their results indicate that firms benefit from prior experience in the region when entering other countries in the same region (Barkema and Drogendijk, 2007). In comparison, Banalieva and Dhanaraj (2013) focused on the home-region orientation of MNEs but found a non-significant relationship between the home-region orientation and firm performance (Banalieva and Dhanaraj, 2013). Banalieva, Santoro, and Jiang (2012) used the data of MNEs from U.S., Europe, and Japan and showed that the benefit of expansion within the home region depends on the degree of regional economic integration.

Review of previous studies on the relationship between regional diversification and firm performance shows that results of empirical studies are mixed, suggesting that the impact of diversification within a region on firm performance needs to be further explored. Most previous

studies have examined a linear relationship between regional expansion and firm performance (Barkema and Drogendijk, 2007; Qian et al., 2010; Qian et al., 2013). In comparison, a number of studies on the international diversification and firm performance link have proposed and examined a non-linear relationship between the two constructs such as a U shape or an S shape relationship (Bobillo et al., 2010; Chang and Wang, 2007; Contractor et al., 2003; Wang et al., 2011). Although regional diversification can be different from international diversification in terms of geographic, institutional, and socio-cultural proximity (Banalieva and Dhanaraj, 2013; Phene and Almeida, 2008; Qian et al., 2010), it is worth applying findings from studies on international diversification and examining a curvilinear relationship between intra-regional diversification and firm performance.

In addition, most previous studies have used performance at an entire MNE level to investigate the effect of intra-regional diversification on firm performance (Banalieva and Dhanaraj, 2013; Banalieva et al., 2012; Qian et al., 2010; Qian et al., 2013). They have used, for example, ROA and ROS of an entire MNE as a proxy for firm performance. Except a few studies (e.g., Barkema and Drogendijk, 2007), performance at a subsidiary level has not been incorporated into empirical studies. Intra-regional expansion can strongly affect subsidiaries operating in the region because geographic, institutional, and socio-cultural proximity within a region reduces the costs of communication, information processing, and knowledge transfer between subsidiaries within the region (Banalieva and Dhanaraj, 2013; Kostova, 1999; Phene and Almeida, 2008; Qian et al., 2010). However, subsidiaries with certain characteristics or under a certain condition may benefit from these positive effects derived from cooperation with sister subsidiaries within the region, whereas other subsidiaries under different conditions may enjoy a limited benefit. Subsidiaries that are positively affected by regional expansion positively contribute to the performance of an entire

MNE. Previous studies, however, have not explored which conditions increase the positive or negative effect of regional diversification on individual subsidiaries. Exploring which subsidiaries are positively or negatively affected by regional expansion will help understand the unexplored process from reginal diversification through subsidiary performance within the region to the performance of the entire MNE level.

HYPOTHESES

Subsidiaries are encountered by the liabilities of foreignness in host countries (Casillas and Moreno-Menéndez, 2014; Yildiz and Fey, 2012). To mitigate the liabilities of foreignness, they need to acquire a wide range of local knowledge as to regulations, culture, business practices, and markets of the host country. Subsidiaries also adapt their practices to the host country to gain legitimacy in the country (Contractor et al., 2003; Deephouse and Carter, 2005; Yildiz and Fey, 2012). The cost derived from activities to overcome the liabilities of foreignness can be substantial. Each subsidiary needs to be engaged in the initial learning and adaptation process in its host country. That limits a subsidiary's capacity to transfer its knowledge to sister subsidiaries in the same region. In addition, an MNE's regional pool of knowledge and resources may not be rich in the stage of the lower degree of regional expansion. Consequently, when the degree of an MNE's intra-regional diversification is low, the benefit from regional expansion may not outweigh the cost to overcome the liabilities of foreignness.

When the degree of regional diversification exceeds a certain level, several subsidiaries have accumulated a certain level of local knowledge, come to understand how to operate in the host country, and developed resources by their own (Hutzschenreuter and Voll, 2008). Due to

similarities of institutions among countries in the same region, the transfer of knowledge and practices developed by the subsidiary to sister subsidiaries in same the region may be facilitated (Arregle et al., 2013; Jensen and Szulanski, 2004; Kostova, 1999; Xie, Zhao, Xie, and Arnold, 2011). The knowledge and organizational practices transferred from sister subsidiaries may be applicable to and compatible with a focal subsidiary's host country and help the focal subsidiary mitigate the liability of foreignness and compete with local rivals (Arregle et al., 2013; Kostova, 1999; Phene and Almeida, 2008; Rugman and Verbeke, 2004). Resources transferred from sister subsidiaries may also work as complementary assets; combining a focal subsidiary's resources with those from sister subsidiaries may enhance the focal subsidiary's competitiveness in its host country (Phene and Almeida, 2008; Qian et al., 2008). In addition, the operations of subsidiaries in the region may be integrated to manufacture products for the region (Bartlett and Ghoshal, 1998; Rugman, Verbeke, and Yuan, 2011). Operational integration within the region may enable subsidiaries to benefit from economies of scale (Contractor et al., 2003; Hennart, 2007). These arguments imply that after exceeding a certain degree of regional expansion, subsidiaries can benefit from regional diversification. From these arguments, the following hypothesis is proposed.

Hypothesis 1: The relationship between regional diversification and the performance of the subsidiary in the region has a U-shaped relationship.

Expatriate managers from the parent firm tend to better understand the strategies of the parent firm, including regional strategies of the MNE (Tan & Mahoney, 2006). Having understood the regional strategies and the expected roles of the subsidiary, they fulfill the subsidiary's task to implement the regional strategies. Expatriate managers may also work as a conduit for

communication and information sharing with sister subsidiaries in the same region (Harzing 2001). A profound understanding of the MNE's organizational culture and regional strategies by expatriate managers may facilitate the communication and cooperation with sister subsidiaries. As the number of subsidiaries in the region increases, communication and cooperation with sister subsidiaries become more complex and costlier. When a larger number of expatriate managers are assigned to the subsidiary, it may be able to overcome an increase in communication cost and realize effective cooperation with sister subsidiaries.

In addition, expatriate managers work to transfer knowledge and resources from the parent firm to the subsidiary (Singh et al., 2019). They may also work to obtain knowledge from sister subsidiaries because of their function as an information and communication conduit (Harzing, 2001). As the degree of regional diversification increases, the opportunity to access knowledge and resources owned by sister subsidiaries increases. Subsidiaries with more expatiate managers may be able to take advantage of the opportunity through effective communication and information sharing with sister subsidiaries. Effective cooperation with sister subsidiaries and access to resources owned by other subsidiaries in the region may improve the focal subsidiary's performance.

Hypothesis 2: The number of expatriate managers positively moderates the relationship between regional diversification and the performance of the subsidiary in the region, such that the performance of subsidiaries having more expatriate managers improves with regional diversification.

A large number of subsidiaries are joint ventures with local firms. In addition, they often have more than one local partners (Gong, Shenkar, Luo, & Nyaw, 2007). When local firms are involved in a subsidiary as a joint venture partner, benefits from regional diversification to the subsidiary may lower. Local partners mitigate environmental uncertainty and liabilities of foreignness that subsidiaries experience in the host country, using their local knowledge and experiences (Brouthers, Brouthers, and Werner, 2008; Sartor & Beamish, 2018). On the other hand, they can be opportunistic and increase behavioral uncertainty perceived by MNEs (Gong et al., 2007; Yiu & Makino, 2002). Substantial time and efforts might be spent on monitoring local partners, which sacrifices time and efforts to cooperate with sister subsidiaries in the same region. In addition, speed of decision-making may slow down because local partners can have different objectives and interests to be achieved through the participation in the joint venture (Demirbag et al., 2010). They may be more interested in business activities inside the host country, rather than cooperation with sister subsidiaries. Accordingly, local partners may limit the benefits from intra-regional diversification and cooperation with sister subsidiaries. This negative effect may increase with the number of local partners involved in the joint venture (Gong et al., 2007). Thus, the following hypothesis is proposed.

Hypothesis 3: The number of local firms involved in the subsidiary negatively moderates the relationship between regional diversification and the performance of the subsidiary in the region, such that the performance of subsidiaries having more local partners lowers with regional diversification.

METHOD

Sample and data collection

The hypotheses were tested using a sample that consists of foreign direct investments (FDI) of Japanese listed firms. Japanese firms are one of major sources of FDI and operate subsidiaries in a number of regions. Thus, a sample consisting of Japanese firms produces an appropriate setting to investigate a relationship between regional diversification and subsidiary performance.

Following previous studies, this study views a region as a group of countries with physical continuity and proximity (Arregle et al., 2009; Arregle et al., 2013; Banalieva and Dhanaraj, 2013). Countries were divided into regions based on the geographic region classification by the United Nations (Banalieva and Dhanaraj, 2013). Based on the classification, host countries were allocated to one of eight regions, which consist of Latin America, Northern America, Eastern Asia, South-eastern Asia, Western and Southern Asia, Eastern Europe, Western Europe, and Oceania. Northern America and Oceania were excluded from the analysis because the two regions contain only two host countries of Japanese FDI (the US and Canada, and Australia and New Zealand, respectively). Eastern Asia was also excluded from the analysis because FDI of Japanese firms is highly concentrated on China. Because Eastern Asia is the home region of Japanese firms, dropping Eastern Asia enables this study to analyze the effect of intra-regional diversification outside the home region, and the possible bias derived from the inclusion of both the home region and host regions into the analysis can be reduced. Therefore, subsidiaries operating in the five regions were included in the analysis.

The primary data source for this study was the CD-ROM version of the *Overseas Japanese Companies Data* (*Kaigai Shinshutsu Kigyo Soran* in Japanese) compiled by *Toyo Keizai Shimpo*. Using the database, this study produced the balanced panel dataset whose observation period is

from 1997 to 2011 with two-year intervals. The dataset included both manufacturers and non-manufacturers. The data at the foreign subsidiary level were primarily collected from the *Overseas Japanese Companies Data*, while the data at the parent firm level were primarily collected from the *Nikkei NEEDS* database compiled by *Nihon Keizai Shimbun*. Removal of observations with missing data produced the final sample consisting of 4,792 firm-year observations.

Measures

The dependent variable of this study is the performance of a foreign subsidiary. Financial data of profitability, such as return on asset or return on investment, are generally not disclosed at the subsidiary level (Chang, Chung, and Moon, 2013). Using the data available in the *Overseas Japanese Companies Data*, subsidiary performance was operationalized as productivity (Gaur, Delios & Singh, 2007; Gong, 2003). The productivity of foreign subsidiaries was measured by foreign subsidiary sales divided by a count of subsidiary employees. The scores were log-transformed to include in the analysis. By using productivity as a proxy, the difference in performance derived from subsidiary size is controlled.

Previous studies on regional and international diversification have often used the ratio of regional or foreign sales/assets to total sales/assets as a proxy for geographic diversification (Banalieva and Dhanaraj, 2013; Bobillo et al., 2010; Kirca, Fernandez, and Kundu, 2016; Li and Yue, 2008). The ratio of regional sales or assets may fail to capture the degree of MNEs' geographic dispersion. Thus, this study operationalized regional diversification using an entropy measure (Goerzen and Beamish, 2003; Qian et al., 2010; Qian et al., 2013; Wang et al., 2011), which depicts the number of countries in the region and the relative importance of the countries

(Qian et al., 2008; Wang et al., 2011). Scores of regional diversification were calculated by using the following formula:

$$Regional\ diversification = \sum p_i ln\left(\frac{1}{p_i}\right)$$

where p_i represents the proportion of the number of subsidiaries in country i to the total number of subsidiaries in the region. The scores were calculated for each region and parent firm.

The number of expatriate managers is a count of Japanese managers in a foreign subsidiary. More than 10 percent of subsidiaries in the dataset do not have Japanese managers, which means the variable has a lot of zeros. To account for many zeros, the scores were transformed using inverse hyperbolic sine transformation. By using inverse hyperbolic sine transformation, this study can avoid a disproportionate misrepresentation of zeros, adjust for skewness, and improve the normality of a variable (Friedline, Masa, and Chowa, 2015; Kafouros and Aliyev, 2016). The number of local firms having ownership in a foreign subsidiary is also a count of local firms. Because 68.1 percent of subsidiaries in the dataset do not have local partners, this variable also has a lot of zeros. Thus, the scores were transformed using inverse hyperbolic sine transformation.

Several control variables that may affect subsidiary performance were incorporated into the analysis. As control variables at the parent firm level, host country experience and the performance of the parent firm were incorporated. Local knowledge accumulated from an MNE's host country experience helps a subsidiary in the country understand local business environments and mitigate uncertainties perceived in the country (Schwens, Eiche, and Kabst, 2011; Slangen and Hennart, 2008). Host country experience was measured as an MNE's cumulative experience in the host country. Years since establishment were counted for each subsidiary in the host country. Then, the

scores of all subsidiaries in the country owned by the parent firm were summed up. The scores were log-transformed to include in analysis. Parent firms that experience higher performance may possess proprietary assets, which can be a source of competitiveness of subsidiaries (Berry, 2015; Chang et al., 2013). The performance of the parent firm was measured by ROE of parent firms.

As control variables at the subsidiary level, size and ownership structure of a subsidiary were included. Larger subsidiaries may have more organizational slack, which affects subsidiary performance (Sui and Baum, 2014). Size of a subsidiary was measured by the number of employees of the subsidiary divided by the number of employees of the parent firm. The ownership structure of a subsidiary may affect the access to local complementary assets, the degree of perceived uncertainty, and the speed of decision-making (Chang et al., 2013). The ownership structure was measured by two variables. The first one is the ratio of a subsidiary's shares owned by the primary Japanese parent firm. The second variable is a count of Japanese firms that have ownership in the subsidiary. When only the primary Japanese parent firm has ownership in the subsidiary, this variable takes zero. This variable has a lot of zeros because only 25.0 percent of subsidiaries in the dataset have more than one Japanese parent firm, which means that 75.0 percent of this variable are zero. Thus, this variable was transformed using inverse hyperbolic sine transformation.

As the control variables at the host country level, cultural distance between the host country and the home country and the degree of institutional development of the host country were incorporated. Difference in culture between the host country and the home country may cause uncertainty perceived by an MNE and increase the liabilities of foreignness (Cuypers and Martin, 2010). The GLOBE study's 9 dimensions on practices were used to measure cultural distance (House et al., 2004). Mahalanobis distance between the host country and the home country was

calculated because it can address the correlation between 9 cultural dimensions (Berry, Guillen, and Nan, 2010). The level of institutional development of the host country may be associated with business environments and the resultant transaction cost (Hoskisson et al., 2000; Peng, 2003; Slangen and Beugelsdijk, 2010). The degree of institutional development of a host country was operationalized using the Index of Economic Freedom developed by the Heritage Foundation. The Index consists of sub-indices including business freedom, trade freedom, fiscal freedom, government spending, monetary freedom, investment freedom, financial freedom, property rights, freedom from corruption, and labor freedom. The Index indicates the degree to which institutions constrain the freedom of business activities (Meyer, Estrin, Bhaumik, and Peng, 2009). This study used the overall score made of these sub-indices. The overall score of the Index for each country was standardized within the region. This measure captures a host country's relative degree of institutional development within the region.

In addition, the industry of a subsidiary was controlled for. The dummy variable that takes a value of 1 in the case of service industries was included in the analysis. Finally, to control for effects specific to an observation year, dummy variables that represent an observation year were incorporated, being year 2011 as the base year.

RESULTS

Table 1 demonstrates the descriptive statistics and correlation coefficients of the variables included in this study. In the dataset, the mean values for subsidiary age was 18.0 while the mean value for subsidiary employees was 302.6. Wholly owned subsidiaries accounted for 42.4 % of the observations. The number of observations was 193 in Latin America, 2907 in Southeastern

Asia, 71 in Western and Southern Asia, 53 in East Europe, and 1568 in Western Europe. The correlation coefficients displayed in Table 1 did not indicate a serious concern about severe multicollinearity.

Insert Table 1 around here

This study adopted a random-effect panel model because some variables in this study, such as cultural distance, are time-invariant. Table 2 reports the results of the random-effect panel model. Model 1 included the regional diversification variable, moderators, and control variables. Model 1 indicates that the linear effect of regional expansion is positive and significant. The squared term of regional diversification was added in Model 2. Model 2 shows that the squared term was positive and significant. This suggests that intra-regional diversification and subsidiary performance has a U-shaped relationship, which supports Hypothesis 1. Figure 1 is a graphical presentation of the results.

Insert Table 2 and Figure 1 around here

Model 3 tests the interaction between intra-regional diversification and the number of expatriate managers in the subsidiary. As predicted by Hypothesis 2, the interaction term was positive and significant. The result implies that subsidiaries where more expatriate managers are allocated can take greater benefit from regional expansion. Thus, Hypothesis 2 was supported.

Figure 2 is a graphical presentation of the results. Model 4 examines Hypothesis 3. The result shows the negative and significant interaction term between intra-regional diversification and the number of local partners. It indicates that subsidiaries in which more local partners have ownership tend to gain less benefits from intra-regional expansion, supporting Hypothesis 3. Figure 3 depicts the moderating effect of the number of local firms.

Insert Figures 2 & 3 around here

DISCUSSION AND CONCLUSION

This study explored how the degree of intra-regional expansion affects the performance of subsidiaries within the region. As the results indicated, the relationship between regional expansion and subsidiary performance takes a U-shaped relationship. When the degree of regional expansion is low to medium, it negatively affects subsidiary performance. The effect of regional expansion on subsidiary performance turns positive when the degree of geographic diversification exceeds a certain threshold. This study also found the moderators that affect the relationship between intra-regional expansion and subsidiary performance. The results showed that assignment of expatriate managers to subsidiaries boosts the benefits from intra-regional diversification, while having local partners reduces the benefits that the subsidiaries could receive.

This study aimed to advance an understanding of MNEs' intra-regional activities and its consequences. Specifically, it investigated the impact of regional diversification on the

performance of individual subsidiaries in the region. Most previous studies that address regional activities of MNEs have examined the impact of intra-regional diversification on performance at the entire MNE level (Banalieva and Dhanaraj, 2013; Banalieva et al., 2012; Qian et al., 2010; Qian et al., 2008). The same holds true for studies on the link between international diversification and firm performance (Contractor et al., 2003; Kirca et al., 2016; Li and Yue, 2008). This implies that how regional diversification of an MNE affects an individual subsidiary within the region remains unexplored. It is probable that intra-regional expansion significantly affects subsidiaries' operations within the region because they may cooperate with each other and share a reginal pool of knowledge and resources. Every subsidiary, however, may not enjoy these positive effects of regional expansion in the same manner. Depending on internal and external conditions, some subsidiaries may be negatively affected by intra-regional diversification. The sum of the effects of an MNE's regional expansion on individual subsidiaries will be reflected on the performance on the entire MNE level. However, the process from regional expansion to individual subsidiaries to the MNE-level performance has remained as a black box. A contribution of this study is to explore this unexplored process. This study found that the effect of intra-regional diversification on subsidiary performance takes a U-shaped function. In the initial stage of regional expansion, the cost of regional expansion seems to be larger than its benefits. For subsidiaries to benefit from cooperation with sister subsidiaries in the same region, an MNE needs to geographically disperse its regional activities to a certain degree. It is implied that the complementarity of resources owned by subsidiaries within the region produces synergy effects when the degree of regional dispersion is moderate to high. The findings suggest that, when exceeding a certain level of intra-regional expansion, the performance of individual subsidiaries improves, which can positively affect the MNE-level performance.

The results also indicate that when more expatriate managers are allocated to a subsidiary, it can take more benefits from intra-regional diversification. As the number of subsidiaries in the region increases, communication and cooperation with sister subsidiaries become more complex. Expatriate managers may better process communication and cooperation with sister subsidiaries in the same region. Through communication with sister subsidiaries, transfer of sister subsidiaries' knowledge to the focal subsidiary may be facilitated (Singh et al., 2019). In addition, this study found that when fewer local partners are involved in the subsidiary, it can obtain more benefits of intra-regional diversification. When having local partners, the speed of decision-making slows down, which hinders timely cooperation with sister subsidiaries. When subsidiaries are wholly-owned, they may be easier to be integrated into the network of subsidiaries within the region. These findings may partially explain a process from intra-regional diversification through subsidiary performance to MNE performance. As an MNE geographically expands within the region, the performance of subsidiaries having more expatriate managers and fewer local partners improves by taking advantage of regional diversification. This performance improvement has eventually a positive effect on an entire MNE-level performance.

This study is subject to limitations. The dataset of this study consists of subsidiaries of Japanese MNEs. This research design limits the generalizability of the findings to MNEs headquartered in other countries. The second limitation is related to classification of regions. The classification adopted in this study is based on that by the United Nations. Previous studies, however, have classified regions in different manners and there does not seem to be a dominantly used classification criterion (Rugman and Verbeke, 2004; Qian et al., 2013). The way in which countries are divided into regions may affect the result of this study. In addition, because of unavailability of data, productivity of subsidiaries was used as a proxy for subsidiary performance. Although

productivity captures certain aspects of subsidiary performance, future studies may use other measures of subsidiary performance, although financial data of subsidiaries are in general difficult to collect (Chang et al., 2013). Finally, this study only examined two moderators. Future studies may extend this study by examining a set of potential moderators that may affect the relationship between regional expansion and the performance of individual subsidiaries.

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Table 1. Descriptive statistics and Correlation coefficients

	Variables	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	Subsidiary Productivity	5.39	1.75	1.00																		
2	Regional Diversification	0.98	0.65	0.17	1.00																	
3	Expatriate Managers	1.71	0.97	-0.01	0.00	1.00																
4	Local Partners	0.33	0.50	-0.34	-0.02	0.07	1.00															
5	Host Country Experience	3.05	0.81	0.18	0.31	0.16	-0.02	1.00														
6	Parent Firm Performance	3.03	14.89	0.00	0.00	-0.02	-0.02	-0.05	1.00													
7	Subsidiary Size	0.06	0.15	-0.34	-0.20	0.16	0.10	-0.02	0.01	1.00												
8	Ownership Structure	0.66	0.37	0.14	-0.28	0.21	-0.31	-0.06	-0.01	0.00	1.00											
9	Japanese Partners	0.30	0.57	-0.22	-0.08	0.10	0.27	-0.02	0.01	0.09	-0.21	1.00										
10	Cultural Distance	4.65	0.80	0.39	0.02	0.01	-0.20	0.02	-0.01	-0.15	0.15	-0.12	1.00									
11	Institutional Development	0.43	1.01	0.19	-0.07	0.09	-0.09	0.01	0.00	-0.07	0.20	-0.04	0.41	1.00								
12	Year dummy 1	0.11	0.32	0.00	-0.02	0.02	0.03	-0.21	0.03	0.00	-0.02	0.02	0.04	0.07	1.00							
13	Year dummy 2	0.12	0.33	-0.04	0.01	0.02	0.05	-0.14	0.02	-0.03	-0.02	0.03	0.01	0.03	-0.13	1.00						
14	Year dummy 3	0.14	0.34	-0.06	0.00	0.04	0.04	-0.05	-0.17	-0.03	-0.03	0.04	-0.02	-0.02	-0.14	-0.15	1.00					
15	Year dummy 4	0.14	0.35	-0.05	-0.01	0.03	0.02	-0.01	-0.12	0.01	-0.01	0.00	-0.01	-0.02	-0.14	-0.15	-0.16	1.00				
16	Year dummy 5	0.12	0.33	0.00	-0.01	0.00	-0.01	0.04	0.05	0.01	0.00	0.01	0.00	-0.03	-0.13	-0.14	-0.15	-0.15	1.00			
17	Year dummy 6	0.13	0.33	0.03	0.00	-0.03	0.00	0.08	0.14	0.00	0.02	-0.01	0.01	-0.01	-0.13	-0.14	-0.15	-0.15	-0.14	1.00		
18	Year dummy 7	0.12	0.32	0.07	0.01	-0.02	-0.06	0.13	0.13	0.01	0.04	-0.05	-0.01	0.00	-0.13	-0.14	-0.15	-0.15	-0.14	-0.14	1.00	
19	Service Industry	0.52	0.50	0.47	0.16	-0.22	-0.24	-0.01	-0.02	-0.30	0.03	-0.23	0.27	0.11	0.02	0.01	-0.01	0.01	0.00	-0.01	0.00	1.00

Note: Correlations equal or greater than |0.028| are significant at $p<0.05$.

Table 2. Results of Random effect models

	Model 1			Model 2			Model 3			Model 4		
	Dependent variable:			Dependent variable:			Dependent variable:			Dependent variable:		
	Subsidiary performance			Subsidiary performance			Subsidiary performance			Subsidiary performance		
	Coef.			Coef.			Coef.			Coef.		
Regional Diversification	0.110	*	(0.047)	-0.279	*	(0.112)	-0.050		(0.073)	0.163	**	0.051
Regional Diversification Squared				0.218	***	(0.057)						
Regional Diversification	0.109	***	(0.025)	0.115	***	(0.025)	0.000		(0.046)	0.112	***	0.025
Expatriate Managers	-0.326	***	(0.052)	-0.319	***	(0.052)	-0.327	***	(0.052)	-0.128		0.091
Regional Diversification×Expatriate Managers							0.099	**	(0.035)			
Regional Diversification×Local Partners										-0.195	**	0.074
Host Country Experience	0.223	***	(0.034)	0.218	***	(0.034)	0.219	***	(0.034)	0.229	***	0.034
Parent Firm Performance	0.000		(0.001)	0.000		(0.001)	0.000		(0.001)	0.000		0.001
Subsidiary Size	-1.700	***	(0.118)	-1.707	***	(0.117)	-1.668	***	(0.118)	-1.705	***	0.117
Ownership Structure	-0.016		(0.074)	-0.002		(0.074)	-0.016		(0.074)	-0.012		0.074
Japanese Partners	-0.169	***	(0.046)	-0.162	***	(0.046)	-0.169	***	(0.046)	-0.171	***	0.046
Cultural Distance	0.536	***	(0.049)	0.541	***	(0.048)	0.538	***	(0.049)	0.536	***	0.049
Institutional Development	0.048		(0.028)	0.055		(0.028)	0.049		(0.028)	0.050		0.028
Year dummy 1	-0.089		(0.063)	-0.083		(0.063)	-0.088		(0.063)	-0.084		0.063
Year dummy 2	-0.277	***	(0.058)	-0.278	***	(0.058)	-0.279	***	(0.058)	-0.273	***	0.058
Year dummy 3	-0.290	***	(0.053)	-0.280	***	(0.053)	-0.290	***	(0.053)	-0.286	***	0.053
Year dummy 4	-0.298	***	(0.051)	-0.293	***	(0.051)	-0.298	***	(0.051)	-0.296	***	0.051
Year dummy 5	-0.131	**	(0.050)	-0.125	*	(0.050)	-0.131	**	(0.050)	-0.129	*	0.050
Year dummy 6	-0.021		(0.048)	-0.014		(0.048)	-0.020		(0.048)	-0.019		0.048
Year dummy 7	0.073		(0.047)	0.080		(0.047)	0.074		(0.047)	0.075		0.047
Service Industry	0.906	***	(0.065)	0.892	***	(0.065)	0.909	***	(0.065)	0.911	***	0.065
Constant	1.841	***	0.258	1.887	***	0.257	2.017	***	0.265	1.756	***	0.260
R squared	0.399			0.407			0.402			0.401		
Observations	4792			4792			4792			4792		

*** $p<.001$; ** $p<.01$; * $p<.05$

Note: Standard errors are in parentheses.

Figure 1. The relationship between regional diversification and subsidiary productivity

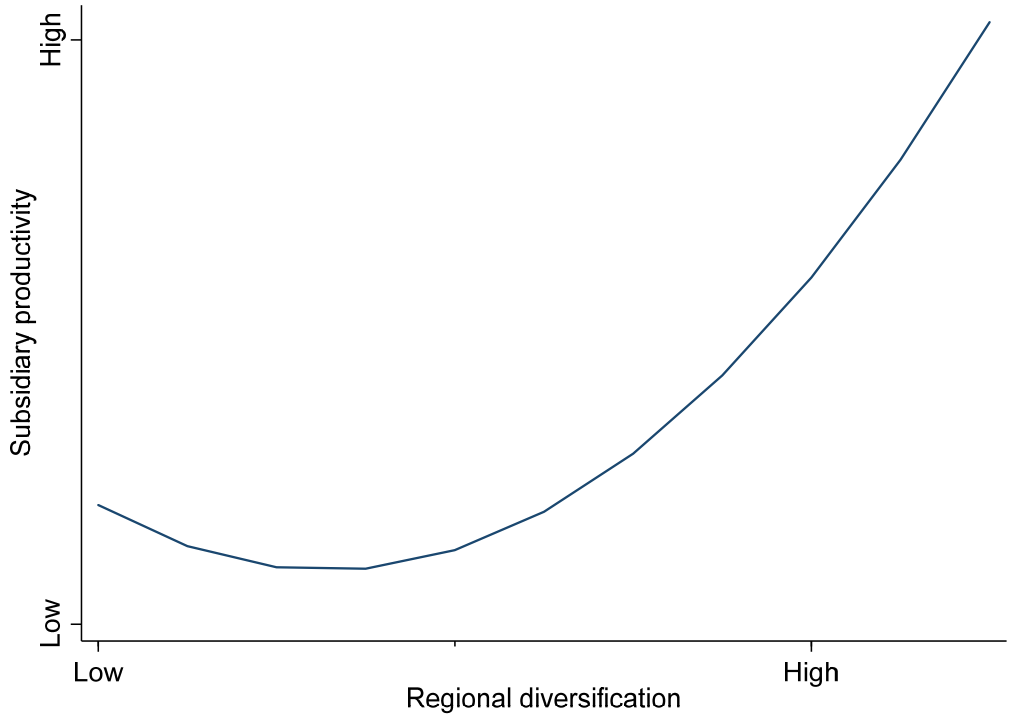

Figure 2. The interaction effect of expatriate managers

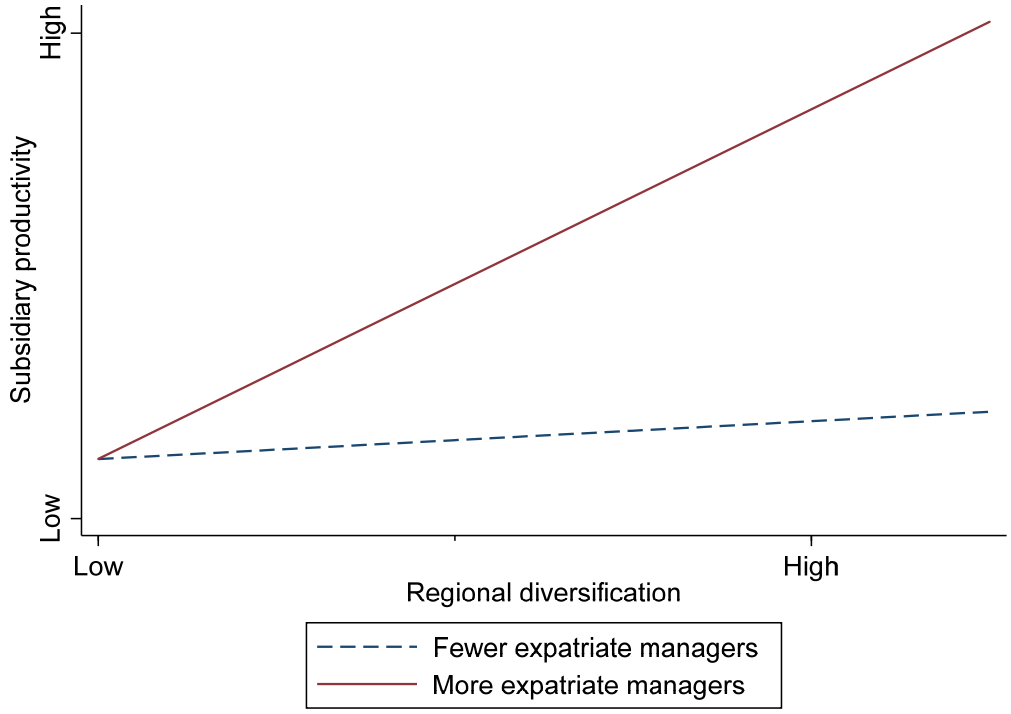

Figure 3. The interaction effect of local partners