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Regional and Product Diversification and the Performance of Retail Multinationals

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Regional and Product Diversification and the Performance of Retail Multinationals

Abstract

Despite the importance of geographic expansion in the services sector, few studies have analyzed the relationships between international diversification, product diversification and performance for services firms. Here we investigate whether and how firms in the retail-trade sector may benefit by spreading their boundaries within and across regional boundaries. Using a panel data set of 68 large European retailers from 19 countries for the period between 1997 and 2010, we find that intra-regional diversification has a horizontal S-curve relationship and inter-regional diversification has an S-curve relationship with firm performance. Moreover, the results show that unrelated product diversification has a negative moderating effect on the relationship between inter-regional diversification and firm performance. Overall, these results add support in the services sector for the three-stage paradigm of international diversification and performance.

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1   Introduction

Of the firms on the most recent *Fortune Global 500* list, 242 firms are manufacturing firms, 111 firms are financial firms, 100 firms are services firms and 47 firms are utility firms, based on their listed main industry sectors in 2012. The combined revenue of the 100 services firms was $5,431 billion. Thus, the services sector makes up a substantial part of the global economy, and its rapid growth deserves more scholarly attention (Kundu and Merchant, 2008).

Among these 100 services firms, 45 firms are from the retail-trade sector with combined revenue of 2,627 billion U.S. dollars. These numbers increased from 40 firms whose combined revenue was 1,399 U.S. dollars in 2003. Most of these retail firms are multinational enterprises (MNEs), but their international footprint is relatively weak compared to MNEs in other industry sectors (Rugman and Oh, 2010; Corstjens and Lal, 2012). According to Rugman and Girod (2003), retail MNEs mainly focus on their domestic markets or home-region markets. Possible explanations for this home-region focus are the high capital intensity (Rugman and Verbeke, 2008), asset specificity and government regulations (Campbell and Verbeke, 1994) in the retail-trade sector.

To both academic scholars and managers, a key question in regard to a retail firm's relatively weak international activities is whether and how it may benefit by spreading its boundaries within and across regional boundaries. In other words, what are the performance implications of intra- and inter-regional geographic diversification of retail MNEs? Previous research on the relationship between international diversification (or multinationality) and performance provides important guidance in answering this critical question. In particular, the three-stage paradigm of internationalization (Contractor, Kundu, and Hsu, 2003) generalizes different arguments and findings, and implies that the performance of MNEs may depend upon their international trajectory.

Recent studies have sharpened the theoretical and empirical approach of the three-stage paradigm by accommodating regional characteristics of MNEs (Li, 2005; Rugman and Oh, 2010; Oh and Contractor, 2012, 2014). These studies focused on U.S. manufacturing firms and found that home-region expansion improved the performance of U.S. firms, while foreign triad region expansion reduced their performance, as predicted by the three-stage paradigm (Contractor et al., 2003; Contractor, 2007) and regional MNE perspective (Rugman and Verbeke, 2004). Triad regions are well-defined geographic blocks of North America, Europe and Asia-Pacific (Rugman, 2005). These studies also showed the importance of product diversification as a moderating effect on the relationship between international expansion and performance.

In order to answer the research question, we use information on 68 European retailers for the period between 1997 and 2010, which total 385 observations. We focus on European retailers because they are the most internationalized among the worldwide leading retail firms, with comparatively high operations outside the slow-growing European home market (Deloitte, 2014). Still, despite their increasing international activities, many European retailers are struggling to break even and survive in global markets (Gielens and Dekimpe, 2007).

While our results supported a three-stage paradigm for international expansion (Contractor et al., 2004), they also provided additional insights into the international diversification-performance relationship. Our findings showed that intra-regional diversification of large European retail MNEs had a horizontal S-curve relationship with performance, while inter-regional diversification had an S-curve relationship. Moreover, the results indicated that this relationship was moderated by product diversification in that unrelated product diversification had a negative moderating effect on the relationship between inter-regional diversification and performance in the case of European retail MNEs. Interestingly, related product diversification of retail MNEs did not have a significant moderating effect and intra-regional diversification was not affected by either related or unrelated product diversification.

Thus, our study contributes to the literature in three ways. First, we extend the existing literature that focuses on U.S. manufacturing firms to European service (retail) firms, providing additional insight into the three-stage paradigm and regional diversification. Second, we divide geographic diversification into intra-regional and inter-regional diversification and product diversification into related and unrelated diversification. Third, we analyze the interaction between the two types of geographic and product diversification.

The remaining portions of this paper are organized as follows. The next section provides a literature review and develops our hypotheses. In Section 3, we explain our data and method. The empirical results appear in Section 4. In Section 5, we provide a discussion of our results, the limitations of our study, future research avenues and a conclusion.

2 Theory and hypotheses

2.1 Intra- and inter-regional diversification

A firm's diversification strategy and its performance implications have been at the center of research in strategic management, international business and financial economics. The gaining

importance of this research topic is reflected in the growing phenomenon of firms producing multiple lines of products and serving various geographical markets (Kim, 1999).

Although the increasing volume and value of international trade and foreign investments over the past several decades are undeniable facts, recent evidence shows that the destination of such trade and investments have been mostly geographically bounded into home-region countries and neighboring countries (Rugman and Verbeke, 2004; Ghemawat, 2007). In addition, past research was unable to provide strong evidence as to whether geographic boundaries of MNEs are expanding or contracting (Rugman and Oh, 2009). Thus, the majority of MNE activities have remained within their home-region boundaries in the past ten plus years (Akhter and Beno, 2011; Rugman, Oh, and Lim, 2012). In regard to services or retail firms, home-region orientation is substantially stronger than for manufacturing firms (Rugman and Verbeke, 2008).

Despite its importance for services firms in today's economy, few studies have analyzed the relationship between international diversification and performance for firms from the services sector. For example, Capar and Kotabe (2003) found a U-shaped relationship for German services firms, while Contractor et al. (2003) found an S-shaped relationship for knowledge-based services firms and a horizontal S-shaped relationship for capital intensive services firms by using a sample of large services firms from 12 countries. Using a regional MNE perspective, Sukpanich and Rugman (2007) and Mohr et al. (2014) provided evidence of the performance superiority of home-region orientation for retail firms. Li (2005) found that a home-region strategy provides better performance outcomes for U.S. MNEs in various service industry sectors, but his study excluded retail and food service sectors.

For services firms, diversification is associated with value creation or risk minimization at the customer end, while for manufacturing firms it is associated with knowledge adoption or cost minimization at the production end (Rugman and Verbeke, 2008). Thus, customer characteristics are important determinants in geographic diversification decisions of services firms, supporting the nature of home-region orientation in the services sector. In order to consider the similarities and differences of such demand-based characteristics, we divided geographic diversification into two aspects: intra-regional and inter-regional diversification. Intra-regional diversification reflects a firm's diversification to other countries within its home triad region, whereas inter-regional diversification is its diversification to consumer markets outside of its home triad region. Recent studies (Qian et al., 2010; Qian, Li, and Rugman, 2013) have analyzed the effect of intra- and inter-regional diversification on a sample of U.S.- and Canada-based firms. For example, using a sample of U.S.-based manufacturing firms, Qian et al.

(2010) found a linear positive effect of intra-regional diversification on performance and an inverted U-shaped relationship between inter-regional diversification and performance. However, these studies neither focused on services MNEs nor on European firms. Moreover, these studies did not examine how product diversification may moderate performance implications of intra- and inter-regional diversification.

In this study, we focus on retail-trade within the service sector and argue that important differences exist between the internationalization of manufacturing and retail firms. For example, while manufacturing firms are able to internationalize sales by exporting products to foreign markets, retail firms need to significantly invest into the development of a store network to achieve sales in foreign markets. Building a network of retail stores involves activities such as selecting and managing local real estate, suppliers, human resources and logistics channels. Moreover, retail firms need to develop a deep understanding of shopping behaviors in foreign markets, beyond purely product-related consumer preferences. As this process involves considerable investments and learning processes, retail firms typically need several years before they can reach break-even volumes in foreign markets (Corstjens and Lal, 2012). Previous research has suggested that few retailers succeed in achieving similar profit margins in international markets when compared to their home markets (Gielens and Dekimpe, 2007). By distinguishing between intra- and inter-regional diversification, we describe the potential performance implications of retail internationalization in more detail.

When a retail firm diversifies its operations across countries within its home-region market, it may be able to quickly learn about new consumer needs and shopping behaviors due to their similarities to domestic consumer behaviors. According to the internationalization process theory (Johanson and Vahlne, 1977), a services firm first enters into few key markets that are culturally, geographically, economically, and politically close to its home market. In addition, product standards, consumer tastes and supplier characteristics in such countries do not much differ from those in the firm's home country. Thus, the retail firm does not need to extensively change its business model and may even use the same suppliers as in its domestic market. Indeed, the retailer will achieve critical success factors, such as economies of scale in procurement and low transportation and coordination costs. Further, since the firm's entry into home-region countries is typically earlier than its competitors from foreign regions (Oh and Rugman, 2007), it likely enjoys a first mover advantage. These benefits lead to a positive performance effect at the beginning stage of a retailer's intra-regional diversification.

When a retail firm further diversifies into additional countries in its home-region, it must coordinate its operations in these countries, requiring extra administrative costs. If the retail firm

decides to expand its operations into a few key foreign countries in which it operated initially, then it needs to start building its own supply chain in each foreign market due to the growth of its operation size. Thus, its economies of scale should be considered separately in each country (e.g., Hennart, 2007), although it still shares economies of scope in the home-region. These factors may lead to negative performance effects in the second stage of intra-regional diversification.

In the last stage of intra-regional diversification, a retail firm may reach a critical size for its store network operations in each country. Each local market starts gaining its own scale benefits in a retailer's sourcing, logistics and marketing activities. The additional administrative and marketing costs may be offset by economies of scale. At this stage, the retail firm finds the most efficient and reliable suppliers, integrates them and achieves a regional supply chain network (Doner, 1991; Rugman, Li, and Oh, 2009). Retailers may be able to build, integrate, and reconfigure various resources located in proximate countries and transfer and leverage them to countries in the home-region (Qian et al., 2008; Qian et al., 2010). These benefits turn into a superior performance. Thus, we hypothesize as follows.

> *Hypothesis 1*: Intra-regional diversification of retail firm has a horizontal S-curve fit relationship with the firm's performance.

The performance implications of inter-regional diversification are different from that of intra-regional diversification. At the beginning stage of inter-regional diversification, a retail firm will serve new customers whose characteristics are substantially different from those of their existing customers in the home country or region. The retail firm will face a considerably different set of competitors and may suffer from latecomer disadvantages. In order to serve these different markets, the company may need to utilize very different kinds of store networks than those used in the home-region due to inter-regional variations in shopping behaviors and infrastructures (e.g., Gereffi, 1999; Qian, Li, and Rugman, 2013). Developing such a new store network requires additional costs. Yet, the economies of scale may not offset such costs. Although the retail firm will likely choose few, large, key countries in foreign regions, it needs to recombine its existing partners and new partners in its supply chain. The recombination will increase transportation and administrative costs. Thus, the retailer will suffer from these negative aspects of foreignness and newness.

In the later stage of inter-regional diversification, as the size of the operation in each country grows, the retail firm may start benefiting from economies of scale in procurement and sales.

Sourcing from local suppliers will enable the retailer to reduce transportation and factor costs, improve response time, and lower several trade barriers in foreign operations (Kogut and Kulatilaka, 1994; Arntzen et al., 1995). In addition, the retail firm will receive benefits from product and industry life cycles, which enable it to efficiently use its inventories. At this stage, therefore, the firm's performance may improve as compared to the beginning stage of inter-regional diversification.

In the last stage of inter-regional diversification, the retail firm has to control and coordinate its extensively dispersed worldwide operations. Global competitiveness is hard to achieve (Rugman et al., 2012). Although a retailer may be able to find the most efficient suppliers and build a new supply chain network, it will not likely implement global supply chain integration due to high transportation costs between triad regions and different regulations and business practices across regions (Li, 2005; Oh and Rugman, 2011). Thus, the supply chain network and distribution systems will be organized and controlled through each regional headquarters, requiring additional administrative costs. In addition, due to decreasing marginal returns to scale, the scale benefits in this stage are not significantly higher than those in the previous stage. Thus, overall performance in the last stage will decline. Combining the performance implications of each stage of inter-regional diversification, we hypothesize as follows.

> *Hypothesis 2*: Inter-regional diversification of retail firm has an S-curve fit relationship with the firm's performance.

2.2   Moderating effects of product diversification

Tallman and Li (1996) developed a theoretical framework that suggests that the similarities of geographic and product diversifications propose potential interaction effects on a firm's performance. Accordingly, several studies have investigated the interactions between geographic and product diversifications (e.g., Tallman and Li, 1996; Hitt, Hoskisson, and Kim, 1997; Geringer, Tallman, and Olsen, 2000; Sukpanich and Rugman, 2007; Oh and Contractor, 2012, 2014). While the results in the existing studies are inconsistent, a study by Sukpanich and Rugman (2007), which is closely related to this paper, found that higher levels of home-region sales enhance the positive impact of product diversity on the performance of large merchandizers.

Previous research referred to a retail format based on its specific product assortment and service offering, store design, and location, aiming to match specific consumer segments and shopping situations (e.g., Gonzales-Benito, Munoz-Gallego, and Kopalle, 2005). Accordingly, Keep,

Hollander and Calantone (1995) argued that in the retail-trade sector, product diversification indicates that a retail firm has diversified across retail formats.[1] Over the past decades, most worldwide leading retailers have started to diversify their retail formats, indicating that retailers market an increasingly diversified portfolio of product lines (Deloitte, 2014).

We argue that product diversification of a retail firm does not require substantial coordination and control costs when the firm diversifies its retail formats within its home-region. This is because geographic, cultural, economic, and institutional proximity within the home-region enables a retailer to efficiently transfer its knowledge and capabilities from one retail format to the others and exploit market inefficiency and consumer trends through retail format diversification (e.g., Kedia and Bhagat, 1988). Thus, experiential knowledge from a retail format is more valuable when it applies to other retail formats when market characteristics are similar with those of existing ones (Barkema, Bell, and Pennings, 1996; Kostova and Roth, 2002). In addition, geographic adjacency provides more opportunities to create intensive interactions, which are required when a firm diversifies its product lines (Jones and Hill, 1988). Economies of scale and scope in procurement and logistics can improve a firm's benefits in product diversification through a regionally integrated supply chain in its home-region. Indeed, product diversification may increase the monopoly power of large retailers in their home-region. Therefore, product diversification strengthens the positive benefits of intra-regional diversification. Specifically,

> *Hypothesis 3*: Product diversification has a positive moderating effect on the relationship between intra-regional diversification and performance, in a way that it hardens the positive slopes and softens the negative slope in the horizontal S-curve fit.

When a retailer markets its retail format portfolio in distant foreign regions, the retailer may suffer from increased complexity in the form of added coordination and marketing costs. In addition, increasing differences between existing and new markets may make the firm unable to use learning benefits from experiences in existing markets because accumulated knowledge is a location-bound capability (Li, 2005). Thus, each new retail format may require substantial

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[1] In the retail-trade sector, product markets within two-digit Standard Industrial Classification (SIC) industry groups are classified by retail formats. For example, the two-digit industry "food stores" (SIC 54) encompasses retail formats such convenience stores, supermarkets, hypermarkets and superstores. Moreover, in the two-digit non-food retail industries, product markets are classified by retail formats such as department stores (within SIC 53 "general merchandise stores"), clothing stores (within SIC 56 "apparel and accessory stores") and consumer electronics stores (within SIC 57 "home furniture, furnishings and equipment stores").

market research in each foreign region. Further, retail format diversification increases the level of competition and number of competitors in foreign regions (Greenwald and Kahn, 2005). In general, because incumbent domestic or home-region retailers have already achieved higher levels of economies of scale and scope as first movers (Bhattacharya and Michael, 2008), it is not easy for late movers to achieve such scale and scope economies in foreign regions. Therefore, product diversification aggravates the negative effects of inter-regional diversification. Hence,

> *Hypothesis 4*: Product diversification has a negative moderating effect on the relationship between inter-regional diversification and performance, in a way that it hardens the negative slopes and softens the positive slope in the S-curve fit.

3   Methodology

3.1   Sample and data

In order to test these hypotheses, we obtained panel data on 68 leading European retail firms over a time period of 14 years (1997 – 2010) from the database of Planet Retail, a leading private retail research company.[2] Specifically, based on Planet Retail's ranking lists of 1997 and 2010, we extracted panel data on the largest European retail firms for which profitability data were available. The Planet Retail database has also been used by previous research to investigate topics of international diversification in the retail-trade sector (e.g., Gielens and Dekimpe, 2007; Gielens and Dekimpe, 2001; Mohr et al., 2014).

Our sampled firms originate from 19 European countries in different retail industries. For example, our sample included leading European retail firms, such as France-based Carrefour, Netherlands-based Ahold, and U.K.-based Tesco for supermarkets and hypermarkets; Spain-based Inditex, Sweden-based H&M, and Ireland-based Primark for clothing stores; and Sweden-based IKEA, U.K.-based Kingfisher, and Germany-based Hornbach for home and garden stores. Of the sampled firms, 26% originated from the U.K., 9% from Sweden, 7% from Germany and the remainder from countries such as Croatia, France or Italy. Moreover, 60% of these firms had their core business in food retail (e.g., convenience stores, supermarkets and hypermarkets), while the remainder had their core business in non-food retail (e.g., consumer electronics, home and garden stores, and department stores).

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[2] http://www1.planetretail.net/

3.1.1 Dependent variable

We used *return on sales* (ROS) as a performance measure. In accordance with previous studies of firms in the services sector (e.g., Capar and Kotabe, 2003; Contractor et al., 2003; Mohr et al., 2014), we chose ROS mainly due to data availability. As the firms in our sample have different capital structures and tax requirements that vary across their home countries, we computed ROS by taking a firm's earnings before interests and taxes (EBIT) divided by its net sales. We lagged the ROS data by one year ($t + 1$) to facilitate causal inference (Lu and Beamish, 2004).

3.1.2 Independent variables

We operationalized geographic diversification in several ways. First, following previous research, we calculated a firm's *foreign to total sales* to operationalize its degree of international diversification (e.g., Geringer, Beamish, and daCosta, 1989). Second, we calculated a firm's *home-region to total sales* to operationalize its degree of diversification within the European home-region (e.g., Oh and Rugman, 2010). Third, we computed *international diversification* using the entropy index (e.g., Vachani, 1991; Hitt et al., 2006). The entropy index of (total) geographic diversification is expressed by the following equation:

$$\text{Geographic diversification} = \sum_{i=1}^{N} P_i \ln(1 / P_i)$$

where P_i = proportion of sales in country i for a firm with operations in N different countries. Accordingly, the entropy measure captures a firm's degree of geographic diversification in terms of breath (i.e., number of foreign countries) and depth (i.e., relative importance of each foreign country). Fourth, we measured *intra-regional diversification (home-regional diversification)* using the entropy index. Intra-regional diversification captures a firm's degree of diversification across countries within the European home-region. Finally, we operationalized a firm's degree of *inter-regional diversification*. In order to classify geographical regions, we followed Rugman's (2005) triad region classification. We then calculated inter-regional diversification by using the entropy index on a firm's diversification across these regions. Figure 1 shows changes in intra- and inter-regional diversification for our sampled firms, as measured by the entropy index. As Figure 1 illustrates, European retail firms tended to spread their store operations throughout their home-region, Europe, between 1997 and 2010, while their extent of inter-regional diversification remained relatively unchanged.

Following previous research, we operationalized *product diversification* using the above described entropy index (Jacquemin and Berry, 1979; Palepu, 1985). Specifically, we operationalized retail firms' product diversification in three ways. First, since the retail formats

reported in the Planet Retail database correspond to product markets in the Standard Industrial Classification (SIC) system, we measured a firm's (total) *format diversification* by capturing its diversification across retail formats, such as supermarkets, electronics superstores and clothing stores. Second, since Planet Retail also provides data on a retailer's percentage of food and non-food product sales, we measured a firm's degree of *assortment diversification* by capturing its diversification across food and non-food products. Third, we distinguished between related and unrelated format diversification. Following previous research, we calculated a retail firm's *unrelated format diversification* across two-digit SIC groups, such as general merchandise stores (SIC 53), food stores (SIC 54) and apparel and accessory stores (SIC 56). *Related format diversification* was then computed as the difference between a retail firm's total format diversification and unrelated format diversification (Palepu, 1985). Finally, we mean-centered the intra- and inter-regional diversification as well as our product diversification variables when we calculated the interaction terms (Aiken and West, 1991).

3.1.3   Control variables

Consistent with previous studies (e.g., Mayer and Whittington, 2003; Wan and Hoskisson, 2003; Qian et al., 2010), we used several firm- and home country-specific control variables in order to address alternative explanations for our results. First, we controlled for *firm size* using the logarithm of a firm's sales. Second, we controlled for *firm growth* by computing a firm's annual sales growth.[3] Third, in order to account for differences in investments between small and large chain store retailers, we followed Gielens and Dekimpe's (2001) example and computed *firm efficiency* by taking a retail firm's sales over investments (i.e., sales per unit of selling area). Fourth, we controlled for *retail industry size* per capita and *retail industry growth* in a retailer's home country. We obtained this home country-specific data from the *Euromonitor* database. Fifth, we included dummy variables for each year in order to control for unobserved seasonal and macroeconomic trends in the economy. Finally, we were also interested in accounting for firm-specific resources that are difficult to approximate with control variables. Therefore, we decided to use a firm fixed-effects model for coefficient estimation. The fixed-effects model considers unobserved heterogeneity across sampled firms.

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[3] For our robustness checks, we alternatively used the selling area in square meters as firm size and annual growth of the selling area as firm growth. The results showed that our key findings were robust to this alternative measures.

3.2   Model

The equation explaining the relationship between international diversification and firm performance is expressed as:

$$Y_{it} = \alpha + \beta X_{it} + \gamma Z_{it} + v_i + \varepsilon_{it}$$

where Y_{it} is the vector of performance observations for firm i ($i = 1,...,68$) and time t ($t = 1,...,14$); X_{it} is the vector of the international and product diversification measures and their interactions; and Z_{it} is the vector of the control variables. Furthermore, $v_i + \varepsilon_{it}$ is the residual with v_i as the fixed-effect that differs between firms, but is constant over time for each single firm. Thus, the fixed-effects model relates changes in profitability (ROS) for a given retail firm to changes in the independent and control variables for the same firm. We also estimated a random-effects model, but the Hausman specification test was significant, suggesting that the fixed-effects model should be preferred to obtain consistent coefficient estimates.

4   Results

Table 1 illustrates the descriptive statistics and Pearson correlations for the variables used in our study. The descriptive statistics show that, on average, the sampled firms achieve less than 9% of their sales outside their home-region, indicating that cross-regional moves are still rare among European retail firms. All of the correlation coefficients between explanatory variables used in our regressions were below the recommended threshold of 0.8 (Mason and Perreault, 1991). Moreover, we performed pooled estimations of our models in order to calculate the variance inflation factor (VIF) and found that the main effects and control variables had a VIF lower than the suggested critical limit of 10. Our results revealed that the model VIFs associated with our independent variables did not exceed 2.8 and the VIFs of the individual variable did not exceed 5.4.[4] Thus, we concluded that multicollinearity was not a significant concern between our variables.

Table 2 shows our results for Hypotheses 1 and 2. In order to check the consistency of our results, we first tested our model with foreign to total sales as a measure of geographic diversification. Column 1 of Table 1 shows an S-curve fit between geographic diversification and performance (ROS), which supports the seminal finding of the three-stage paradigm of internationalization (Contractor et al., 2003). In Column 2 of Table 1, we used home-region to total sales and found a horizontal S-curve fit, which supports the regional nature of geographic

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[4] The VIFs were tested for all of the models in Tables 2 and 3, including the interaction models. When calculating the VIFs, we did not take into account the quadratic and cubic terms.

diversification and performance relationship (Rugman and Oh, 2010). We note here that home-region to total sales includes domestic sales and that the finding of home-region to total sales (horizontal S-curve) should be opposite from the finding of foreign to total sales (S-curve). In Column 3, we used the entropy measure of global diversification (Vachani, 1991) and all of the diversification variables were insignificant.

In Column 4 of Table 2, we included the intra-regional and inter-regional diversification variables and their quadratic and cubic terms to test our Hypotheses 1 and 2. The results showed that the linear term of the intra-regional diversification variable was positive and significant (β=0.061, p<0.05), quadratic term was negative and significant (β=-0.073, p<0.05) and cubic term was positive and significant (β=0.020, p<0.05), indicating that the relationship between intra-regional diversification and performance is a horizontal S-curve fit. Thus, we found support for Hypothesis 1.

Figure 2 illustrates the relationship between intra-regional diversification and performance.[5] As shown in Figure 2, the minimum value of the intra-regional diversification variable was 0 and the maximum value was 2.677, with most of the data falling into the range between 0 and 1.731 (mean plus two standard deviations). Thus, while many retail firms have experienced the performance effects of the first and second stage of intra-regional diversification, comparatively few retailers have yet experienced the benefits of the third stage of intra-regional diversification. Among those with high degrees of intra-regional diversification in the third stage are firms such as Sweden-based H&M, Germany-based Metro Group, and France-based Ahold. Moreover, the results showed that the linear term of the inter-regional diversification variable was negative and significant (β=-0.129, p<0.05), quadratic term was positive and significant (β=0.336, p<0.05) and cubic term was negative and significant (β=-0.246, p<0.05). Thus, our findings showed that the relationship between inter-regional diversification and performance is an S-curve fit, supporting Hypotheses 2. Figure 3 illustrates the S-curve fit between inter-regional diversification and performance. The minimum value of the inter-regional diversification variable was 0 and the maximum value was 0.970, with most of the data falling into the range between 0 and 0.732 (mean plus two standard deviations). Thus, similarly to intra-regional diversification, few retailers have yet entered the third stage of inter-regional diversification and experienced significantly decreasing performance at high degrees of inter-regional diversification. Retailers with operations that fall into the third stage of inter-regional diversification include firms such as France-based Casino, Carrefour, and LVMH.

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[5] In our figures, we did not add the impact of other variables on performance.

We also tested linear and quadratic models. While several terms were significant, the LR-test results showed that the cubic model was the best fit for the proposed relationship (see the last rows of Table 2). However, we could not find any specific relationships between global diversification (as measured with the entropy index) and performance. Regarding the control variables, we like to note that the product diversification variable was insignificant across all models, while firm size was positive and significant and firm growth and home country industry size were negative and significant.

In Table 3, we tested the interaction models for Hypotheses 3 and 4. As discussed above, we used format diversification as a measure of product diversification (Keep et al., 1995). In Column 1, we added the interactions between intra-regional and format diversification and between inter-regional and format diversification. We found that the interaction between inter-regional and format diversification was negative and significant (β=-0.064, p<0.05), while the interaction between intra-regional and format diversification was positive, but insignificant (β=0.002, n.s.). Considering that the direct effect of format diversification was insignificant, the results imply that product diversification hurts performance when the level of inter-regional diversification is high. Figure 4 shows this interaction effect graphically. The figure shows that the negative moderating effect of format diversification on the relationship between inter-regional diversification and performance was stronger when the level of inter-regional diversification was higher.

As a robustness check, we used the assortment diversification variable as a measure of product diversification instead of format diversification. We tested the direct effects in Column 2 and interaction effects in Column 3 of Table 3. The results were consistent with those from format diversification: the interaction between inter-regional and assortment diversification was negative and significant (β=-0.170, p<0.001). Thus, the results supported Hypothesis 4, but do not support Hypothesis 3.

Further, as a post-hoc analysis, we used the related and unrelated format diversification variables in order to capture a retail firm's related and unrelated product diversification. We, then, tested their interactions with inter-regional and intra-regional diversifications. Palich, Cardinal, and Miller (2000) argued that higher degrees of (total) format diversification are associated with unrelated format diversification. Consistent with the findings from (total) format and assortment diversification, the direct effects of the related and unrelated format diversification variables were insignificant (Column 4). In Column 5, only the interaction between inter-regional and unrelated format diversification was negative and significant (β=-0.074, p<0.05), while all other interactions were insignificant.

Figure 5 depicted the moderating role of unrelated format diversification on the relationship between inter-regional diversification and performance. As shown in Figure 5, this interaction effect was considerably similar to the interaction effect shown in Figure 4. This result indicated that substantial complexity arises from operating both dissimilar markets and dissimilar retail formats, which is what has a significant negative effect on the performance of retail MNEs. In addition, our results suggested that product diversification does not either help or hinder the business operations of retail MNEs in their familiar home-region markets.

5   Discussion and conclusion

5.1   Discussion

In this study, we examined performance implications of intra- and inter-regional diversification, using the retail-trade sector as the empirical setting of our study. The results of our study may provide important implications to chain store businesses in the services industry sector with regard to determining the international scale and scope of their operations. For example, the two leading France-based grocery retailers, Carrefour and Auchan, both generate their largest sales share with hypermarkets. Although Carrefour was ranked number two and Auchan number 15 according to Deloitte's 2010 sales-based ranking of the worldwide leading retailers, Auchan's profits exceeded those of Carrefour by roughly 25%. The results of this study suggest that differences in the two retail firms' geographical diversification decisions could be an important explanation for the variation in their performance. More precisely, while the degree of assortment diversification is similar for both retailers, Carrefour operates in a much broader and more diverse portfolio of geographical markets than Auchan. In 2010, for example, Carrefour operated in a portfolio of 33 geographical markets, whereas Auchan had operations in 13 geographical markets with a stronger focus on the European home-region.

Carrefour recently announced that its main priority consists of refocusing on its French home market as well as other European markets, such as Belgium, Italy, and Spain. Thus, by redesigning its country portfolio and rechanneling its corporate investments, Carrefour aims to "enhance synergies between sales and purchasing, and create new relationships between head offices, countries, and stores." Furthermore, the firm announced that the "sharing of knowledge and best practice will form the heart of this transformation process" (Carrefour, 2012).

While we argued that economies of scale, consumer differences, coordination costs in supply chain management and competitive pressures are underlying factors determining performance differences in intra- and inter-regional diversification, future research needs to disentangle each

factor. It is likely that the importance of each factor varies over the stage of intra- and inter-regional diversification. A survey method may be most appropriate in order to identify and examine each factor. We also presume that our findings depend upon the characteristics of an industry sector. For example, access to natural resources, stakeholder pressure, and economies of scale are most important for firms in the extractive industry sector, while consumer differences and competitive pressures may be less important. For the intermediate goods producing industry sector, economies of scale and coordination costs in the supply chain management are also likely more important than consumer differences and competitive pressures. In this regard, market entry research may help to disclose industry-specific location choice factors (e.g., Kundu and Contractor, 1999), which likely determine performance.

Other firm-specific characteristics are likely to moderate the effects of these factors on performance. For example, Oh and Rugman (2012) found that European firms that have large firm sizes and better innovative and managerial capabilities are more likely to globally integrate their operations. These findings imply that some firm-specific advantages may cross regional boundaries and help firms to overcome inter-regional liability of foreignness. Other firms that do not have such strong firm-specific advantages may not be able to leverage their global operations to profitability. Thus, firms should not pay attention to irresponsible, unconfirmed 'globalization' or 'born global' suggestions. Even though services firms are not as internationalized as manufacturing firms, our findings do not suggest aggressive entry and expansion strategies into global markets. These firms should gain their international experience and develop their capabilities in their preferable home-region markets before, if necessary, venturing themselves into unknown territories. Our findings and suggestions are consistent with those found in Arregle, Beamish, and Hébert (2009); Lopez, Kundu, and Ciravegna (2009); Rugman and Oh (2010); Qian et al. (2010); and Qian et al. (2013).

Regarding the interplay between geographic and product diversification, our study of European retail firms is one of the first to examine the moderating effect of product diversification on intra- and inter-regional diversification for an industry sample in the services sector. Our results showed that product diversification only matters for inter-regional diversification. The complexity of product diversification further hinders the already difficult and unprofitable retail business in distant foreign regions. This result is contradicted by recent findings in Contractor and Oh (2014). They showed that product diversification lowered the positive performance outcome of the home-region expansion of U.S. manufacturing firms, while it lessened the negative performance outcome of foreign region expansion.

Due to the differences in the samples, it is difficult to judge whether the heterogeneities are from different industry contexts (i.e., manufacturing vs. retailing), country context (i.e., European firms vs. American firms) or a mixture of the two. Thus, future research should develop datasets consisting of multiple industry sectors and multiple regions, and perform comparative studies in order to find the source of this heterogeneity in the findings. However, one important common finding between Contractor and Oh (2014) and this study is that diversifying into the home-region provides overall superior performance outcomes, while diversifying into foreign regions has a negative performance consequence for both European retail firms and American manufacturing firms. Overall, the findings strongly support the regional MNE (Rugmand and Verbeke, 2004) and internationalization process theories (Johanson and Vahlne, 1977; Contractor et al., 2003).

5.2   Conclusion

Our aim in this article was to extend the research on geographic diversification and firm performance by analyzing the differential effects of intra- and inter-regional diversification. We found that intra-regional diversification has a horizontal S-curve relationship and inter-regional diversification has an S-curve relationship with performance. Product diversification has a significant role in the way that unrelated product diversification negatively moderates the effect of inter-regional diversification on performance. While the retail-trade sector has a relatively low international footprint compared to the manufacturing industry sector, we recommend that retail firms first develop firm-specific capabilities in their home-region market before they operate, if ever, in global markets.

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Table 1. Summary Statistics and Correlation Matrix

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Return on sales	0.047	0.038														
2. Foreign to total sales	0.239	0.282	0.412													
3. Home region to total sales	0.914	0.182	-0.164	-0.645												
4. Geographic diversification	0.639	0.722	0.412	0.826	-0.435											
5. Intra-regional diversification	0.497	0.617	0.363	0.792	-0.261	0.928										
6. Inter-regional diversification	0.178	0.277	0.236	0.637	-0.831	0.658	0.401									
7. Format diversification	1.051	0.610	-0.428	-0.181	-0.003	-0.107	-0.156	0.048								
8. Assortment diversification	0.674	0.252	-0.345	-0.233	0.076	-0.116	-0.103	-0.119	0.564							
9. Related format diversification	0.598	0.444	-0.302	0.011	-0.180	0.012	-0.083	0.256	0.773	0.333						
10. Unrelated format diversification	0.452	0.387	-0.327	-0.298	0.201	-0.184	-0.148	-0.216	0.687	0.506	0.071					
11. Firm size	22.441	1.356	0.039	0.410	-0.318	0.501	0.444	0.438	0.271	0.225	0.402	-0.033				
12. Firm growth	0.089	0.192	-0.090	-0.100	0.068	-0.106	-0.073	-0.108	-0.086	-0.048	-0.087	-0.034	-0.212			
13. Firm efficiency	8.906	1.151	0.218	-0.137	0.075	-0.100	-0.148	-0.021	-0.105	-0.200	0.023	-0.192	0.062	-0.160		
14. Industry size	8.697	0.466	0.211	0.164	0.015	0.137	0.150	-0.030	-0.002	-0.075	0.054	-0.066	0.472	-0.250	0.269	
15. Industry growth	0.042	0.094	-0.014	0.035	0.005	0.031	0.041	-0.013	0.092	0.014	0.102	0.028	0.000	0.010	-0.002	0.0067

[Note: N=385. Correlations above |0.1| are significant at $p < 0.05$. Deemed lettering indicates the variables that do not enter a model together.

Table 2. International Diversification and Firm Performance (ROS)

Measure of multinationality	(1) Foreign to total sales	(2) Home region to total sales	(3) Global diversification	(4) Intra-regional & inter-regional diversification
Multinationality	-0.058	1.194***	0.026	
	(0.051)	(0.304)	(0.017)	
Multinationality squared	0.372**	-1.600***	-0.026	
	(0.168)	(0.489)	(0.017)	
Multinationality cubed	-0.452***	0.710***	0.006	
	(0.140)	(0.244)	(0.004)	
Intra-regional diversification				0.061**
				(0.026)
Intra-regional diversification squared				-0.073**
				(0.029)
Intra-regional diversification cubed				0.020**
				(0.008)
Inter-regional diversification				-0.129**
				(0.053)
Inter-regional diversification squared				0.336**
				(0.143)
Inter-regional diversification cubed				-0.246**
				(0.102)
Firm size (log)	0.017***	0.019***	0.008*	0.011**
	(0.005)	(0.005)	(0.004)	(0.005)
Firm growth	-0.015***	-0.015***	-0.014***	-0.014***
	(0.005)	(0.005)	(0.005)	(0.005)
Firm efficiency (log)	-0.004	-0.004	-0.002	-0.003
	(0.005)	(0.005)	(0.005)	(0.005)
Format diversification	-0.008	-0.007	-0.006	-0.005
	(0.006)	(0.006)	(0.006)	(0.006)
Home country industry size (log)	-0.047***	-0.041***	-0.038**	-0.031*
	(0.016)	(0.015)	(0.016)	(0.017)
Home country industry growth	0.016	0.011	0.014	0.007
	(0.022)	(0.022)	(0.023)	(0.023)
Observations	385	385	384	380
Number of firms	68	68	68	67
R-squared	0.162	0.179	0.111	0.140
F-test	3.21***	3.63***	2.06***	2.27***
LR-test against linear model	26.25***	25.30***	3.01	20.67***
LR-test against quadratic model	13.17***	10.72***	2.42	19.35***

Notes: Firm- and year-fixed effects are estimated, but are not reported here. Standard errors are in parentheses. *P < 0.1; **P < 0.05; ***P < 0.01 (two tailed).

Table 3. Interactions with Product Diversification

Measure of product diversification	(1) Format diversification	(2) Assortment diversification	(3)	(4) Related and unrelated format diversification	(5)
Intra-regional diversification	0.052*	0.065**	0.053**	0.060**	0.053*
	(0.027)	(0.026)	(0.026)	(0.026)	(0.029)
Intra-regional diversification squared	-0.058*	-0.077***	-0.064**	-0.072**	-0.062**
	(0.030)	(0.029)	(0.029)	(0.029)	(0.031)
Intra-regional diversification cubed	0.016*	0.021***	0.018**	0.020**	0.017**
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)
Inter-regional diversification	-0.108**	-0.122**	-0.022	-0.124**	-0.099*
	(0.054)	(0.053)	(0.060)	(0.053)	(0.056)
Inter-regional diversification squared	0.309**	0.312**	0.084	0.308**	0.257*
	(0.142)	(0.143)	(0.156)	(0.145)	(0.148)
Inter-regional diversification cubed	-0.213**	-0.227**	-0.086	-0.223**	-0.169
	(0.102)	(0.102)	(0.109)	(0.104)	(0.106)
Format diversification	-0.007				
	(0.007)				
Intra-regional diversification × Format diversification	0.002				
	(0.012)				
Inter-regional diversification × Format diversification	-0.064**				
	(0.025)				
Assortment diversification		-0.025	-0.026		
		(0.021)	(0.021)		
Intra-regional diversification × Assortment diversification			0.039		
			(0.027)		
Inter-regional diversification × Assortment diversification			-0.170***		
			(0.049)		
Related format diversification (RFD)				0.003	-0.007
				(0.009)	(0.010)
Unrelated format diversification (UFD)				-0.012	-0.014
				(0.009)	(0.009)
Intra-regional diversification × RFD					0.011
					(0.015)
Intra-regional diversification × UFD					-0.005
					(0.017)
Inter-regional diversification × RFD					-0.043
					(0.029)
Inter-regional diversification × UFD					-0.074**
					(0.033)
Firm size (log)	0.008	0.010**	0.013***	0.010**	0.010*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Firm growth	-0.014***	-0.014***	-0.014***	-0.014***	-0.014***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)

Firm efficiency (log)	-0.003	-0.002	-0.003	-0.002	-0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Home country industry size (log)	-0.029*	-0.032*	-0.040**	-0.032*	-0.030*
	(0.016)	(0.016)	(0.016)	(0.017)	(0.017)
Home country industry growth	-0.000	0.006	0.001	0.007	0.000
	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
R-squared	0.161	0.143	0.177	0.144	0.170
F-test	2.42***	2.32***	2.71***	2.23***	2.27***
LR-test against non-interaction model	9.15**		15.30***		11.79

Notes: N=380. See Table 2.

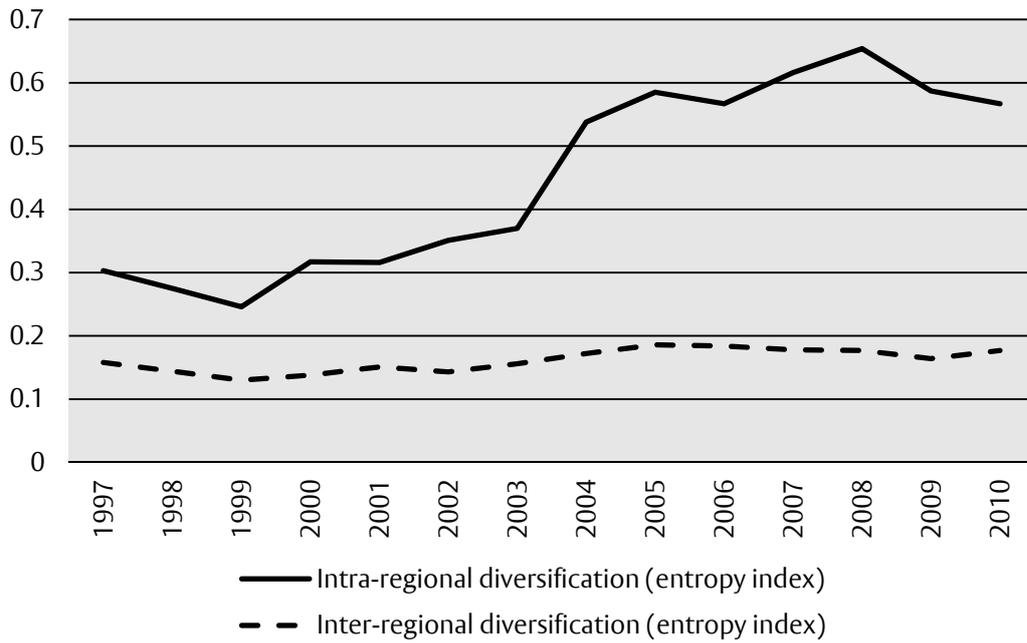**Figure 1. Average Development of Intra- and Inter-regional Diversification for European Retail Firms (1997-2010)**

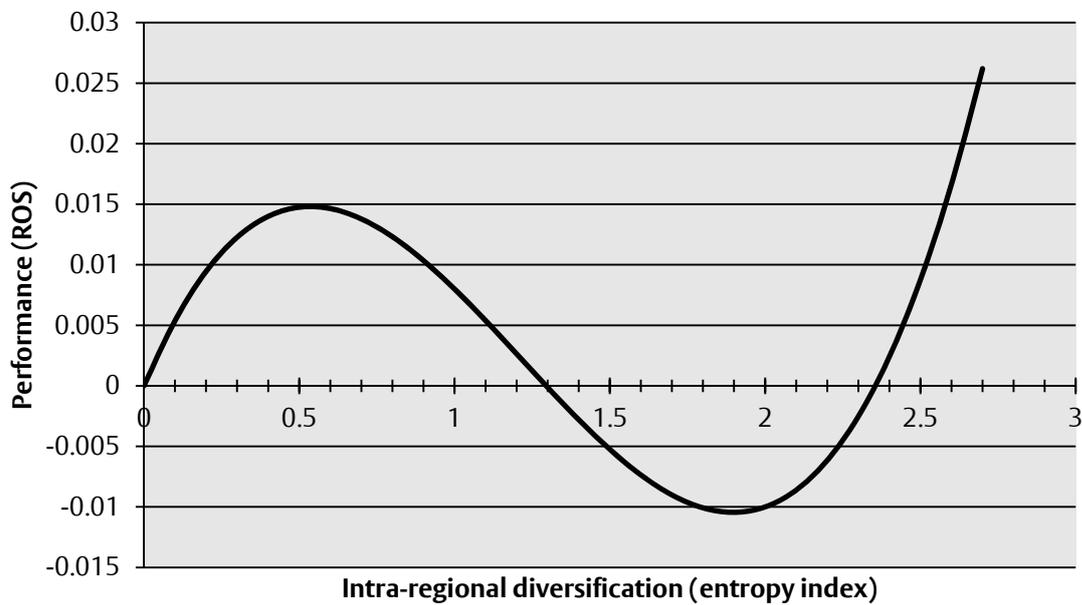

Figure 2. Intra-regional Diversification and Performance

Oh, Sohl and Rugman, March 2014

Figure 3. Inter-regional Diversification and Performance
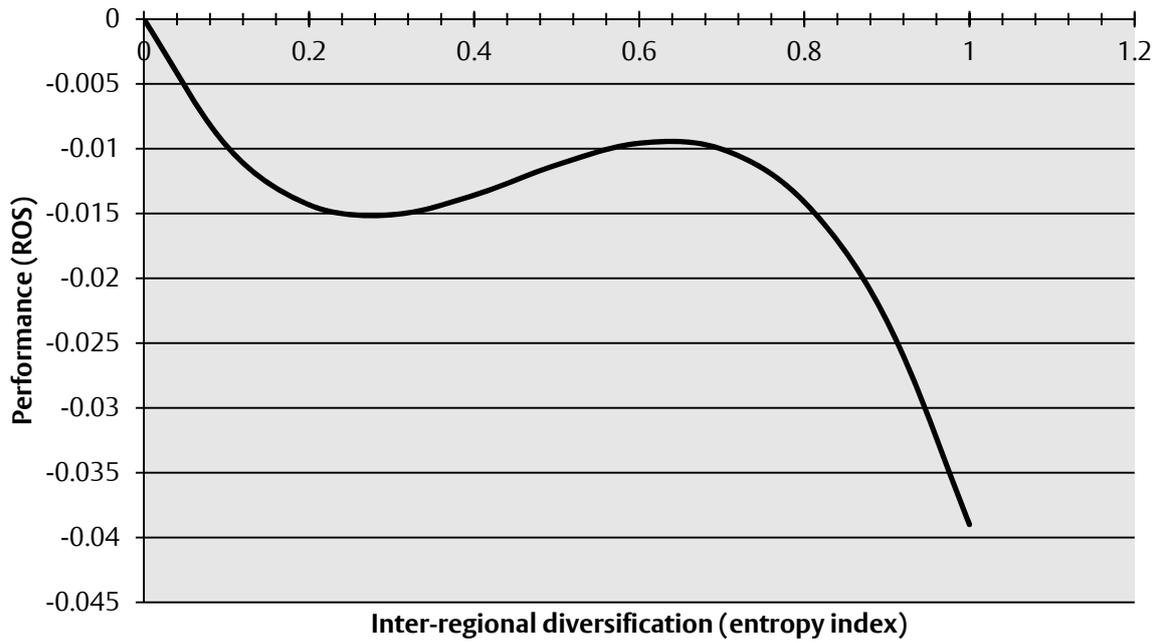
Figure 4. Interaction Effect: Inter-regional Diversification and Format Diversification

—— High format diversification (mean + 1 standard deviation)

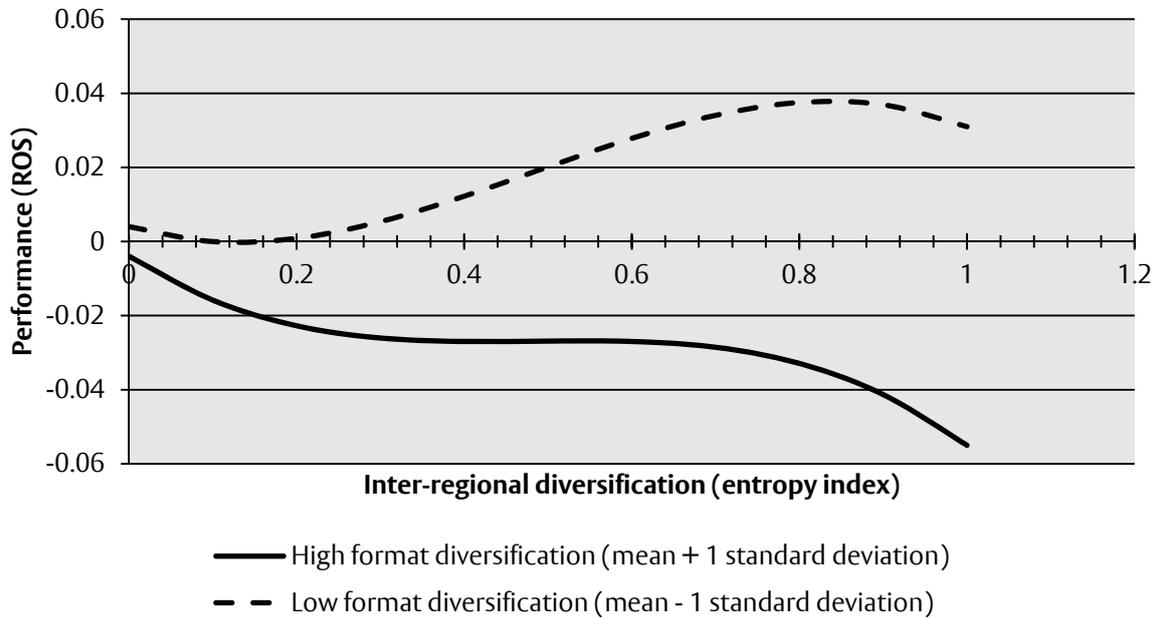– – Low format diversification (mean - 1 standard deviation)

Figure 5. Interaction Effect: Inter-regional Diversification and Unrelated Format Diversification