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Competitive Market Embeddedness, Diversity of the Institutional Environment, and Firm Performance
Encastrement concurrentiel sur le marché, diversité de l'environnement institutionnel et performance de l'entreprise
Encastre del mercado competitivo, diversidad del entorno institucional y rendimiento de la empresa

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Article abstract

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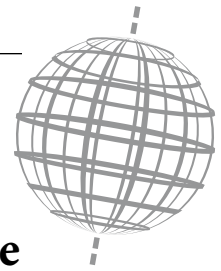
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ABSTRACT

The impact of competitive market embeddedness on multinational enterprises' (MNEs') performance is examined using a sample of 53 hypermarket MNEs from 28 countries between 2007 and 2014. We found that competitive market embeddedness has a U-shaped relationship with MNE performance, and the positive effect is stronger when the coercive institutional environment of the foreign country's market in which an MNE operates is more diverse. Our empirical findings suggest understanding the competitive market structure among multiple rivals is important for explaining the consequences of multimarket contact.

Keywords: multinational enterprise, multimarket competition, performance, institutional environment

RÉSUMÉ

L'impact de l'encastrement du marché concurrentiel sur la performance des entreprises multinationales (EMNs) est examiné en utilisant un échantillon de 53 EMN d'hypermarchés de 28 pays entre 2007 et 2014. Nous avons constaté que l'encastrement du marché concurrentiel avait une relation en forme de U avec les performances des multinationales, et que l'effet positif était plus fort lorsque l'environnement institutionnel coercitif du marché des pays étrangers dans lequel opère une entreprise multinationale est plus diversifié. Nos résultats empiriques suggèrent qu'il est important de comprendre la structure du marché concurrentiel entre plusieurs rivaux pour expliquer les conséquences d'un contact multi-marché.

Mots-Clés : entreprise multinationale, concurrence multi-marché, performance, environnement institutionnel

RESUMEN

impacto del encastre del mercado competitivo en el desempeño de las empresas multinacionales (EMN) se examina utilizando una muestra de 53 empresas multinacionales de hipermercados de 28 países entre 2007 y 2014. Encontramos que la inserción en el mercado competitivo tiene una relación en U con el rendimiento de las EMN, y el efecto positivo es más fuerte cuando el entorno institucional coercitivo del mercado del país extranjero en el que opera una empresa multinacional es más diverso. Nuestros hallazgos empíricos sugieren que comprender la estructura competitiva del mercado entre múltiples rivales es importante para explicar las consecuencias del contacto multimercado.

Palabras Clave: empresa multinacional, competencia multimercado, desempeño, entorno institucional

The issue of how a multinational enterprise's (MNE's) global competition affects its performance is central to strategy and international business research. One factor that affects both competition and firm performance is the degree of multimarket competition between rivals. In the face of multimarket competition, rivals are likely to engage in mutual forbearance to deter other rivals, and that involves either colluding or reducing market entry (Baum and Korn, 1999; Bernheim and Whinston, 1990). Prior researchers have argued that this approach positively influences aspects of organizational performance such as return on assets (ROA) and sales (Evans and Kessides, 1994; Gimeno, 1994).

There are two key motivations for this study. First, recent research indicates that MNEs often concurrently compete through an interconnected system of multiple foreign market engagements (Tsai, Su, and Chen, 2011). However, relatively little attention has been devoted to this concept, which implies that the outcomes of multimarket competition between two rivals are likely to depend on the overall market competition context. In other words, an MNE's strategic behavior can not only be influenced by dyadic multimarket competition but also constrained by the overall structure of competition among rivals (Burt, 1992). Although mutual forbearance can occur in two rivals' mutual market competition, such forbearance may also be facilitated by an MNE's relative position in a competitive market structure.

Second, an institutional environment as a contingent condition can either strengthen or weaken the effect of multimarket engagement on an MNE's behavior and performance (Arregle, Miller, Hitt, and Beamish, 2013). Several studies have used either institutional distance or a dyadic analysis of an MNE's home and a host country market to capture the impact of a coercive institutional environment. However, given that MNEs operate in several foreign countries' markets simultaneously and their international strategy considers competition across host-country markets, it is worth examining the effect on MNE performance of variation in the coercive institutional environments across host countries (Arregle *et al.*, 2013; Goerzen and Beamish, 2003).

This study addresses that gap by empirically examining how concurrent competition between and among MNEs impacts firm performance. To do so, we draw on the network embeddedness theory, assuming that competing behavior between a firm and a rival is embedded in the structure of the market competition among several other rivals (Tsai *et al.*, 2011). Moreover, we complement prior research that has highlighted institutional distance at a dyadic level by examining the fundamental manner in which the MNE performance effect for competitive market embeddedness is influenced by the diversity of the institutional environment. When we refer to the institutional environment, we are speaking of the coercive institutions (political, regulatory, and economic structures) that have a strong and visible impact on an MNE's foreign market engagement (Holmes, Miller, Hitt, and Salmador, 2013; North, 1991).

We argue that an MNE's competitive market embeddedness in a competitive network weakens the firm's performance. We also argue that whereas competitive market embeddedness can be negative for a firm's performance, after a certain threshold, the negative effect declines, and firm performance can be positively affected by competitive market embeddedness. We lastly argue that the extent of institutional diversity in foreign markets has a bearing on the effect of competitive market embeddedness on a firm's performance.

We test our hypotheses by examining the structure of the multimarket competition within MNEs that operated in the global grocery market between 2007 and 2014. In this context, we test the impact of highly dense multimarket competition on performance. We seek to contribute to the multimarket competition literature in two related ways. First, instead of focusing on the premise that multimarket competition is measured at the dyadic level, we explore the effect of competitive market embeddedness in which each multimarket contact between two rivals is embedded in a competitive network of individual rivals. Second, by examining the diversity of the coercive institutional environment among foreign markets, we extend the contingent perspective on multimarket contacts, which previously has been limited to the institutional or cultural distance between two foreign markets.

Literature Review

Multimarket Competition and Performance

Business strategy research suggests that rivals with highly competitive contacts in multiple markets compete less intensely with one another because of mutual interdependence. (Bernheim and Whinston, 1990). The argument is that when a rival engages in an initially aggressive market entry, its rival counterattacks by establishing a foothold in the opponent's markets; those foothold strategies lead to a process of competitive escalation in each other's markets (Baum and Korn, 1999). In this competition, the awareness of mutual interdependence leads to quick imitation of the competitors' moves to maintain competitive parity and results in suppressing the intensity of the rivalry; this behavior has been referred to as mutual forbearance (Gimeno and Woo, 1999; Jayachandran, Gimeno, and Varadarajan, 1999). Several empirical studies have found that multimarket competitions are closely related to deterred rivalry (Rhoades and Heggestad, 1985), price collusion (Evans and Kessides, 1994), firms' collusive

behavior (Parker and Röller, 1997), and decreasing foreign market entry (Baum and Korn, 1999). Some studies have found that multimarket contact positively influences organizational outcomes, such as relative higher profits (Scott, 1991), price-cost margin and ROA (Hughes and Oughton, 1993), and sales (Evans and Kessides, 1994; Gimeno, 1994). Recently, in a study of cooperative networks, Shipilov (2009) found that firms with a high level of historic multimarket contact with partners augment their performance more compared to firms that do not enjoy multimarket contact with their partners. Guedri and McGuire (2011) found that multimarket competition has a strong positive effect on firm performance for strategic groups surrounded by high mobility barriers.

In global strategy research, scholars have highlighted the MNEs' multimarket competition to explain why MNEs enter host country markets (Casson, 1987; Graham, 1990). Multimarket competition is a central feature of global industries because MNEs are aware of their mutual interdependence (Porter, 1986). Consequently, MNEs follow their rivals' market entry behaviors to avoid a competitive disadvantage and weak cross-subsidization and to match their rivals' presence, economies of sales, and market shares in host country markets (Porter, 1986). Recently, a few international business studies have investigated whether the MNE's response to a rival attack varies with the degree of multimarket contacts in host countries. Yu and Cannella (2007) examined a sample of 13 global automaker firms in 27 countries, and they found that geographical distance, government constraints, and multimarket contacts affect the speed of an MNE's response to a rival's attack. Similarly, Yu, Subramaniam, and Cannella (2009) found that foreign subsidiary ownership, cultural distance, and government regulation influence the effect of multimarket contacts.

Although previous studies of strategy and international business have significantly contributed to our understanding of the consequences of multimarket competition, we believe that there is an opportunity to expand our understanding of multimarket competition's influence for three reasons. First, previous international business studies have not greatly focused on the performance implications of multimarket competition in global markets and the effects of multimarket contact on rivalry.

Second, while several empirical studies of multimarket competition have found evidence that mutual forbearance from increasing multimarket contacts influences organizational outcomes, their sample of firms is from a single country, the US, and this does not allow one to examine the performance effect of multimarket competition in conjunction with firms' engagement in global markets. Furthermore, those studies on the organizational outcomes have yielded mixed results; some have found no evidence of mutual forbearance (Strickland, 1985), such as ROA (Rhoades and Heggestad, 1985) or advertising price (Waldfogel and Wulf, 2006). In a recent study of the Norwegian insurance industry, Greve (2008) found that a firm's sales growth is rapid when it does not meet many multimarket competitors in a given market.

Third, previous studies have mostly focused on the market competition in a firm-rival relationship and assumed that competing behavior between two rivals is an isolated result instead of an interdependent element in competitions among multiple rivals in an interconnected competitive structure. Although the general assumption appears to be that the consequence of multimarket

competition among several rivals is likely to be equal to the aggregation of the forbearance effect of the isolated firm-rival level, this assumption remains largely untested. Given that an MNE engages in several foreign markets in which multiple rivals also compete simultaneously (Goerzen and Beamish, 2003), prior studies have failed to explore the critical issue concerning the consequence of multimarket competition among multiple rivals.

STRUCTURAL EMBEDDEDNESS

Network scholars have long emphasized that network structure is a key determinant of a firm's behavior in its social relationships (Burt, 1992; Coleman, 1988). They have argued that the patterns of network structure significantly influence the firm's network behavior by developing a theoretical framework of network embeddedness, which involves the extent to which the dyadic relationships of each firm are embedded in a broader network of all relationships (Ibarra, Kilduff, and Tsai, 2005; Kilduff and Tsai, 2003). For instance, when firms in a network are tightly connected with one another, they are more likely to develop reliable relationships based on trust and reciprocity (Coleman, 1988). In such a dense network structure, firms are more prone to increase their willingness to invest resources and efforts in sharing knowledge and risk with other members, which helps maximize the benefits from collaboration (Nahapiet and Ghoshal, 1998; Reagans and McEvily, 2003).

In contrast, Burt (1992) suggested that the extent to which one firm connects to others that are connected to each other influences the firm's behavior, perceptions, and outcomes. For instance, in a sparse network in which structural holes are rich, firms that bridge between disconnected firms benefit from brokerage positions (Burt, 1992; McEvily and Zaheer, 1999; Rowley, Behrens, and Krackhardt, 2000). That is, spanning structural holes enables them to access more novel information on business opportunities and to exploit that information for their advantage. Indeed, in a study of the Canadian mutual fund industry, Zaheer and Bell (2005) found that firms that bridge structural holes in a network improved their market share. Moreover, Rowley *et al.* (2000) found that the effect on firm performance of network embeddedness is contingent on industry context.

In this paper, we argue that both an integration of a multimarket competition approach and a competitive network structure are critical for understanding the relationships of multimarket competition and performance (Burt, 1992; Uzzi, 1997).

Hypotheses

Recent network studies suggest that competitive relations show the essential attributes of a relational form that network theory focuses on and vary in intensity, frequency, and strength over time in sequence (Knoke and Yang, 2008; Skilton and Bernardes, 2015). In citing Gimeno (2004) and Tsai *et al.* (2011), Skilton and Bernades (2015) pointed out that the difference between cooperative and competitive networks is that "while in cooperation network action follows private information flows, competition network action follows from selective attention to public actions" (2015, p. 1689).

Competition studies focus on competitive moves and reactions between two firms when they seek out the same markets or customers, and there is a high market overlap between them that makes their behaviors competitively interdependent. Gimeno (2004) argued that these dyadic competitive relations between firms "form a competitive network in which firms are embedded, [and] the structure of that network influences firms' behavior beyond the effect of dyadic market overlap" (p. 822). For example, in a competitive network of three firms (A, B, and C), A competes with B in one market and with C in another market, but B and C do not compete with each other. If A responds to a competitive move by B, C might react to A's action or do nothing. This suggests that like network embeddedness according to Burt's theory of brokerage, competitive signals originating from an indirect tie (B) are transformed by how a mediating firm (A) responds to them and influences competitive actions of another indirect tie (C) (Skilton and Bernardes, 2015).

In the context of global competition, MNEs are competitively interdependent because they often engage in several foreign markets in which their rivals are also present (Chen, 1996; Stuart, 1998). This type of interconnected, competitive system forms a competitive structure in which firms are embedded. An MNE's competitive structural embeddedness increases as it develops contacts with its competitors in additional foreign markets in which those competitors are also mutually developing contacts (Tsai *et al.*, 2011). This competitive network structure offers an important understanding of MNEs' strategic actions and competing behavior. As Tsai *et al.* (2011) indicated, such a system allows an MNE "to actively simulate the rival's consideration" (p. 776) because it is likely to develop responses and strategies for competing against its rivals' intentions.

Competitive market embeddedness has an effect on an MNE's behavior and market sales by affecting its competitive environment. For instance, under increasing multimarket engagement, the rivals may increase their counterattacks, initiating a process of competitive escalation in each other's market (Baum and Korn, 1999). This escalation can lead to a reduction in a firm's performance outcomes, such as sales growth and new product introduction (Haveman and Nonnemaker, 2000; Kang, Bayus, and Balasubramanian, 2010), which is consistent with the conventional argument that increasing competition among rivals is likely to constrain a firm's performance.

The effect of multimarket engagement on performance might change to the extent that MNEs are likely to find ways to manage and exploit the competitive pressure. Competitive market embeddedness facilitates information dissemination in the interconnected system, increasing efficient information spillovers or leakage about other competitors' behavior by many overlapped and indirect connections (e.g., Ahuja, 2000; Burt, 1992; Echols and Tsai, 2005). With an increasing number of competitive relationships among rivals, an MNE is likely to have information on the rivals' strategic behaviors and recognition of their interdependencies. Because the MNE can observe how its rivals interact in the interconnected system, it will likely verify or modify the strategic behaviors that it has implemented against these rivals (Fuentelsaz and Gómez, 2006; Tsai *et al.*, 2011).

Accordingly, we expect the competitive market embeddedness to exhibit a curvilinear effect on an MNE's performance. The initial level of competitive contacts intensifies the rivalry and reduces market sales. However, as competitive market embeddedness increases, the MNE recognizes its interdependence

and manages competitive pressure either by engaging in tacit collusion with rivals or by increasing the motivation for knowledge sharing (Audia, Sorenson, and Hage, 2001; D'Aveni, 2002). Thus, we state Hypothesis 1 on this relationship as follows:

Hypothesis 1: An MNE's increasing competitive market embeddedness among rival firms is associated with the MNE's performance that first decreases and then increases, forming a U-shape.

Diversity of the Coercive Institutional Environment

When MNEs compete in different geographic markets, they experience the pressure of diverse institutional environments. Specifically, this pressure results from the constraints of different coercive institutions through the regulatory and political environment and economic structure, which largely influence MNEs' strategic activities and business operations (Holmes *et al.*, 2013).

The coercive institutional environment constrains and regulates organizational behavior both by establishing a level of governmental checks and balances and by providing explicit rule-setting, monitoring, and sanctioning activities through formal and encoded laws (North, 1991). By imposing sanctions (or the threat of sanctions), coercive authorities impose their will and rules on organizations. Although authorities may induce compliance from organizations by providing supporting programs and rules and funds, the regulatory environment's primary mechanism is coercion (DiMaggio and Powell, 1983). For instance, regulatory pressure by an authoritarian government is likely to reduce MNEs' risky investments by imposing high levels of political constraints and forcing the MNEs to reduce their exposure to government over-regulations (Caprio, Faccio, and McConnell, 2013). Such strong government regulatory rules and policies influence managerial incentives in shaping the MNE's policies (John, Litov, and Yeung, 2008). Alternatively, when political and regulatory controls are not strong, MNEs are more likely to have greater opportunities to pursue their desired strategic actions, leading to high-risk investments.

The economic environment relates to a coercive constraint that reduces uncertainty and information asymmetries in market transactions and establishes rules in the market economy (North, 1990). Reflected in a country's monetary and fiscal policies (Lucas, 2003), the economic environment influences the availability of financial resources and potential consumption, production, and cost of living in the country, which have an impact on that country's attractiveness to foreign investors (Brouthers and Brouthers, 2000).

When a MNE operates in multiple foreign markets, diverse coercive institutional environments further increase internationalization costs and can be obstacles to successful operation in foreign markets (Hitt, Hoskisson, and Kim, 1997; Kostova and Zaheer, 1999). For instance, diversity of coercive institutional environments can increase an MNE's transaction costs because it increases management complexity by incurring higher coordination costs, such as the costs associated with communicating, learning, adjusting, and monitoring (Hitt *et al.*, 1997; Kostova and Zaheer, 1999), in managing different institutional environments. Thus, varying coercive institutions across several host markets relate to MNEs' propensity

to internationalize in the region close to their home countries (Banalieva and Dhanaraj, 2013). When diversity of coercive institutional environments decreases, MNEs are better able to exploit resources and knowledge and transfer them to other host markets (Chan, Isobe, and Makino, 2008).

Recently, scholars have argued that experience from diversity of institutional environments can contribute to learning and heighten the potential for developing organizational resources and capabilities that can offer distinctive synergies across foreign markets (Björkman, Stahl, and Vaara, 2007; Stahl and Voigt, 2008). Operating in dissimilar foreign markets can generate fertile ground for finding solutions in the face of challenges or problems in foreign markets in three ways. First, several foreign markets with a broad array of dissimilar institutional environments can provide a greater choice for problem solving and opportunities to experiment with different solutions (Cuervo-Cazurra and Genc, 2008). These positive effects can enable the MNE to develop new approaches to adapt to new institutional environments and address distinct institutional requirements. Thus, the diversity of institutional environments contribute to an increase in an MNE's ability and flexibility to effectively cope with these environments (Gaur and Lu, 2007). Second, by confronting various demand characteristics, rivals, and business partners, MNEs may have strong incentives to avoid failures in unfamiliar environments, leading to the construction of a richer knowledge structure and capabilities than if they operate in only a few foreign markets (Wu, 2011). Third, diversity of institutional environments can provide a larger number of new ideas, knowledge, and practices outside the realm of an MNE's specialty (Barkema and Vermeulen, 1998). These novel resources provide the MNE the opportunity to develop technologies and various new products to address new and dissimilar customer needs through redesign and combination (Luo and Tung, 2007).

We contend that diversity of coercive institutional environments can have important implications for the effect of competitive market embeddedness on an MNE's performance. When an MNE operates in multiple foreign markets with varying coercive institutional environment, it can develop new resources and capabilities throughout several foreign country markets rather than being restricted to one country by integrating its firm-specific resources with new knowledge and practices acquired from those markets (Rugman and Verbeke, 2005; Sapienza *et al.*, 2006). Increasing MNE's competitive market embeddedness may lead the MNE to apply those resources and capabilities in the increased competing markets, which could not only improve the MNEs' competitiveness in foreign markets but also reduce internationalization costs by enabling the MNE to redeploy these resources and capabilities in several markets without additional deployment cost (Sapienza *et al.*, 2006). That is, the MNE will be exposed to more opportunity to use and deploy its new firm-specific resources and capabilities at relatively lower cost to cope with competition, which can at some point outweigh the cost of the diversity. Thus, it is reasonable to expect that diversity of coercive institutional environments will magnify the positive effect of pronounced competitive market embeddedness on an MNE's performance as competitive market embeddedness increases.

However, when an MNE is at a low level of competitive market embeddedness, there is reason to expect that diversity of coercive institutional environments may depress an MNE's performance. Although diversity of coercive institutional environments can enhance learning and knowledge to develop new resources and capabilities, an MNE's relatively lower exposure to markets will restrict the MNE's opportunity to exploit its resources and capabilities and will result in minimal benefits of diversity of coercive institutional environments.

In view of these arguments, we expect that the benefits from diversity of coercive institutional environments are likely to be minimal with competitive market embeddedness up to a point, but then the benefits resulting from high levels of diversity of coercive institutional environments will overtake the cost, and the net impact on MNE performance will become positive. Formally, we propose Hypothesis 2:

Hypothesis 2: The effect of an MNE's competitive market embeddedness on performance (increasing sales growth) is greater when the diversity of coercive institutional environments increases.

Methodology

Sample

We tested our hypotheses using a longitudinal dataset describing engagement in foreign markets, the institutional environment of countries, and the firm characteristics of major hypermarket MNEs operating in the global grocery industry between 2007 and 2014. A hypermarket is a superstore combining a supermarket and a department store; its business model focuses on high-volume and low-margin sales. Thus, the global grocery industry is known for the prevalence of competition among such hypermarket chain firms in several foreign markets featuring diverse institutional environments (Kim and Singal, 1993).

To examine the effect of competitive market embeddedness and the diversity of coercive institutions on an MNE's performance in the global grocery industry, we compiled data from several sources. We first used a data set of global grocery firms in foreign markets from the Planet Retail database. Planet Retail is a commercially available database on retailing that includes detailed information on leading retailers' market activity, foreign countries in which they operate, and an analysis of the global retailing industry. This database is considered one of the most comprehensive database of retailers around the world and contains information on retailers' retailing sectors, total outlets, store format, banner sales, outlet sales, sales, market share, and sales growth in both foreign country and national market and allows identification of key characteristics of retailers' behavior. We used this database to identify multimarket market contacts and observe competitive market ties in each year of the observation period. This database has been employed less frequently in the literature, which means that our results can be regarded as strengthening previous findings on the role of multimarket competition in explaining the relation between competition and performance.

Our sample of competitive market embeddedness was generated in three steps. First, we started with an initial sample of 226 hypermarket chain firms from Planet Retail. Because we focused on competitive market embeddedness and performance

in global markets, we excluded firms operating in a single home-country market. We also omitted private firms that were missing financial data and provided insufficient data for the firm-level characteristics, such as the number of stores, firm size, and national sales record. After applying these criteria, we obtained a sample of 53 hypermarket chains from 24 countries operating in 102 foreign country markets that represented approximately 95% of the world grocery markets during the study period. From 2007 to 2014, each sample firm engaged in an average of 6.24 foreign markets, but there were important variations in multimarket activity across firms. A few firms engaged in up to 51 foreign country markets, whereas some other firms engaged in only three or four foreign markets. Each foreign country market has an average of 5.5 market contacts; some countries have up to 36 market contacts among grocery MNEs. This led to an unbalanced panel dataset. Our original panel dataset comprised 1,386 observations with dyad-level market contacts. After constructing a competitive market embeddedness variable at the network level, we obtained a final dataset with 336 observations for 53 firms. A list of retailers presented in our sample is provided in Table 1.

We then analyzed the MNEs' annual reports to corroborate the data from Planet Retail because firms' annual reports provide firm-specific characteristics, financial data, and information on foreign market activities and legitimize their foreign operations to outside observers. To obtain data for the institutional environment, we used the Index of Economic Freedom (IEF) data, which was created by the Heritage Foundation and the *Wall Street Journal* in 1995 (Holmes *et al.*, 2013; Gwartney, 2009). Gwartney (2009) represented that the availability and productivity of resources is influenced by the quality of a nation's institutions; secured property rights, open markets, and minimal trade restrictions are key elements of a sound institutional environment.

The IEF Index ranks 186 countries according to their level of economic freedom based on the following 10 factors: business, trade, fiscal policy, government spending, monetary policy, foreign investment, financial policy, property rights, corruption, and labor. In countries that have high levels of freedom, governments allow labor, capital, and goods to move freely and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty (Index of Economic Freedom).

Variables

Performance. We used sales growth to measure MNE performance. Sales growth is one MNE key goal because the outcome from competition directly manifests itself in revenue increases by gaining new customers (Helfat *et al.*, 2007). Furthermore, because increases in sales volume occur more quickly than changes in accounting-based performance measures, the use of sales growth permits a shorter lag structure in the statistical analysis (Stuart, 2000). Thus, sales growth might be more appropriate than profitability in this competitive retailing industry. We calculated sales growth ($Sales_{t+1}/Sales_t$) using a log transformation (Podolny, Stuart, and Hannan, 1996; Stuart, 2000).

Competitive market embeddedness. To measure the retailing MNEs' competitive market embeddedness, we followed Burt's (1992) structural holes of ego-network, which involves individual actors' positional advantage and disadvantage (based on how an actor is connected), which can affect their constraints and

TABLE 1
List of retailers

Number	Retailer	Origin of country
1	Carrefour	France
2	Casino	France
3	Auchan	France
4	Ahold	Netherlands
5	Walmart	USA
6	Louis Delhaize	Belgium
7	Tesco	United Kingdom
8	AEON	Japan
9	Dairy Farm	Singapore
10	LuLu Group	United Arab Emirates
11	Mercator	Slovenia
12	Schwarz Group	Germany
13	Leclerc	France
14	Metro Group	Germany
15	SPAR (Austria)	Austria
16	Agrokor	Serbia
17	Cencosud	Chile
18	SOK	Finland
19	The Sultan Center	Lebanon
20	Yimpas	Turkey
21	ICA Gruppen	Sweden
22	Kesko	Finland
23	Lotte Shopping	South Korea
24	Spinneys (LEB)	Lebanon
25	Coop Trading	Sweden
26	Delta M Group	Serbia
27	Dohle	Germany
28	Giant Stores	Saudi Arabia
29	Globus	Germany
30	John Lewis	United Kingdom
31	Mega Mart	South Korea
32	Panda	Saudi Arabia
33	SPAR International	Netherlands
34	UNY	Japan
35	Vester	Russia
36	Whole Foods Market	USA
37	Al Safeer	United Arab Emirates
38	Chedraui	Chile
39	Coop Italia	Italy
40	Daiei	Japan
41	Edeka	Germany
42	H-E-B	USA
43	Jerónimo Martins	Portugal
44	Migros	Switzerland
45	Migros Ticaret	Turkey
46	NTUC FairPrice	Singapore
47	Parkson	Malaysia
48	Safeway (USA)	USA
49	Sainsbury	United Kingdom
50	Sedmoi Kontinent	Russia
51	Seven and I	Japan
52	Shinsegae	South Korea
53	Tengelmann	Germany

opportunities and, thus, their behavior. Imagine a relational network of three actors (A, B, and C) in which each is connected to the other. When A wants to influence or exchange with another actor, A will not be in a strong bargaining position because both of A's potential exchange partners (B and C) could isolate A and exchange with one another. However, in a situation in which there is a structural hole between B and C, A has an advantaged position because A has two alternative exchange partners, whereas B and C have only one: A. The formula used to calculate the constraint is as follows:

$$\Sigma(P_{ij} + \Sigma P_{iq} P_{jq})^2, q \neq i, j \text{ (Burt, 1992)},$$

where P_{ij} is the proportion of rival i's competitive contact in the relationship with rival j and $\Sigma P_{iq} P_{jq}$ is the sum of the indirect contact strength from i to j, via all contact q.

To operationalize competitive market embeddedness, we first calculated market contacts at the dyad level, reflecting the overall degree of multimarket contact between MNE i and j in all the foreign country markets in which both are present (Baum and Korn, 1999). Based on this market overlap between two MNEs, we created an annual adjacent matrix of market contacts among all pairs of MNEs in our sample. Next, network measures were computed using UCINET Version 6 (Borgatti, Everett, and Freeman, 2002). Competitive market embeddedness, as a structural holes measure, represents the extent to which market contact between a focal firm and each of its rivals in its competitive network constrains the focal firm. In other words, focal firm A's behavior is constrained by its market contact with rival B to the extent that other rivals who have market contacts with firm A also have contact with rival B. If the rivals that have contact with the focal firm also have contact with one another, the firm is highly constrained. This indicates that the firm is likely to have two options: high competition or collusion. Figure 1 presents an example of a sample MNE's competitive market contacts, specifically, Tesco's competitive market connections with rivals at the end of 2011.

Diversity of the coercive institutions. The coercive institutions represent structures of codified and explicit rules that provide authoritative behavioral guidelines by establishing and enforcing laws, regulations, and policies that govern business activities (North, 1990). We took two steps to measure the diversity of coercive institutions. First, we calculated a score for coercive institutions using the Index of Economic Freedom data (Gwartney, Block, and Lawson, 1996). Those data included aggregate indicators constructed based on 10 quantitative factors. Among these 10 factors, we specifically employed eight factors that are most closely associated with our conceptualization of a coercive environment, namely, property rights, freedom from corruption, business freedom, labor regulation, monetary policy, trade policy, foreign investment policy, and government intervention in banking. All factors loaded positively (factor loadings > 0.64), reflecting a greater regulatory institution. A high score indicates that the country has a broader and more restrictive institutional environment and oversight. Second, we calculated the diversity of the coercive institutions with the coefficient of variation across the countries. The coefficient of variation is the standard deviation of the distribution divided by its mean. A higher coefficient of variation indicates greater institutional diversity (Pfeffer and Langton, 1993).

Control variables. We controlled for *MNE age* with the logarithm of the number of years since an MNE's founding. In addition, we controlled for *MNE size* as the logarithm of a given MNE's total assets because larger firms may have greater resources and a larger propensity to take competitive actions in the markets than smaller firms. We controlled for the *MNE international experience*, which could influence an MNE's capability to implement a wider array of competitive actions. We measured this experience using the logarithm of the number of foreign countries over the 5-year period prior to the year *t*. An MNE's general and administrative expenses in foreign markets may contribute to its *marketing advantage* (Anand and Delios, 2002), which could influence the outcomes of competition in foreign markets. We measured an MNE's marketing advantage by using the number of foreign outlets as the logarithm. Regional effects can influence MNE performance because an MNE from an advanced economy or country may benefit from its country's image and industrial policies when it competes in foreign markets (Phelps, 2010). We controlled for *developed economies effects* using a dummy variable, coded as 1 if an MNE's headquarters is in the United States, Canada, or Europe and 0 for otherwise. Finally, year dummies were included in all models to control for period effects.

Analysis

Due to the nature of the panel data, there was a potential for unobservable heterogeneity. Although both fixed-effects Models and generalized least squares (GLS) random-effects Models can cope with unobservable heterogeneity, we estimated the models using a random-effects model because we wanted to capture between-firm effects (e.g., variation in competitive market embeddedness between firms). We applied the Hausman test (which ascertains the validity for using a random-effects specification) to ensure that our choice of model was justifiable.

Pooling repeated observations on the same firms can result in autocorrelation of the models' residuals, which then generates biased estimates for the model of interest with the lagged dependent variable (Judge, Griffiths, Hill, and Lee, 1985). The test was not significant and supported the use of random effects. To test the robustness of the GLS model, we used an alternative modeling approach. Although a fixed-effects approach is appropriate, we did not use the Models because some variables varied very slightly over time (e.g., MNE size, international experience, or developed economies effects). Thus, we estimated the models with a generalized estimating equation (GEE) that allows both for modeling correlated observations within subjects and correcting for heteroscedasticity. In using GEE, we specified an identity link function to connect performance and specific covariates and an exchangeable correlation matrix for the within-firm variation (Liang and Zeger, 1986). All analyses were performed using the "xtgee, link (identity) corr (exchangeable)" function in Stata 12.1. The results of the GEE regressions were very similar to the results of the GLS estimation, as reported in Table 4.

Results

Table 2 presents descriptive statistics and a correlation matrix for the variables. Our final dataset consists of panel data of 53 firms and 336 firm-year observations from 2007 to 2014. The hypothesized variables did not correlate strongly with one another or with the control variables, which is attribuTable to centering a theoretical variable on its mean prior to construction of the quadratic term.

Table 3 reports the GLS regression results of our hypotheses tests. Model 1 includes the control variables only. As we expected, MNEs' sales increase when they are older and larger and when their headquarters are in more developed regions. Hypothesis 1 predicted a U-shaped effect of competitive contacts on an

FIGURE 1
Tesco's competitive market embeddedness with rival MNEs in 2011
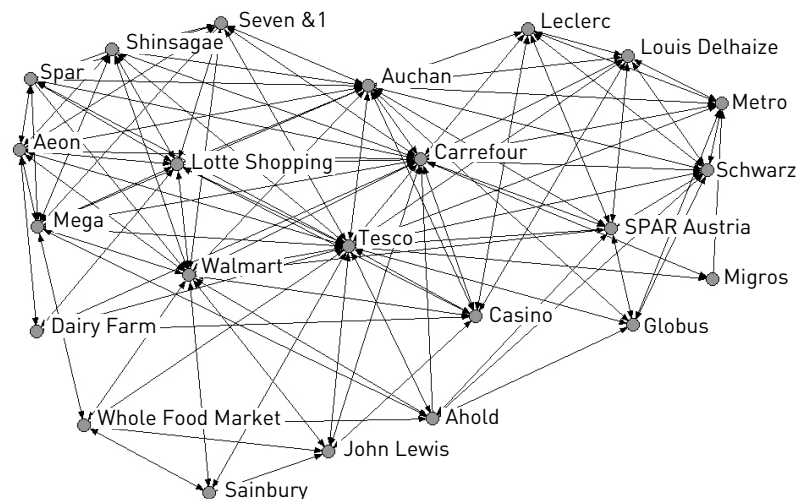
Constraint = 0.202
In the figure, Tesco is the focal firm, or ego. The value of ego network constraint for Tesco's 2011 competitive market network is 0.202. This measure could vary from 0 to 1, with higher values indicative of greater constraint.

TABLE 2
Descriptive Statistics and correlations

Variables	Mean	s.d.	1	2	3	4	5	6	7
1. Performance[a]	0.01	1.76							
2. MNE age[a]	3.84	0.94	0.21*						
3. MNE size[a]	2.54	1.91	0.45*	0.15*					
4. International Experience[a]	6.77	8.65	0.29*	0.13*	0.35*				
5. Marketing advantage[a]	2.13	1.37	0.55*	0.36*	0.28*	0.13*			
6. Developed economies effects	0.54	0.50	0.38*	0.40*	0.20*	0.33*	0.33*		
7. Competitive market embeddedness[b]	-0.36 (4.05)	2.13	-0.30*	0.09*	-0.23*	-0.39*	-0.05	-0.23*	
8. Diversity of coercive institutions[b]	0.01 (3.73)	3.10	0.46*	0.28*	0.26*	0.54*	0.28	0.24*	-0.43*

n = 336, *p < 0.05. [a] logarithm.
[b] We centered the linear effect of the variables around their means before quadratic term and interaction term; means prior to centering are given in arentheses.

MNE's performance. Whereas the impact of the linear effect of competitive contacts on the performance is negative but not significant, the squared term has the U shape predicted by Hypothesis 1. This conclusion is confirmed by the comparison of the Wald test of Models 2 and 3 vs. Models 1 and 2, whose results indicate that Model 3 provides a significant improvement in fit relative to Models 1 and 2. Therefore, the results reflect a U-shaped effect of a competitive contact on the MNE's performance, supporting Hypothesis 1.

Figure 2-1, which uses the coefficients obtained in Model 3, graphically represents this effect. The graphic shows that the curvilinear flexing point is approximately 1.9, and therefore, for a value higher/lower than 1.9, competitive market embeddedness is associated with a lower/higher performance.

Hypotheses 2 predicted the effect that the diversity of institutions strengthens the effect of competitive contacts on performance. Model 6 shows that the interaction of squared competitive market embeddedness and the diversity of institutions has a significant, positive effect on performance, meaning that the increasing rate at which competitive market embeddedness affects performance is higher as institutional environments of engaging foreign markets are more diverse, supporting Hypothesis 2.

Figure 2-2 graphically shows the moderating effect of the diversity of institutions as a sample mean. As shown in this figure, for high levels of competitive contacts, an MNE with more diverse institutional environments is shown to have a larger increase in performance.

Discussion

In this study, we explored how competitive market embeddedness influences an MNE's performance. Unlike past studies focusing on multimarket contacts at a dyadic level, we highlighted the effect of competitive market embeddedness among multiple rivals and proposed that competitive market embeddedness is associated with an MNE's performance. Our findings strongly suggest that competitive market embeddedness has a U-shaped relationship with an MNE's performance. Because coercive institutional environments in foreign markets play an important contingent role in an MNE's market activities, we also examined how diverse coercive institutional environments moderate the

relationship between competitive market embeddedness and MNE performance. Interestingly, we found that increasing the diversity of the institutional environment strengthens the positive influence of competitive market contacts on performance.

The results provide theoretical implications for multimarket competition and international business literature. First, this study's findings advance the understanding of the relationship between multimarket competition and mutual forbearance beyond that facilitated by findings under the dyadic perspective (Yu, Subramaniam, and Cannella, 2009). One key aspect of this contribution is related to recognizing the competitive dynamics in a competitively interconnected system as an influential dimension of MNE performance. Our results show that the level of an MNE's competitive embeddedness depends on the extent of multimarket contacts with its rivals, and multimarket contacts among rivals are crucial to competition and firm performance. We show that when competitive market embeddedness goes beyond a certain point, firm performance increases. Theoretically, we interpret this result as implying that MNEs benefit from information spillovers for rivals' strategic actions and responses through a very high level of competitive embeddedness that represents competitively well-connected markets among firms and rivals. This suggests that to understand the effects of multimarket competition, it is necessary to integrate market contacts at the dyadic and network levels.

Second, this study shows that the performance effect of multimarket competition is contingent on the diversity of the institutional environments in multiple foreign markets. We have cited prior works that have largely focused on institutional contingency influencing multinational engagement using institutional distance as a dyadic measure (Yu *et al.*, 2009). In strongly diverse coercive institutions of foreign markets in which an MNE operates, the potential to yield better adaptive capability and to learn new ideas and practices may enable the MNE to improve the efficiency of its foreign market activities and to reduce its liability of foreignness. Thus, for an MNE operating in more diverse institutional environments, multimarket competition more positively influences performance, as reflected in the upward shift of the relationship between competitive market embeddedness and sales performance.

TABLE 3
Results of Random-effects GLS regression on MNEs' performance

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	-2.325***	-2.301***	-2.315***	-2.347***	-2.341***	-2.373***
	(0.411)	(0.409)	(0.359)	(0.350)	(0.342)	(0.333)
Y08	0.760***	0.759***	0.718***	0.711***	0.711***	0.708***
	(0.057)	(0.057)	(0.054)	(0.049)	(0.050)	(0.046)
Y09	0.007	-0.001	-0.026	-0.026	-0.027	-0.040
	(0.057)	(0.058)	(0.055)	(0.050)	(0.050)	(0.046)
Y10	0.092	0.085	0.066	0.027	0.026	0.015
	(0.058)	(0.059)	(0.055)	(0.050)	(0.051)	(0.047)
Y11	0.187**	0.183**	0.172**	0.122*	0.121*	0.095*
	(0.058)	(0.058)	(0.055)	(0.050)	(0.051)	(0.047)
Y12	0.207***	0.199***	0.177**	0.128*	0.127*	0.118*
	(0.058)	(0.059)	(0.056)	(0.051)	(0.051)	(0.047)
Y13	0.204***	0.194**	0.180**	0.138**	0.138**	0.137**
	(0.059)	(0.060)	(0.057)	(0.052)	(0.052)	(0.048)
MNE age[a]	0.111†	0.110†	0.080	0.162**	0.161**	0.142**
	(0.061)	(0.061)	(0.058)	(0.054)	(0.054)	(0.050)
MNE size[a]	0.247*	0.245*	0.228*	0.212*	0.212*	0.234**
	(0.107)	(0.106)	(0.091)	(0.091)	(0.088)	(0.087)
International experience[a]	0.029	0.027	0.014	-0.003	-0.003	-0.011
	(0.026)	(0.026)	(0.022)	(0.023)	(0.022)	(0.022)
Marketing advantage[a]	0.139**	0.140**	0.179***	0.188***	0.189***	0.177***
	(0.048)	(0.048)	(0.045)	(0.041)	(0.042)	(0.038)
Developed economies effects	0.797†	0.787†	0.644†	0.526	0.523	0.398
	(0.409)	(0.406)	(0.348)	(0.347)	(0.336)	(0.334)
Competitive market embeddedness		-0.025	-0.185***	-0.154***	-0.153***	-0.126***
		(0.023)	(0.031)	(0.028)	(0.030)	(0.028)
Competitive market embeddedness squared			0.049***	0.045***	0.046***	0.089***
			(0.007)	(0.006)	(0.007)	(0.009)
Diversity of coercive institutions				0.106***	0.108***	0.033†
				(0.014)	(0.016)	(0.018)
Diversity of coercive institutions X embeddedness					0.002	-0.008
					(0.007)	(0.007)
Diversity of coercive institutions X embeddedness squared						0.018***
						(0.003)
Wald chi-squared		1.10	56.39***	122.42***	121.32***	190.73***
R^2 within	0.43	0.44	0.52	0.60	0.60	0.66
R^2 between	0.34	0.35	0.44	0.47	0.47	0.51
R^2 overall	0.38	0.39	0.49	0.53	0.53	0.57
Number of observation	336	336	336	336	336	336
Number of firms	53	53	53	53	53	53

$\dagger p<0.10$, *$p<0.05$, **$p<0.01$, ***$p<0.001$. Standard errors are in parentheses.
[a] logarithm.

		TABLE 4				
		Results of GEE regression on MNEs' performance[a]				
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Constant	-2.333***	-2.309***	-2.333***	-2.337***	-2.332***	-2.365***
	(0.420)	(0.418)	(0.403)	(0.382)	(0.383)	(0.377)
Y08	0.761***	0.760***	0.719***	0.713***	0.712***	0.710***
	(0.062)	(0.063)	(0.069)	(0.064)	(0.064)	(0.068)
Y09	0.008	-0.001	-0.026	-0.026	-0.027	-0.041
	(0.063)	(0.063)	(0.070)	(0.065)	(0.065)	(0.069)
Y10	0.093	0.086	0.066	0.027	0.026	0.014
	(0.064)	(0.064)	(0.071)	(0.066)	(0.066)	(0.070)
Y11	0.187**	0.183**	0.170*	0.120[†]	0.120[†]	0.091
	(0.063)	(0.064)	(0.070)	(0.065)	(0.066)	(0.070)
Y12	0.206***	0.198**	0.174*	0.125[†]	0.125[†]	0.113[†]
	(0.064)	(0.065)	(0.071)	(0.066)	(0.067)	(0.070)
Y13	0.203**	0.193**	0.175*	0.134*	0.135*	0.128[†]
	(0.065)	(0.066)	(0.073)	(0.067)	(0.068)	(0.072)
MNE age[a]	0.110[†]	0.110	0.080	0.155*	0.154*	0.135[†]
	(0.067)	(0.067)	(0.072)	(0.068)	(0.069)	(0.072)
MNE size[a]	0.246*	0.245*	0.226*	0.211*	0.211*	0.232**
	(0.106)	(0.106)	(0.095)	(0.092)	(0.092)	(0.087)
International Experience[a]	0.029	0.027	0.013	-0.004	-0.004	-0.013
	(0.026)	(0.026)	(0.024)	(0.023)	(0.023)	(0.022)
Marketing advantage[a]	0.147**	0.148**	0.195***	0.202***	0.202***	0.198***
	(0.052)	(0.052)	(0.056)	(0.052)	(0.052)	(0.054)
Developed economies effects	0.790[†]	0.780[†]	0.622[†]	0.511	0.511	0.370
	(0.408)	(0.405)	(0.368)	(0.355)	(0.355)	(0.338)
Competitive market embeddedness		-0.026	-0.193***	-0.163***	-0.162***	-0.143***
		(0.026)	(0.039)	(0.036)	(0.038)	(0.040)
Competitive market embeddedness squared			0.051***	0.047***	0.047***	0.092***
			(0.008)	(0.008)	(0.009)	(0.013)
Diversity of coercive institutions				0.107***	0.109***	0.034
				(0.018)	(0.020)	(0.026)
Diversity of coercive institutions X embeddedness					0.002	-0.009
					(0.009)	(0.010)
Diversity of coercive institutions X embeddedness squared						0.019***
						(0.004)
Wald Chi-squared		1.06	37.24***	77.40***	77.07***	96.42***
Number of Observation	336	336	336	336	336	336
Number of firms	53	53	53	53	53	53

[†] $p<0.10$, * $p<0.05$, ** $p<0.01$, *** $p<0.001$. Standard errors are in parentheses.
[a] logarithm.

FIGURE 2.1
Effect of competitive ties on MNE's performance

FIGURE 2.2
Effect of competitive ties on MNE's performance contingent upon diversity of institutions
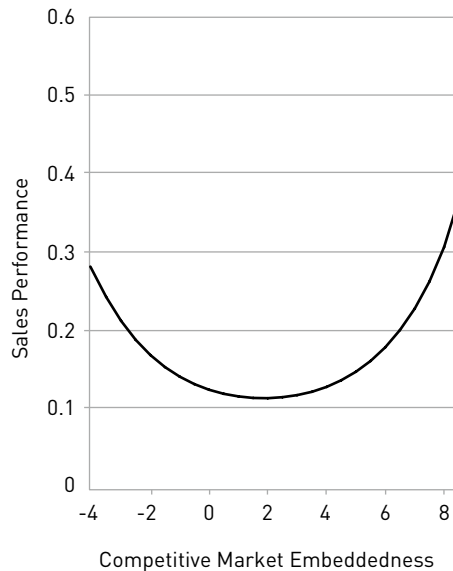
This study also has practical implications for multinational managers. In a global business context in which rivals increasingly compete in the same geographic markets, our theoretical framework and results suggest that developing a sound understanding of rivals' competitive situations and behaviors is an important aspect of increasing an MNE's readiness to engage in global competition.

Despite its potential contributions, this study is subject to several limitations that offer suggestions for future studies. First, our empirical analyses are based solely on data from a single industry over an eight-year period. Although it could be expected that this study's findings would translate well to other industry contexts, the model's broader applicability remains a question for future study. Studies that explore other industry settings or time periods will be important to understanding the generalizability of our results.

Second, this study offers evidence that a diverse coercive institutional environment has a strong moderating effect on the relationship between competitive market embeddedness and performance. However, institutional context can be further understood by informal institutions, such as sociological recognition and behavior at the firm, country, and regional levels. This possibility could be explored in a more diverse sample at different institutional levels, which might further advance the understanding of managing cross-border environments in a multimarket competition context.

Third, although our study tests the effect of competitive market embeddedness on firm performance, relational embeddedness, including joint venture and strategic alliances between rivals, has been a critical activity in an MNE's global strategy. Given the important roles of cooperative alliances among competitors, it would be interesting for future studies to examine whether and how such alliances influence the effect on an MNE's performance of competitive network embeddedness.
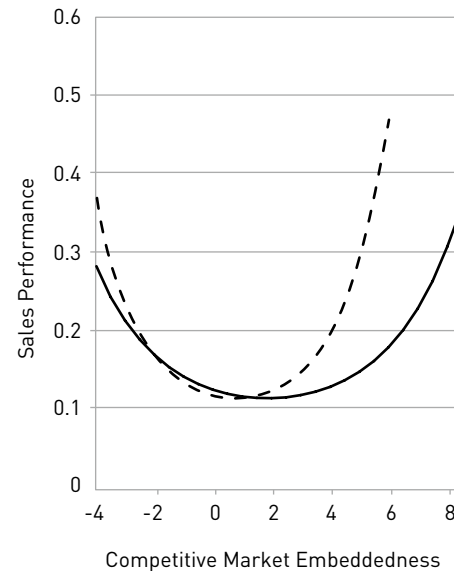
Fourth, MNEs' competitive networks are embedded in a broader competitive network or an ecosystem of global industries with a mix of global and regional suppliers, customers, and competitors (Moore, 1996); thus, future studies should also consider how a global industry network or ecosystem affects MNE performance and interacts with an MNE's competitive market embeddedness.

Fifth, although our paper shows that sales performance correlates well with competitive market embeddedness, it does not provide direct evidence that net profit is also enhanced. It is because that one can consider sales performance as intermediate outcomes of firm activities. Thus, it is an important future study direction to examine alternative performance data to increase understanding of the effect of competitive market embeddedness on MNE performance.

Finally, our study has focused only on the relation between performance and competitive embeddedness, so there are many other research opportunities to improve our knowledge by investigating the effect of organizational knowledge under the condition of competitive embeddedness. For example, accumulated knowledge on markets, resources, and technology can have an important influence on improving the MNE performance. In addition, competitive embeddedness can influence the type of organizational performance, such as collective learning, knowledge development, and innovation. Future studies examining the effect of knowledge might be valuable to draw comparisons with the network theory used in this study.

In conclusion, this study provides strong evidence that competitive market embeddedness has an effect on MNE performance. By additionally showing that diversity of coercive institutions moderates that effect, this study suggests that interconnected system of foreign markets among rivals and institutional environment are important factors in understanding MNE's global competition and performance.

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