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Article

Accepted Version

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Jong Min Lee

Henley Business School, University of Reading, Whiteknights, Reading, RG6 6UD, United Kingdom

Tel: +44 (0)118 378 6861; Email: jongmin.lee@henley.ac.uk

Journal of International Business Studies (Forthcoming)

Pre-proof version (accepted for publication on 19 July 2021) - This version will undergo additional copyediting, typesetting and review before it is published in its final form

MNCs as dispersed structures of power: Performance and management implications of power distribution in the subsidiary portfolio

ABSTRACT

Multinational corporations (MNCs) are considered as dispersed structures of power, in which diverse headquarters (HQ)-subsidiary power relationships collectively influence performance and management. Yet, few studies have accounted for the subsidiary portfolio characteristics shaped by the entire set of differentiated HQ-subsidiary power relationships, and little is known about their effect on the performance and management decisions of MNCs. Drawing on agency and resource dependence theories, this study investigates how the power structure of the MNC, or the pattern of power distribution in the subsidiary portfolio, affects MNC performance and expatriate utilization. Results from a comprehensive panel of Korean MNCs show that the degree of power concentration in the subsidiary portfolio has inverted U-shape relationships with MNC performance and the use of expatriate control. Results also reveal, however, that these relationships vary between manufacturing and downstream subsidiary portfolios. These findings suggest that the structural characteristics of the subsidiary portfolio are important determinants of MNC performance and management. This study opens an important new avenue for international business scholarship by explicitly conceptualizing the MNC as a portfolio of differentiated subsidiaries and examining the consequences of the subsidiary portfolio characteristics.

Keywords: multinational corporations; headquarters-subsidiary relationships; power structure; agency theory; resource dependence theory; expatriates; performance

INTRODUCTION

Many multinational corporations (MNCs) now function as differentiated networks rather than centralized hierarchies, in which each subsidiary commands its own set of resources in a given location across different value chain activities (Nohria & Ghoshal, 1997; Rugman, Verbeke, & Yuan, 2011). According to this view, subsidiaries occupy a prominent place within the MNC as semiautonomous entities capable of making their own strategic choices within certain constraints. Central to this view are the concepts of power, influence, and dependence. Subsidiaries are, by definition, hierarchically dependent on their corporate headquarters (HQ), but they also have sources of influence and power (Bouquet & Birkinshaw, 2008a; Ghoshal & Bartlett, 1990). For various reasons, the position of a subsidiary relative to that of others within the MNC may be stronger or weaker, which further influences its relationship with HQ. There has been increasing evidence that subsidiaries are willing and able to use their power to stimulate change, resource allocation, and growth within the MNC network (Ambos, Andersson, & Birkinshaw, 2010; Mudambi, Pedersen, & Andersson, 2014), and that they compete with each other to obtain, retain, and enhance their position within the MNC (Birkinshaw & Lingblad, 2005; Luo, 2005). The MNC forms a dispersed structure in which power is not equally distributed across subsidiaries, and HQ must deal with the entire set of differentiated power relations within the subsidiary portfolio (Andersson, Forsgren, & Holm, 2007; Geppert, Becker-Ritterspach, & Mudambi, 2016; Nohria & Ghoshal, 1997).

In the past decades, numerous studies have advanced our understanding of MNC governance and HQ-subsidiary relations by exploring how different subsidiary circumstances influence HQ management decisions and how they affect subsidiary performance (Kostova, Marano, & Tallman, 2016; Meyer, Li, & Schotter, 2020). Yet, current research falls short of accounting for the key organizational reality that HQ simultaneously manage an entire portfolio of HQ-subsidiary relations rather than isolated dyadic ones (Nohria & Ghoshal, 1994). Although management of the subsidiary portfolio is a distinct source of value creation (Meyer, Mudambi, & Narula, 2011), few studies have accounted for the subsidiary portfolio characteristics that reflect the entire set of differentiated HQ-subsidiary relationships (Hoenen & Kostova, 2014; Nachum & Song, 2011), and little is known about how they influence MNC management and performance (Belderbos, Tong, & Wu, 2020).

This paper builds on agency theory and resource dependence theory to explore how the power structure of the MNC, or the pattern of power distribution in the subsidiary portfolio, affects MNC performance and the use of expatriate control. Although the two theories have disparate views on the source of subsidiary power, both provide a complementary framework for understanding the full range of HQ-subsidiary power relations in the differentiated MNC (Cuervo-Cazurra, Mudambi, & Pedersen, 2019; Kostova, Nell, & Hoenen, 2018). This study integrates the two theories to explore the management and performance implications of the power structure of the MNC, which is shaped by the entire set of HQ-subsidiary relationships.

Although the defining characteristic of the MNC lies in its geographically dispersed multi-unit structure, its performance is not merely a manifestation of multinationality but it is influenced by the management and coordination of a widely distributed subsidiary portfolio (Kirca et al., 2011; Meyer et al., 2011). A crucial aspect of MNC management concerns determining the right balance between centralization and decentralization in decision making (Gates & Egelhoff, 1986; Young & Tavares, 2004). The staffing decision determining the extent to which the MNC uses corporate expatriates in subsidiaries has been a key parameter for the MNC's centralized and decentralized approaches to managing worldwide operations (Bonache, Brewster, & Suutari, 2001; Edström & Galbraith, 1977). Generally, MNCs can enhance centralized control of subsidiaries by increasing their use of expatriates, or allow more decentralized decision making by reducing the number of expatriates and employing more local managers (Boyacigiller, 1990; Harzing, 2001; Tan & Mahoney, 2006).

This paper argues that the pattern of power distribution in the subsidiary portfolio constitutes a unique structural characteristic or power structure of the MNC, which can be represented along a continuum, with oligopolistic structure (highly concentrated power in a small number of subsidiaries) at one end, and egalitarian structure (equally distributed power across subsidiaries) at the other. By synthesizing insights of the agency and resource dependence perspectives, this study contends that MNCs with different power structures face different control and coordination problems, which, in turn, influence their performance and expatriate utilization. In brief, the study hypothesizes that MNCs with either oligopolistic or egalitarian power structure show poor performance and employ a decentralized control scheme, relying less on expatriate control. This paper also argues that the

predicted effect of power structures on MNC performance and expatriate utilization varies across different value chain activities, particularly between upstream (manufacturing) and downstream (sales and service) activities. The empirical investigation of South Korean (hereafter Korean) MNCs provides support for these arguments.

This paper contributes to our understanding of the effect of subsidiary portfolio characteristics on MNC performance and management decisions. It responds to a call for MNC research that relaxes the reductionist assumption of an isolated dyadic HQ-subsidiary relation by conceptualizing the MNC as a portfolio of differentiated subsidiaries (Belderbos et al., 2020; Nachum & Song, 2011) and by simultaneously accounting for the entire set of diverse HQ-subsidiary relations within the MNC (Hoenen & Kostova, 2014). The findings of this study advocate the complementarity of the agency and resource dependence perspectives in explaining the collective role of HQ-subsidiary relations in the differentiated MNC (Cuervo-Cazurra et al., 2019). The paper also extends our understanding of how MNCs use expatriate control in less hierarchical but more loosely-coupled organizations (Brenner & Ambos, 2013; Peng & Beamish, 2014). The conceptual work and empirical findings of the study have important research and practical implications.

THEORY AND HYPOTHESES

Agency and Resource Dependence Perspectives of HQ-subsidiary Relations

Both agency and resource dependence perspectives have been considered theoretically appropriate and insightful for understanding HQ-subsidiary relations and the associated control decisions (Kostova et al., 2018; Mudambi & Pedersen, 2007). Agency theory concerns the design of optimal contracts between economic actors to curtail opportunistic behaviors stemming from rational self-interest. The potential misalignment of economic incentives between a principal and an agent increases the economic costs of influencing the agent's behaviors (Jensen & Meckling, 1976). The HQ-subsidiary relationship is a typical principal-agent relationship, in which the principal (HQ) delegates decision-making authority to the agents (subsidiaries). Subsidiaries have a certain degree of decision-making power that is "loaned" from HQ, while HQ retain the power to veto and overrule subsidiary decisions (Baker, Gibbons, & Murphy, 1999). The principal's interest is influenced by the agents, while the

delegation of discretion and the associated loss of control may create potential agency problems. Specifically, divergent interests and goal incongruence between HQ and subsidiaries may induce undesirable subsidiary rent-seeking behaviors, but HQ are unable to fully verify the subsidiaries' actions because of the information asymmetry prevalent in a multinational environment (Arrow, 1985; Nohria & Ghoshal, 1994; O'Donnell, 2000). Recently, scholars have advanced a broader agency perspective of HQ-subsidiary relations by relaxing the classical assumptions of the agency model of self-interest and economic rationality (Hoenen & Kostova, 2014; Kostova et al., 2018). They proposed that undesirable subsidiary behaviors are not necessarily caused by their self-interest with "guile" (Williamson, 1975), but may be the result of their bounded rationality as well as of that of HQ. Both HQ and subsidiaries have limited information processing capacity, which may lead to broader agency problems. HQ may fail to define objectives correctly and allocate resource efficiently to their subsidiaries owing to imperfect rationality, while subsidiaries may fail to perform to expectations as a result of limited competence rather than of self-interest and opportunism (Hendry, 2002; Verbeke & Greidanus, 2009; Verbeke & Yuan, 2005).

Resource dependence theory posits that an organization is unable to produce all resources required for its sustainability, therefore must acquire the necessary resources from other organizations. The need for resources makes the acquiring party dependent on the supplying organizations, which creates uncertainty for the acquiring party. In such resource exchange relations, dependence is an antipode of power (Emerson, 1962), and power accrues to organizations that possess resources required by others. Organizations strive to develop their own resources to reduce dependence on others while increasing other's dependence on themselves. By doing so, they not only reduce uncertainty but also enhance autonomy and bargaining power (Aldrich, 1976; Pfeffer & Salancik, 1978). The resource dependence perspective predicts that each subsidiary has different power based on its respective dependence on other MNC subunits for resources (Ghoshal & Bartlett, 1990). Subsidiaries are motivated to look for ways of enhancing their power, for example, by augmenting their resource base or by increasing their control of strategic resources on which others depend (Andersson et al., 2007; Mudambi et al., 2014). The resource dependence view has been used to examine the power dynamics between HQ and subsidiaries, particularly in the subsidiary evolution literature (Birkinshaw & Hood, 1998; Bouquet &

Birkinshaw, 2008a). As subsidiaries evolve over time, typically through the accumulation of resources and the development of specialized capabilities in the local environment, the scope of their decision making increases, as does their power vis-à-vis HQ. This change may undermine the hierarchical HQ-subsidiary relationship underpinning the agency perspective, and subsidiaries may "own" some power to make decisions, in addition to their "loaned" power from HQ (Andersson, Forsgren, & Holm, 2002; Mudambi et al., 2014).

The above discussion suggests that the principal-agent relationship and the resource dependence relationship coexist and jointly shape the HQ-subsidiary relationship in MNCs (Cuervo-Cazurra et al., 2019). Although isolating one relationship and ignoring the other may simplify theorizing and provide an effective analytical tool, this study proposes that integrating the two relationships is more productive and applicable to examining the entire set of differentiated HQ-subsidiary relationships.

The MNC as a Political System

Both the agency and resource dependence perspectives allow a political view of the internal reality of the MNC, which takes into account the divergent agendas of MNC subunits and the dynamic political coalitions between them (Forsgren, Holm, & Johanson, 2005; Ghoshal & Bartlett, 1990; Morgan, 2006). The view of the MNC as a political system incorporates power and conflicts as a normal part of functioning. Put differently, MNCs are constituted by interest divergence, conflicts, and coalitions. Political behavior in MNCs is present in the form of ongoing competition and perpetual bargaining processes, in which all MNC subunits, including HQ, pursue different interests and leverage different bases of power to gain influence and legitimacy inside the MNC (Andersson et al., 2007; Kostova & Zaheer, 1999). Such behavior generates a range of internal tensions between MNC subunits (Dörrenbächer & Geppert, 2011), which further affects HQ control and coordination mechanisms as well as MNC performance (Ghoshal & Westney, 1993; Mudambi & Navarra, 2004).

From the agency perspective, tensions between HQ and subsidiaries concern agency problems in which subsidiaries do not serve the best interest of the MNC (Ghoshal & Nohria, 1989; O'Donnell, 2000) and attempt to resist HQ control (Mudambi, 1999). Such agency problems pose control and coordination challenges for HQ. They are most often attributed to culturally and institutionally distant

subsidiaries that are difficult to monitor (Gong, 2003; Roth & O'Donnell, 1996), and to resource-rich subsidiaries that have greater ability to avoid HQ central control and reduce the range of decisions over which HQ can exercise veto power (Mudambi & Navarra, 2004; Nohria & Ghoshal, 1994). From the resource dependence perspective, tensions and conflicts between MNC subunits occur in the form of bargaining and negotiation of subsidiary mandates (Birkinshaw & Hood, 1998; Bouquet & Birkinshaw, 2008a; 2008b) and of intrafirm competition for charters and resources (Cerrato, 2006; Dörrenbächer & Gammelgaard, 2010). Subsidiaries cooperate with each other to achieve the goal of the MNC as a whole, but at the same time, they compete for parent resources to reduce their dependence on others and to improve their position within the MNC (Luo, 2005). Both intrafirm cooperation and competition emerge when there is some degree of equality in bargaining power and charter uniformity between subsidiaries (Becker-Ritterspach & Dorrenbacher, 2011; Birkinshaw & Lingblad, 2005).

Both agency and resource dependence theories suggest that HQ cannot rely exclusively on hard control mechanisms, such as centralization and formalization, in managing their subsidiaries. Instead, HQ must engage with subsidiaries in assigning and negotiating their roles and initiatives, using soft control mechanisms aimed at developing shared values and goals (Ambos, Kunisch, Leicht-Deobald, & Steinberg, 2019; Hewett, Roth, & Roth, 2003; Nohria & Ghoshal, 1994).

The Power Structure of the MNC

The differentiated network view of the MNC suggests that some level of hierarchical authority coexists with significant decentralization, therefore intraorganizational power is a joint product of both hierarchical authority and resource control (Astley & Sachdeva, 1984; Cuervo-Cazurra et al., 2019; Ghoshal & Bartlett, 1990). Thus, power is not evenly distributed across subsidiaries. For various reasons, HQ may grant greater autonomy to some subsidiaries than to others, while some subsidiaries possess more resources than others, and have greater bargaining power within the MNC (Johnston & Menguc, 2007; Mudambi & Navarra, 2004). This suggests that the pattern of power distribution in the subsidiary portfolio may differ greatly from one MNC to another, with some MNCs having a more concentrated power structure and others a more dispersed one.

This study argues that the degree of power distribution across subsidiaries constitutes a structural characteristic that is present to a greater or lesser degree in all MNCs. In other words, MNCs have a unique power structure that can be described as a continuum between oligopolistic and egalitarian poles. An oligopolistic power structure refers to a pattern of power distribution in which power is highly concentrated in a few subsidiaries. Typically, oligopolistic MNCs have a subsidiary portfolio consisting of a small number of powerful subsidiaries and many ordinary, less powerful ones. By contrast, an egalitarian power structure refers to a pattern in which power is more equally distributed across the subsidiary portfolio. In egalitarian MNCs, the majority of subsidiaries have similar power, and the degree of power concentration is much lower than in oligopolistic MNCs.

Power Structures and MNC Performance

Both agency and resource dependence perspectives suggest that HQ face greater challenges when managing powerful subsidiaries than less powerful ones (Hedlund, 1981; Pfeffer & Salancik, 1978). Powerful subsidiaries typically have greater resources and experience than other subsidiaries do. They tend to desire greater autonomy for their operations and commit resources to pursue their interests, which may not correspond with those of the MNC as a whole (Ghoshal & Nohria, 1989; Nohria & Ghoshal, 1994). Powerful subsidiaries have a greater ability to resist HQ control because they are less reliant on HQ for resources. They are more closely associated with rent-seeking behaviors and intensify agency problems (Mudambi & Navarra, 2004). Powerful subsidiaries are also likely to develop broader or more ambitious goals, which are not aligned with corporate strategy, and to engage in power bargaining with HQ to enhance their position within the MNC (Ambos et al., 2010). Therefore, HQ face increased agency costs associated with potential rent-seeking behaviors and more intense power bargaining when managing powerful subsidiaries (Chang, Mellahi, & Wilkinson, 2009; Ciabuschi, Dellestrand, & Martín, 2011; O'Donnell, 2000). These issues are more endemic in MNCs with an oligopolistic power structure, where power is concentrated in a few subsidiaries. Oligopolistic MNCs are also characterized by a high level of power differentials in their subsidiary portfolio, which means that they face a high level of internal differentiation (Nohria & Ghoshal, 1994). HQ must deal with complex contingencies associated with diverse subsidiary circumstances that present different

control problems. These, in turn, increase the probability of coordination failures associated with HQ's bounded rationality (Verbeke, Li, & Goerzen, 2009). With increased coordination complexity, limited information processing capacity may prevent HQ from providing accurate guidance and delivering effective resource allocation, resulting in agency problems (Hendry, 2002; Kostova et al., 2018). Therefore, MNCs with oligopolistic power structure face increased management challenges and coordination costs associated with potential agency problems that are detrimental to MNC performance.

By contrast, egalitarian MNCs are less likely to face severe agency problems and intense power bargaining because they do not have particularly powerful subsidiaries in their portfolio. Instead, egalitarian MNCs are likely to experience more intense intrafirm competition between subsidiaries for resources and charters, which are potentially detrimental to the MNC as a whole (Birkinshaw & Lingblad, 2005; Bouquet & Birkinshaw, 2008b). In oligopolistic MNCs, where there are high power differentials between subsidiaries, powerful ones can relatively easily secure their position within the MNC and win over other subsidiaries. Subsidiaries with different power positions also tend to pursue divergent strategies and compete for different resources and mandates within the MNC (Bouquet & Birkinshaw, 2008a; Peng, 2012). Thus, in oligopolistic MNCs, intrafirm competition for resources and charters between subsidiaries is comparatively weak. In egalitarian MNCs, however, subsidiaries have relatively similar power they can use to gain attention and affect resource allocation decisions by HQ. Being in a similar power position, subsidiaries are likely to stimulate intrafirm competition by proactively taking initiatives for new mandates, becoming involved in stronger bargaining, and engaging in issue-selling activities, which in turn intensify the level of tension and conflicts within the MNC (Becker-Ritterspach & Dorrenbacher, 2011; Dutton & Ashford, 1993). Intrafirm competition can be beneficial to the MNC if it maintains a healthy level, but excessive competition and tension make cooperation and coordination difficult and increase management costs for HQ. From the agency perspective, these can also be viewed as self-seeking behaviors because subsidiaries may focus on winning the competition for their own interests rather than pursuing the best interests of the MNC (Birkinshaw & Lingblad, 2005; Kostova et al., 2018; Mudambi & Navarra, 2004). From the broader agency perspective, intense intrafirm competition may increase the possibility of coordination failures

resulting from HQ's bounded rationality (Hendry, 2002; Hoenen & Kostova, 2014). Dealing with multiple subsidiaries engaging in initiative taking and issue selling increases the level of coordination complexity and management costs, at times when HQ with limited information processing capacity may fail to specify objectives and allocate resources correctly (Verbeke et al., 2009). Therefore, egalitarian MNCs also face increased management challenges and coordination costs that have detrimental effects on firm performance.

In sum, the above discussion suggests that both oligopolistic and egalitarian power structures are attributed to high levels of management challenges and coordination costs associated with potential agency problems, which negatively influence MNC performance. This study argues that the degree of power concentration in the subsidiary portfolio has an inverted U-shape relationship with MNC performance: the more oligopolistic or the more egalitarian power structure of the MNC is, the lower its performance.

Hypothesis 1. The degree of power concentration in the subsidiary portfolio has an inverted U-shape relationship with MNC performance.

Power Structures and Expatriate Utilization

When managing a sizable portfolio of dispersed subsidiaries, HQ must consider the trade-off between centralization and decentralization and seek the right balance (Ambos et al., 2010; Young & Tavares, 2004). While HQ use a variety of control mechanisms to balance centralization with decentralization, this paper focuses on their use of expatriates, which provides an important means to exercise centralized control over subsidiaries (Edström & Galbraith, 1977; Harzing, 2001). It is well established that expatriation constitutes a key mechanism for HQ to exercise management control and coordinate business activities across locations. Expatriates can replace or complement HQ centralization by providing direct surveillance of subsidiaries (Brenner & Ambos, 2013; Harzing, 2001). Expatriates are socialized primarily at HQ for a substantial period of time, which gives them a better understanding of the strategic objectives of the MNC and greater commitment to MNC goals than those of local managers (Bonache et al., 2001; Tan & Mahoney, 2006). Although expatriates work at overseas subsidiaries, they have contracts with HQ, and international assignments increase

their career opportunities within the firm. These incentives make them more loyal to the MNC than local managers, and less likely to defect (Suutari, 2003). Expatriates serve as reliable agents who effectively monitor subsidiary operations and direct their behaviors to achieve desired outcomes for the MNC as a whole. Numerous staffing studies have demonstrated empirically that expatriates provide a crucial mechanism for HQ to enhance centralized control over foreign subsidiaries (Boyacigiller, 1990; Gaur, Delios, & Singh, 2007; Gong, 2003). By making intensive use of expatriates, HQ can tighten their control, enhance monitoring, and maintain centralized decision making. Conversely, by decreasing their use of expatriates, HQ may allow greater subsidiary autonomy and managerial discretion, grant more legitimacy, and enable decentralized decision making (Belderbos & Heijltjes, 2005; Gaur, Pattnaik, Singh, & Lee, 2019; Peng & Beamish, 2014; Tan & Mahoney, 2006).

This study argues that both oligopolistic and egalitarian power structures are characterized by high levels of coordination difficulties associated with potential agency problems. In these circumstances, HQ may attempt to increase their use of expatriates to enhance their monitoring and control over subsidiaries (Boyacigiller, 1990; Tan & Mahoney, 2006). Yet, according to both agency and resource dependence theories, increased monitoring and centralized decision making do not necessarily achieve their intended outcomes (Young & Tavares, 2004). Agency theory predicts that firms determine the optimal control strategy as a function of uncertainty, risk, and relative monitoring costs, the last playing a decisive role. If monitoring costs are high because of information asymmetry and bounded rationality, HQ are likely to use a control mechanism aimed at eliminating goal conflicts rather than directly commanding subsidiary behavior (Eisenhardt, 1985; 1989). Strong HQ monitoring has a dual effect on opportunistic subsidiary behavior. On one hand, it may help reduce the propensity of the subsidiary to engage in self-seeking activities, but on the other, it may create negative feelings toward HQ, which further increase opportunistic behaviors (Ghoshal & Moran, 1996; O'Donnell, 2000). The resource dependence perspective makes a similar point. It suggests that the high degree of interdependence between MNC subunits and increased subsidiary power lead HQ to employ less centralized control mechanisms because strong HQ monitoring may become counterproductive by restricting information and resource exchanges. Moreover, strong monitoring and centralized decision

making by HQ also create a range of intervention hazards that demotivate subsidiaries and scuttle the management efforts of HQ (Foss, Foss, & Nell, 2012). Therefore, when HQ and subsidiaries are highly interdependent, HQ use more normative integration and soft control by merging the goals of HQ and subsidiaries into an inclusive and shared goal (Cuervo-Cazurra et al., 2019; Nohria & Ghoshal, 1994; O'Donnell, 2000).

Therefore, when there are high levels of managerial challenges and coordination costs associated with potential agency problems within the MNC, HQ rely less on centralized control mechanisms, such as expatriation, and use more decentralized decision making, supported by normative integration and soft control mechanisms. This suggests that the degree of power concentration in the subsidiary portfolio has an inverted U-shape relationship with the level of expatriate utilization in the subsidiary portfolio. MNCs maintain lower levels of expatriate utilization in their subsidiaries when they have either a more oligopolistic or a more egalitarian power structure.

Hypothesis 2. The degree of power concentration in the subsidiary portfolio has an inverted U-shape relationship with the level of expatriate utilization.

Manufacturing vs. Downstream Subsidiary Portfolio

Recent literature has stressed that HQ-subsidiary relations may vary considerably across value chain activities (Rugman et al., 2011; Verbeke, Kano, & Yuan, 2016). Both manufacturing and downstream subsidiaries play important roles in the global operations of MNCs, but they present different needs for HQ control, global coordination, and operational interdependence (Alcacer, 2006; Rugman et al., 2011; Zhou, 2015). HQ manage manufacturing and downstream subsidiaries differently, allocating different levels of attention and discretion (Bouquet & Birkinshaw, 2008b; Mudambi & Navarra, 2004). This study argues that the effect of power structures on MNC performance and expatriate utilization varies depending on subsidiary value chain activities, particularly between manufacturing and downstream subsidiary portfolios.

Establishing and managing manufacturing subsidiary portfolios require greater resource commitment and tighter control systems from HQ than managing downstream subsidiary portfolios. Manufacturing activities often involve technological knowledge and proprietary know-how embodied

in production processes that must be used effectively in foreign locations (Teece, 1977) and protected from unintended spillovers (Alcacer, 2006). Moreover, MNCs increasingly develop widely dispersed production networks to take advantage of location advantages and global production scale. Maintaining broadly connected production networks requires HQ to enhance their centralized control over core resources to achieve quality and speedy delivery on a global scale (Alcacer, 2006; Zhou, 2015). The global production network is also viewed as a system of interdependent tasks, in which manufacturing subsidiaries rely on each other's input to deliver their own output. High interdependence with other units reduces the decision-making power in each subsidiary, motivating subsidiaries to work together and cooperate with each other (Kostova & Roth, 2003). Therefore, manufacturing subsidiaries are less autonomous and more directly related to the central management of the MNC (Holm & Pedersen, 2000; Taggart & Hood, 1999). Furthermore, manufacturing subsidiaries require a higher level of multilateral coordination than do downstream subsidiaries because of the greater need to synchronize actions with each other (Zhou, 2015). HQ make decisions for various manufacturing locations as to what and how much they should produce and how to price their output for internal transfer between operations (Benito, 1996). Thus, manufacturing subsidiaries, engaged in "repeated games," are concerned with the next round when their track record is evaluated based on their contribution to MNC performance (Mudambi, 2011). This makes manufacturing subsidiaries less likely to become involved in self-seeking behaviors. HQ also maintain close liaison with manufacturing subsidiaries to ensure product consistency and quality control, which in turn, reduces information asymmetry between them (Belderbos & Heijltjes, 2005; Whitley, Morgan, Kelly, & Sharpe, 2003).

By contrast, downstream subsidiaries are less integrated into global operations than manufacturing subsidiaries are in the sense that their boundaries of responsibility are often limited to the countries where they serve. Downstream activities, such as sales and service, are highly sensitive to cultural differences, facing higher pressure to show local responsiveness, and hence, require a greater degree of flexibility and autonomy than do production activities (Bartlett & Ghoshal, 1989; Martinez & Jarillo, 1991; Rugman et al., 2011). Maintaining centralized HQ control in the downstream subsidiary portfolio may hamper subsidiaries in achieving local legitimacy and high performance (Andersson et

al., 2002; Kostova & Zaheer, 1999).The relatively lower level of global integration of downstream subsidiaries indicates that they are more autonomous and loosely coupled than are manufacturing subsidiaries. Downstream subsidiaries have limited interaction with other subsidiaries and assume responsibility for their outcomes. This naturally fosters a subsidiary-focused identity and a logic of self-interest. They may face fierce competition with each other for HQ resources and engage in self-seeking behaviors (Dellestrand, Kappen, & Lindahl, 2020; Hill, Hitt, & Hoskisson, 1992; Mudambi & Navarra, 2004). When managing the downstream subsidiary portfolio, HQ tend to face higher levels of managerial challenges associated with agency problems than when managing manufacturing subsidiaries (Andersson et al., 2007; Ghoshal & Bartlett, 1990).

In sum, the desired level of HQ control and the degrees of potential agency problems vary considerably between manufacturing and downstream subsidiary portfolios. Given that the manufacturing subsidiary portfolio presents a higher level of integration in the global operations of the MNC (Zhou, 2015), and consequently, given that HQ maintain tighter control over global manufacturing systems (Bartlett, Ghoshal, & Birkinshaw, 2003; Delios & Henisz, 2003), manufacturing subsidiary portfolios are less susceptible to potential agency problems than are downstream subsidiary portfolios. Therefore, the power structure of the subsidiary portfolio affects MNC performance and expatriate utilization less in the manufacturing subsidiary portfolio than in the downstream subsidiary portfolio.

Hypothesis 3. The inverted U-shape relationship between the degree of power concentration in the subsidiary portfolio and MNC performance is flatter in the manufacturing subsidiary portfolio than in the downstream subsidiary portfolio.

Hypothesis 4. The inverted U-shape relationship between the degree of power concentration in the subsidiary portfolio and the level of expatriate utilization is flatter in the manufacturing subsidiary portfolio than in the downstream subsidiary portfolio.

METHODOLOGY

Data and Sample

This study uses Korean MNCs to test the hypotheses. A sample of Korean MNCs provides an ideal empirical setting because many of them manage a sizable, geographically dispersed portfolio of subsidiaries in various industries and use expatriates as an important centralized HQ control mechanism (Rugman & Oh, 2008; Singh, Pattnaik, Lee, & Gaur, 2019; Tung, Paik, & Bae, 2013). A panel dataset was built by aggregating both MNC- and subsidiary-level datasets from multiple credible sources. MNC-level information was collected from the *'Kis-value'* database provided by the National Information and Credit Evaluation (NICE) and the '*Industrial research and development (R&D) investment scoreboard*' published by the Korea Institutes for Advancement of Technology (KIAT). MNC-level data were combined with subsidiary-level information obtained from the *'Overseas Korean Business Directory'* (hereafter 'directory') provided by the Korea Trade-Investment Promotion Agency (KOTRA). Subsidiary-level information is available only on a biannual basis because KOTRA publishes the directory biannually. With MNC-level data being collected annually, for the present study, I created a panel dataset with three waves by combining subsidiary-level information from the three editions of the directory (2011-12, 2013-14, and 2015-16) with the average value of the corresponding two years of MNC-level information. The directory includes information on five types of subsidiaries concerning value chain activities: manufacturing, sales, service, branch, and liaison office. Liaison offices were removed from the sample because they do not undertake business activities, only auxiliary ones. This study included MNCs with at least 6 overseas subsidiaries in the sample to ensure a minimum size of MNC subsidiary portfolio (Aharoni, 1971). These criteria created a dataset containing 134 MNCs and their 2,400-odd subsidiaries for each time period, or a total of 7,059 subsidiary-year observations. Ten MNCs had to be discarded because they did not have all the necessary MNC-level information, resulting in a final sample of 124 MNCs and some 2,200 subsidiaries for each time period: 2,120 subsidiaries in T1 (2011-12), 2,293 subsidiaries in T2 (2013-14), and 2,253 subsidiaries in T3 (2015-16), for a total of 6,666 subsidiary-year observations. This dataset forms an unbalanced panel because some MNCs in the sample were acquired in the second and

third waves of observation. This study used the full sample to test the first and the second hypotheses. To test the moderating effect of subsidiary value chain activities (Hypotheses 3 and 4), I constructed separate sample sets by distinguishing manufacturing and downstream subsidiaries (the latter including sales, service, and branch subsidiaries). From the final sample of 124 MNCs and their 6,666 subsidiary-year observations, the manufacturing subsample consisted of 90 MNCs and about 400 subsidiaries for each time period (397 subsidiaries in T1 (2011-12), 427 in T2 (2013-14), and 446 in T3 (2015-16), for a total of 1,270 subsidiary-year observations); and the downstream subsample consisted of 119 MNCs and about 1,800 subsidiaries for each time period (1,723 subsidiaries in T1 (2011-12), 1,866 in T2 (2013-14), and 1,807 in T3 (2015-16), for a total of 5,396 subsidiary-year observations).

Variables

Dependent variables

MNC performance is measured by return on assets (ROA) at the MNC level. I calculated the average of two years of MNC ROA to match the time period of the study. To allow causal inference (Lu & Beamish, 2004), I used the average of the two following years (T+1) in the analysis (i.e., the average of 2013-14, 2015-16, and 2017-18). I operationalized the level of expatriate utilization at the MNC level as the average of the expatriate ratio at all subsidiaries. To avoid the potential confounding effect of not distinguishing between manufacturing and downstream subsidiaries (Lee, 2019)[1], I first computed the average of the expatriate ratio in manufacturing and downstream subsidiary portfolios, respectively, then measured the level of expatriate utilization of the MNC using the mean of the averages of the expatriate ratios in manufacturing and downstream subsidiary portfolios. This measure reflects the extent to which expatriates have managerial influence at subsidiaries and the degree to which subsidiaries are managed in close coordination with HQ (Belderbos, Tong, & Wu, 2014). I measured the expatriate ratio at each subsidiary based on the ratio of the number of expatriate managers sent from HQ to the total number of subsidiary employees (Boyacigiller, 1990; Gaur et al., 2007; Peng & Beamish, 2014).

Independent variables

This study measured the degree of power concentration in the subsidiary portfolio by modifying the Herfindahl-Hirschman Index that is commonly used to assess the degree of concentration (Herfindahl, 1950). Both the agency and resource dependence perspectives suggest that the relative size of the subsidiary within the MNC constitutes a key indicator of its relative power position and influence in HQ-subsidiary relations (Hedlund, 1981; Johnston & Menguc, 2007; Peng & Beamish, 2014; Pfeffer & Salancik, 1978). Power within the MNC is a relational concept, in which the dependence of one subunit on another places the latter in a relative position of power (Andersson et al., 2007; Astley & Zajac, 1990). Larger subsidiaries generally possess greater resources that reduce their dependence on HQ and on other subsidiaries (Gupta & Govindarajan, 2000; Peng & Beamish, 2014). They also have stronger administrative heritage (Bartlett & Ghoshal, 1989) and internal legitimacy (Kostova & Zaheer, 1999), which command the attention of other, smaller subunits. The relative size of the subsidiary within the MNC also reflects the level of operational risk that the MNC runs if the subsidiary does not perform adequately. MNCs are more dependent on larger subsidiaries for the execution of their strategy and the achievement of performance goals (Belderbos & Heijltjes, 2005). Thus, the share of subsidiary size in the MNC subsidiary portfolio, which is the ratio of its size to the total size of the entire subsidiary portfolio, reflects the relative power position of the subsidiary within the MNC (Holm & Pedersen, 2000; Peng & Beamish, 2014).[2] The power concentration index (PCI) is computed as the sum of squares of the share of subsidiary size within the MNC, while subsidiary size is measured by the number of subsidiary employees (Belderbos & Heijltjes, 2005; Pfeffer & Salancik, 1978). I measured the degree of power concentration separately for the manufacturing and the downstream subsidiary portfolio because the number of subsidiary employees is typically much higher in manufacturing than in downstream subsidiaries; therefore, the degree of power concentration in the subsidiary portfolio can be influenced to a large extent by the proportion of manufacturing (or downstream) subsidiaries in the portfolio. The degree of power concentration in the subsidiary portfolio of an MNC is measured by the mean of PCI (Manufacturing) and PCI (Downstream), weighted by the proportion of manufacturing and downstream subsidiaries in the subsidiary portfolio of the MNC:

$$\text{PCI (MNC}_i\text{) (Manufacturing)} = \sum_j^k \left(\frac{\text{Number of employees in manufacturing subsidiary}_j}{\text{Sum of subsidiary employees in all manufacturing subsidiaries of MNC}_i} \right)^2$$

$$\text{PCI (MNC}_i\text{) (Downstream)} = \sum_j^k \left(\frac{\text{Number of employees in downstream subsidiary}_j}{\text{Sum of subsidiary employees in all downstream subsidiaries of MNC}_i} \right)^2$$

where *k* denotes the number of subsidiaries of MNC$_i$, *i* denotes an MNC in the sample, and *j* indicates an individual subsidiary that belongs to MNC$_i$. Using the share percentages as whole numbers, the original index ranges between 0 and 10,000, but I rescaled the index proportionally between 0 and 10 to adjust effect size estimates compared to other variables. A higher index value indicates a higher concentration, and hence, a more oligopolistic power structure, whereas a lower value implies a lower concentration and a more egalitarian power structure.

Control variables

The study used an extensive set of control variables that may influence MNC performance and the level of expatriate utilization. To begin with, I used five MNC-level control variables: (1) MNC size measured by sales revenue (billion US dollars); (2) MNC age, calculated as the duration of operation (the difference between the year of observation and that of establishment); (3) present MNC performance, calculated by the average of the two years of ROA (T) (i.e., the average of 2011-12, 2013-14, and 2015-16), intended to minimize potential endogeneity issues; (4) R&D intensity, which captures the firm's endowment of technological knowledge, and is an important determinant of MNC performance (Kirca et al., 2011), computed as the ratio of R&D expenditure to total sales, using the average of the two years of R&D intensity (i.e., the average of 2011-12, 2013-14, and 2015-16); and (5) degree of internationalization, which is known to influence MNC performance (Hitt, Tihanyi, Miller, & Connelly, 2006), operationalized as the ratio of size (i.e., the number of employees) of foreign operations to that of total MNC operations (Rugman & Oh, 2013).

This study also controlled for the host country environment where the MNC subsidiaries were located. I measured (6) institutional development by the average score of the economic freedom index of all host countries provided by the Heritage Foundation (Peng & Beamish, 2014). I measured (7) institutional quality using the average score of the government stability index of all host countries

from the International Country Risk Guide (Hyun, Oh, & Paik, 2015). I used the average of the gross domestic product (GDP) (trillion US dollars) of all host countries, based on data from the World Development Indicators provided by the World Bank, as a proxy for (8) market size. I calculated the average of all subsidiaries, both manufacturing and downstream, for the degree of internationalization and host country environment-related variables because they affect the level of expatriate utilization and MNC performance, regardless of subsidiary value chain activities.

Finally, I controlled for subsidiary-related variables, measured for the full sample as well as for the manufacturing subsidiaries and downstream subsidiaries separately. I measured (9) the average subsidiary size of the MNC by the logarithm of the average number of subsidiary employees. I computed (10) the average subsidiary age of the MNC based on the average of the duration of subsidiary operation in the host country, and I measured (11) the MNC ownership of subsidiaries by the ratio of the number of wholly-owned subsidiaries to the total number of subsidiaries. I also controlled for time and industry effects by adding year and industry dummies.

Model Selection

An important step in panel data analysis is the selection of an appropriate model. I used a fixed-effects model, controlling for fixed firm-specific effects to better control for unobserved firm heterogeneity that may influence the dependent variables (Hsiao, 2003). I conducted Hausman tests to evaluate the usefulness of the models. The test results strongly rejected the null hypothesis ($p = 0.000$) in favor of the fixed-effect models.

RESULTS

Table 1 shows the descriptive statistics and correlation matrix for the variables. The variables measured separately for manufacturing and downstream subsidiaries are presented separately. Results from additional t-tests show that all subsidiary-related variables measured separately for manufacturing and downstream subsidiaries are significantly different from each other at 0.1% level, confirming the different characteristics of the manufacturing and downstream subsidiary portfolios

(Bartlett & Ghoshal, 1989). Multicollinearity does not appear to be a significant problem because correlation coefficients are fairly low across all variables (Hair, Tatham, Anderson, & Black, 2006).

[Insert Table 1 about here]

Tables 2, 3, and 4 show the results of hypothesis testing. Table 2 reports the results of the full sample analysis for testing Hypotheses 1 and 2. Tables 3 and 4 show the results from manufacturing and downstream subsidiary portfolio samples, respectively, used to test Hypotheses 3 and 4. In Tables 2, 3, and 4, Models 1 to 3 present the results of the relationship between the degree of power concentration and MNC performance, while Models 4 to 6 report the results of the relationship between the degree of power concentration and expatriate utilization. Models 1 and 4 report the results with control variables only. Models 2 and 5 include the linear term of the degree of power concentration. Models 3 and 6 include both linear and quadratic terms of the degree of power concentration.

In Table 2, Model 2 indicates that the linear term of the degree of power concentration in the subsidiary portfolio has no significant relationship with MNC performance, and Model 3 suggests that both linear and quadratic terms are significant. The coefficient of the quadratic term is significant and negative, supporting an inverted U-shape relationship between the degree of power concentration in the subsidiary portfolio and MNC performance. I followed the three-step procedure suggested by Lind and Mehlum (2010) and Haans, Pieters, and He (2016) to formally test the inverted U-shape relationship. First, the coefficient of the quadratic term is negative (β = -0.424) and statistically significant (p = 0.036). Second, the slopes at both ends of the independent variable range (between 0.37 and 9.27) are sufficiently different from zero. At its minimum, the slope is 3.917 (p = 0.008), and at its maximum, it is -3.626 (p = 0.045). Finally, the inflection point is located at 4.992, with the 95% confidence interval ranging from 3.577 to 6.407, well within the independent variable range. Therefore, the results show that all three conditions are met, confirming the inverted U-shape relationship. This result shows that either high or low levels of power concentration in the subsidiary portfolio are negatively related to MNC performance, lending support to Hypothesis 1 that predicts an

inverted U-shape relationship between the degree of power concentration in the subsidiary portfolio and MNC performance.

In Table 2, Model 5 indicates that the linear term of the degree of power concentration in the subsidiary portfolio has no significant relationship with the level of expatriate utilization, and Model 6 reports that both linear and quadratic terms are significant. The quadratic term has a negative sign. The results of the three-step procedure (Haans et al., 2016) confirm the inverted U-shape relationship between the degree of power concentration and the level of expatriate utilization. Specifically, the coefficient of the quadratic term is negative (β = -0.385) and statistically significant (p = 0.023). The slopes at both ends of the independent variable range (between 0.37 and 9.27) are 3.485 and -3.359, respectively, both different from zero (p = 0.005 and 0.030, respectively). The inflection point is located at 4.901, with the 95% confidence interval ranging from 3.640 to 6.163, well within the independent variable range. This result demonstrates that both high and low levels of the degree of power concentration are negatively related to the level of expatriate utilization in the subsidiary portfolio. Thus, Hypothesis 2, which predicts an inverted U-shape relationship between the degree of power concentration in the subsidiary portfolio and the level of expatriate utilization, is confirmed. Figures 1 and 2 illustrate the inverted U-shaped relationships of the power structure in the subsidiary portfolio with MNC performance and expatriate utilization, respectively.

[Insert Table 2, Figure 1, and Figure 2 about here]

In Table 3, Models 2 and 3 show that both the linear and quadratic terms of the degree of power concentration in the manufacturing subsidiary portfolio are not significantly related to MNC performance.[3] In Table 4, Model 2 indicates that the linear term of power concentration in the downstream subsidiary portfolio is not significant, and Model 3 shows that both linear and quadratic terms of the degree of power concentration are significant, suggesting an inverted U-shape relationship between the degree of power concentration in the downstream subsidiary portfolio and MNC performance. Specifically, the coefficient of the quadratic term is negative (β = -0.342) and statistically significant (p = 0.018). The slopes at both ends of the independent variable range (between

0.26 and 10.00) are sufficiently different from zero. The values of the slope at both ends are 3.682 (p = 0.003) and -2.991 (p = 0.036), respectively. Finally, the inflection point is located at 5.633, with the 95% confidence interval ranging from 3.902 to 7.364, well within the independent variable range. These results indicate that both high and low levels of power concentration in the downstream subsidiary portfolio are negatively related to MNC performance, while the level of power concentration in the manufacturing subsidiary portfolio has little to do with firm performance. To test for the moderation effect in (inverted) U-shaped relationships, it is suggested to compare the slopes at points equidistant from the inflection points in each curve and check whether the series of slopes are becoming flatter or steeper, preferably aided by graphic illustrations (Haans et al., 2016). Figure 3 shows the relationships between the degree of power concentration and MNC performance in manufacturing and downstream subsidiary portfolios. As Model 3 in Table 4 indicates, the degree of power concentration in the downstream subsidiary portfolio shows an inverted U-shape relationship with MNC performance. But as Models 2 and 3 in Table 3 show, the degree of power concentration in the manufacturing subsidiary portfolio does not show an inverted U-shape relationship with MNC performance in the data range (i.e., the quadratic term is not significant (p = 0.439), and the estimated inflection point (10.13) is located outside the data range), but a flat curve close to a linear relationship, as can be seen in Model 2 (β = 0.840, p = 0.114). These results and the comparison of curvilinear relationships imply that the effect of power structures on MNC performance is weaker in the manufacturing than in the downstream subsidiary portfolio, as suggested by Hypothesis 3. At the same time, however, the data do not lend clear support to Hypothesis 3, which predicted a flatter inverted U-shape relationship in the manufacturing subsidiary portfolio.

[Insert Table 3, Table 4, and Figure 3 about here]

In Table 3, Model 5 shows that the linear term of the degree of power concentration in the manufacturing subsidiary portfolio has no significant relationship with the level of expatriate utilization, and Model 6 indicates that both linear and quadratic terms are significant. The quadratic term shows a negative sign. The results of the three-step procedure (Haans et al., 2016) confirm the

inverted U-shape relationship. Specifically, the coefficient of the quadratic term is negative (β = -0.240) and statistically significant (p = 0.008). The values of the slopes at the minimum and maximum ends of the independent variable range (between 0.52 and 10.00) are 2.549 and -1.995, respectively, both of which are different from zero (p = 0.011 and 0.003, respectively). The inflection point is located at 5.839, with the 95% confidence interval ranging from 4.470 to 7.208, well within the independent variable range. In Table 4, Model 5 shows that the linear term of the degree of power concentration in the downstream subsidiary portfolio is significant (p = 0.006), and Model 6 also indicates that both linear and quadratic terms are significant (p = 0.000). The quadratic term has a negative sign (β = -0.481). The results of the three-step procedure (Haans et al., 2016) confirm the inverted U-shape relationship. The values of the slope at both ends of the independent variable range (between 0.26 and 10.00) are 5.426 and -3.941, respectively, both different from zero (p = 0.000 and 0.004, respectively). The inflection point is located at 5.901, with the 95% confidence interval ranging from 4.738 to 7.063, well within the independent variable range. These results indicate that both high and low levels of the degree of power concentration are negatively related to the level of expatriate utilization in both manufacturing and downstream subsidiary portfolios, but comparison of the slopes at a series of points equidistant from the inflection points reveals that the inverted U-shape relationship is flatter in the manufacturing than in the downstream subsidiary portfolio (Haans et al., 2016). Specifically, the slope at the ± 2 PCI points from the inflection point is ± 0.96 for the manufacturing subsidiary portfolio and ± 1.92 for the downstream subsidiary portfolio, respectively. The slopes at the ± 3 PCI points from the inflection point is ± 1.44 for the manufacturing subsidiary portfolio and ± 2.88 for the downstream subsidiary portfolio. These results indicate that the shape of the curve is flatter in the manufacturing than in the downstream subsidiary portfolio, suggesting that the effect of power structures on the level of expatriate utilization is weaker in the manufacturing than in the downstream subsidiary portfolio. Figure 4 illustrates the relationships between the degree of power concentration and the level of expatriate utilization in manufacturing and downstream subsidiary portfolios, showing that the inverted U-shape relationship is flatter in the manufacturing than in the downstream subsidiary portfolio. This finding lends support to Hypothesis 4.

[Insert Figure 4 about here]

Robustness Tests

I conducted a series of robustness tests (Meyer, van Witteloostuijn, & Beugelsdijk, 2017). First, I operationalized the power structure using various measures, including the relative length of the subsidiary operation (subsidiary age) and the relative compound distance of the subsidiary from the home country (HQ). Subsidiaries with longer host country operations are generally believed to be more autonomous and less dependent on HQ (Nell & Ambos, 2013) because they tend to have greater knowledge (Rabbiosi & Santangelo, 2013), internal legitimacy (Mudambi, 1998), and stronger local embeddedness (Drogendijk & Andersson, 2013). Greater cultural, institutional, and geographic distances between HQ and subsidiaries (home and host countries) also influence HQ resource allocation (Dellestrand & Kappen, 2012) and the delegation of decision-making rights because HQ often lack relevant knowledge to conduct local adaptions and effective monitoring, and market knowledge and local adaptation are usually more important in culturally and geographically distant locations (Verbeke & Greidanus, 2009; Verbeke & Yuan, 2016). Thus, I tested the hypotheses using the two additional power concentration indices[3] created based on the share of relative subsidiary age and of relative compound distances between Korea and host countries in the subsidiary portfolio. I operationalized subsidiary age as the duration of the subsidiary operation (the difference between the year of observation and of establishment) (Rabbiosi & Santangelo, 2013), and the compound distance as the CAGE distance (Ghemawat, 2001). The CAGE framework conceptualizes distance in a multidimensional way by distinguishing between cultural, administrative, geographic, and economic distance to capture the effects of distance in MNC operations (Beugelsdijk, Nell, & Ambos, 2017). I used data from CAGE comparator™ (www.ghemawat.com/cage) as a proxy for the CAGE distance between Korea and host countries (Ghemawat, 2017). As in the case of the main analysis, I proportionally rescaled between 0 and 10 the original indices ranging between 0 and 10,000 to adjust effect size estimates compared to other variables. In addition, I also tested the hypotheses using the combined measure of the average of three power concentration indices: the relative size, age, and

compound distances of the subsidiary.[4] The results of the robustness tests using different operationalizations (provided in the appendix) yielded substantially consistent results.

I also examined the role of potential endogeneity, which may occur when MNCs with better or worse performance, and those using more or fewer expatriates have more oligopolistic or egalitarian power structures. I conducted a Wooldridge test by adding one time period lead (T+1) values of power structure variables to the models to examine the strict exogeneity assumption. The results showed that the null hypothesis that power structure variables are exogenous (i.e., the coefficient of the lead values of power structure variables is equal to zero) cannot be rejected, suggesting that the strict exogeneity assumption is not invalid (Wooldridge, 2010).

DISCUSSION AND CONCLUSIONS

This study examined the effect of power structures on MNC performance and management decisions. I found that the pattern of power distribution in the subsidiary portfolio is an important determinant of MNC performance and the use of expatriate control, with the influence of power structures varying between manufacturing and downstream subsidiary portfolios. These findings make important contributions to both theory and practice.

First, the study contributes to a stream of literature that conceptualizes MNCs as dispersed structures of power, in which HQ manage the entire portfolio of differentiated HQ-subsidiary relations rather than isolated dyadic relations. Previous studies have advanced our understanding of how HQ manage specific control problems presented by each subsidiary in the differentiated network MNC (Ambos & Schlegelmilch, 2007; Gupta & Govindarajan, 1991; Narula & Lee, 2020; Nohria & Ghoshal, 1994). There has been a call for research to examine the role of heterogeneous characteristics of the MNC subsidiary portfolio, simultaneously accounting for the entire set of HQ-subsidiary relations (Belderbos et al., 2020; Hoenen & Kostova, 2014; Nachum & Song, 2011). In response to this call, the present study explicitly adopted a portfolio approach to examine how the pattern of power distribution in the subsidiary portfolio influences MNC management decisions and performance. The conceptual work and empirical findings of this study complement the current understanding derived

from dyadic HQ-subsidiary relations by showing that subsidiary portfolio characteristics, such as power structures, can also explain variations in MNC expatriate utilization and performance.

Second, the literature relies on agency and resource dependence theories to examine how subsidiary performance varies depending on HQ-subsidiary relations (Ambos & Birkinshaw, 2010; Singh et al., 2019), and how MNCs utilize more or fewer expatriates in some subsidiaries than others (O'Donnell, 2000; Peng & Beamish, 2014). This paper complements the subsidiary-focused literature to examine why and how some MNCs perform better or worse and use more or fewer expatriates than other MNCs. Agency and resource dependence perspectives suggest that both oligopolistic and egalitarian MNCs are likely to face increased coordination challenges associated with potential agency problems, and rely less on direct monitoring and surveillance of subsidiaries using expatriate managers (Eisenhardt, 1989; O'Donnell, 2000). The present study lends support to this idea by revealing that the degree of power concentration in the subsidiary portfolio has inverted U-shape relations with MNC performance and expatriate utilization. These findings demonstrate the continued importance of using agency and resource dependence theories in MNC research (Ambos et al., 2019; Hoenen & Kostova, 2014; Kostova et al., 2018). More important, the study shows that agency and resource dependence perspectives can provide a useful lens for explaining variations in management decisions and firm performance not only at the subsidiary but also at the MNC level.

Third, the present paper expands the purview of the agency problems in MNCs by incorporating recent agency theory work that goes beyond the classical, self-interest-focused agency model. Recent developments have stressed that integrating both self-interest and bounded rationality assumptions is more relevant and applicable to the agency situation at MNCs, and that self-interest and bounded rationality of the principal (HQ) side can also cause agency problems (Hendry, 2002; Hoenen & Kostova, 2014; Kostova et al., 2018). Drawing on this broader agency perspective, the paper suggests that the increased coordination complexity faced by HQ in both oligopolistic and egalitarian MNCs can be attributed not only to potential self-seeking behaviors of subsidiaries but also to agency problems associated with the principal's bounded rationality, for example, failing to define objectives correctly and allocate resources efficiently (Hendry, 2002; Verbeke et al., 2009). The literature has suggested that coordination challenges are more likely to be attributed to oligopolistic MNCs that have

a high level of internal differentiation in HQ-subsidiary power relationships (Ghoshal & Nohria, 1989). The present study argues that egalitarian MNCs also face increased coordination complexity because intrafirm competition is more intense between similar-sized subsidiaries than between asymmetric ones, which compete for common resources, mandates, and charters (Hannan & Freeman, 1977). Therefore, egalitarian MNCs deal more proactively with subsidiary initiative taking and issue selling (Becker-Ritterspach & Dorrenbacher, 2011; Luo, 2005) and find it challenging to specify appropriate objectives and mandates for each subsidiary. This finding contributes to the theoretical extension of the agency model in MNCs by integrating self-interest and bounded rationality assumptions, and by examining agency problems related to the principals (Kostova et al., 2018).

Fourth, the paper reveals that the effect of power structures varies between manufacturing and downstream subsidiary portfolios. In the manufacturing subsidiary portfolio, the power structure is less likely to influence MNC performance and expatriate utilization than it is in the downstream subsidiary portfolio. Prior studies have suggested that, although both manufacturing and downstream activities play crucial roles in global operations, they may have different needs for HQ control, global coordination, and operational interdependence (Alcacer, 2006; Rugman et al., 2011; Zhou, 2015). Consistent with this view, the present study argues that HQ tend to maintain tighter control and delegate limited decision-making rights over the manufacturing subsidiary portfolio because managing global production networks requires greater central coordination and operational interdependence. Therefore, the power structure in the manufacturing subsidiary portfolio is less likely to have a strong effect on MNC management decisions concerning the use of expatriate control. By contrast, HQ usually allow more autonomy to downstream subsidiaries because sales and service activities are highly sensitive to local differences and more subject to local responsiveness pressures (Bartlett & Ghoshal, 1989; Rugman et al., 2011). At the same time, they have a relatively lower level of international configuration than manufacturing activities do (Birkinshaw & Morrison, 1995). Therefore, downstream subsidiary portfolios tend to be more federative and loosely coupled than are manufacturing subsidiary portfolios (Andersson et al., 2007; Tippmann, Scott, Reilly, & O'Brien, 2018). The power structure in the downstream subsidiary portfolio is therefore more likely to affect MNC performance and management than it is in the manufacturing subsidiary portfolio. This finding

contributes to the literature on MNC subsidiary management by suggesting that the agency and resource dependence perspectives on HQ-subsidiary relations have different implications across subsidiary value chain activities.

Finally, the study adds to the expatriate staffing literature, much of which has used transaction cost theory to understand how HQ determine the appropriate expatriate staffing level at the subsidiary level. From the perspective of transaction cost theory, expatriates provide HQ with an efficient control mechanism at lower cost than local managers (Benito, Tomassen, Bonache-Pérez, & Pla-Barber, 2005; Tan & Mahoney, 2006). Expatriation decisions, however, are determined not only by efficiency considerations but also by power relations between HQ and subsidiaries (Wright & McMahan, 1992). HQ may increase or decrease their use of expatriates to adjust subsidiary autonomy and power (Peng & Beamish, 2014; Tao, Liu, Gao, & Xia, 2018). This study complements the current staffing literature and extends our knowledge of MNC expatriate utilization at the aggregate MNC level by examining whether and how the entire set of diverse HQ-subsidiary power relationships influence the use of expatriate control in the subsidiary portfolio.

Managerial Implications

The paper has important implications for managers of MNCs. First, foreign direct investment decisions are usually not discrete choices but part of a series of decisions that create an investment pattern based on their long-term international strategy (Buckley & Casson, 1998). Therefore, the MNC's subsidiary portfolio characteristics at any point in time are the outcome of investment decisions that reflect its international strategy. The power structure of the MNC is also the result of its sequential resource configuration decisions, which does not remain intact but changes over time. For instance, the relative power of the subsidiary changes over time depending on various factors, which further alters the subsidiary's dependence and relationship with HQ. The managers of the MNC should be aware of such changes that collectively alter the power structure of the MNC, and determine whether the evolving power structure fits their business and strategy (Chandler, 1962).

Second, the study also suggests that HQ managers should understand the implications of the inverted U-shape relationships of the power concentration in the subsidiary portfolio with both firm

performance and expatriate utilization. It is well established that subsidiary initiatives, power bargaining, and intrafirm competition between MNC subunits can be beneficial to MNC performance when they are maintained at healthy levels (Birkinshaw & Lingblad, 2005; Ghoshal & Nohria, 1989). This study suggests that HQ managers need to assess whether the degrees of power concentration in their subsidiary portfolio are too high or too low when gauging the healthy level of intrafirm bargaining and competition between MNC subunits. Moreover, determining the appropriate levels of expatriate utilization for international management is a key challenge facing MNCs. Expatriates are crucial but limited managerial resources that are often associated with supply problems because they cannot be increased on demand in the short term (Collings, Scullion, & Morley, 2007). This paper suggests that HQ managers should consider that their portfolio characteristics, including power structures, may influence their overall use of expatriates.

Finally, the study has found that MNCs with either oligopolistic or egalitarian power structure tend to use fewer expatriates. This finding has implications for managers, as it confirms that enhancing HQ monitoring and central decision making to deal with increased power bargaining and intrafirm competition may not be the best solution (Foss et al., 2012; Ghoshal & Moran, 1996; O'Donnell, 2000). Managers should also be aware that HQ-subsidiary relations and the desired level of HQ control may vary considerably across value chain activities. In particular, HQ are likely to exercise tighter control over manufacturing subsidiaries, therefore the effect of power structures on expatriate utilization is weaker than in the case of downstream subsidiaries. This finding reaffirms that when devising management strategies, HQ managers should not neglect the potentially asymmetrical effect of power structures on different value chain activities (Rugman et al., 2011; Verbeke et al., 2016).

Limitations and Future Research Directions

First, although there has been no established measurement for power structures in the subsidiary portfolio, this study uses the Herfindahl-Hirschman Index to create a measure of the degree of power distribution in the subsidiary portfolio. But because it is difficult to directly assess the relative power of all subsidiaries in the subsidiary portfolio for multiple MNCs across different time periods (Mudambi et al., 2014), I used proxy variables such as the share of relative subsidiary size in the

subsidiary portfolio, which has been considered to reflect subsidiary autonomy and power in the MNC network. Future studies may use the same approach to measure the power structure of the subsidiary portfolio by assessing subsidiary power more directly, through primary data collection.

Second, the study takes account of the entire set of differentiated HQ-subsidiary relations, but it also assumes that there is only one HQ in the MNC structure. Although this is the most common case in the sample of this study, recent literature has increasingly examined more complex HQ configurations, such as regional HQ and dispersed HQ activities (Mahnke, Ambos, Nell, & Hobdari, 2012; Nell, Kappen, & Laamanen, 2017). Future studies should delve into the role of such HQ configurations in relation to power structures of the MNC.

Third, similarly to other staffing literature adopting a macro (firm-level) perspective, the present study did not consider differences between expatriate characteristics, such as deployment motives, assigned roles, and the competence of expatriates. The study considered expatriates as an extended form of centralized HQ control and supervision, but expatriates can play different control roles, depending on how HQ use them (Brenner & Ambos, 2013; Harzing, 2001; Singh et al., 2019). This limitation can be addressed by future staffing research adopting a micro (individual-level) perspective, following some of the useful directions provided by the findings of the present study. For example, future studies may examine whether and how HQ assign different roles to expatriates, depending on different levels of power bargaining and intrafirm competition within the MNC. The present study also suggests new paths for future staffing research to investigate expatriate staffing strategies at the aggregate MNC level. Most staffing literature has examined MNC expatriate staffing at the subsidiary level, with little attempt to do so at the MNC level (Lee, 2019). In particular, the effect of expatriate staffing on firm performance has been frequently examined at the subsidiary level, but how different levels of expatriate utilization influence firm performance at the aggregate MNC level has received little attention. Future studies may examine the consequences of expatriate utilization for various types of MNC-level performance (e.g., knowledge- or operation-related performance) (Belderbos et al., 2014). These studies would contribute to a more comprehensive understanding of MNC expatriation strategies.

Fourth, the study uses only Korean MNCs, with relatively short panel data for empirical analysis. The data may contain home country effects because Korean MNCs typically have more hierarchical organizational structure and culture than do Western MNCs and because they use expatriates in a more traditional way (Froese, Pak, & Chong, 2008; Froese, Sekiguchi, & Maharjan, 2018; Hemmert, 2018). Korean MNCs tend to rely a great deal on expatriates to enhance centralized HQ control over subsidiaries, and expatriates are often home country nationals who have substantial experience in working at HQ. They are also typically assigned to work abroad for a specified period of time, after which they return to HQ (Kang & Shen, 2014; Kim & Tung, 2013). Thus, expatriates are generally believed to be reliable agents in Korean MNCs, who can effectively monitor subsidiary operations and minimize goal incongruence between HQ and subsidiaries (Tung et al., 2013). Yet, the literature also found that expatriates might be less loyal to their corporations than commonly assumed, and may be concerned with building transferable skills that are valuable in the external labor market (Stahl, Miller, & Tung, 2002). Repatriation of expatriates has been identified as a serious international human resource management problem for many European and North American MNCs (Collings et al., 2007). Therefore, future research in other country contexts may reveal different findings. Moreover, this study used a relatively short panel dataset, partly because the main dataset (i.e., subsidiary-level information) was available only biannually. Although the collected data showed that firm-level variables display substantial cross-sectional and cross-temporal variance, future studies using a longer panel dataset can further enrich the literature.

Finally, although MNC theory is more developed with regard to individual subunits within the MNC rather than to the MNC as a portfolio (Cantwell, 2005), recent studies have called for more research on the explicit conceptualization of the MNC as a portfolio of differentiated subsidiaries and on the implication of changes in the subsidiary portfolio for understanding the ways in which multinational operations affect MNC management and performance (Belderbos et al., 2020; Hutzschenreuter & Matt, 2017; Nachum & Song, 2011). This study joins these scholarly efforts to stress the importance of conceptualizing the MNC as a portfolio, and encourages future studies to follow this approach.

ACKNOWLEDGEMENTS

I would like to thank Editor Klaus Meyer for his insightful comments and enduring guidance during the review process. I want to express my gratitude to the three anonymous JIBS reviewers for their constructive feedback and helpful suggestions. I also thank Phillip Nell and Grazia Santangelo for their useful comments at the 16th JIBS Paper Development Workshop in Copenhagen, Denmark. I am also indebted to helpful discussions with my colleagues at Henley Business School, especially Rajneesh Narula and Chul Chung.

NOTES

[1] Distinguishing subsidiary value chain activities is essential in expatriate staffing studies, especially when using the expatriate ratio (i.e., the number of expatriates divided by the total number of subsidiary employees) to measure the level of expatriate utilization. Technically, the usual range of expatriate staffing levels is much lower in manufacturing subsidiaries than in downstream subsidiaries, because the total number of subsidiary employees is typically much higher in manufacturing than in downstream subsidiaries. Therefore, not distinguishing between manufacturing and downstream subsidiaries in expatriate staffing studies can be problematic because the expatriate staffing level would be largely influenced by the proportion of manufacturing (or downstream) subsidiaries in the subsidiary portfolio (e.g., it would average down the expatriate staffing level if the MNC had a large number of manufacturing subsidiaries relative to other MNCs or to the number of downstream subsidiaries).

[2] The mass-dependent view from organizational ecology literature also advocates this approach by arguing that larger organizations tend to have competitive advantages over smaller ones, that they exert more influence on the population based on their superior access to resources, and that competition is more intense among similar-sized organizations than among asymmetric organizations because different-sized organizations typically use different structures and strategies, and compete for different resources (Hannan & Freeman, 1977).

[3] The results show that the relationship between the power structure in the manufacturing subsidiary portfolio and MNC performance is not statistically significant based on the traditional threshold rules of thumb ($p < 0.1$), but it is recommended to examine the relationship with actual *p*-values and graphic representations, especially for nonlinear relationships (Haans et al., 2016; Meyer et al., 2017). The graphic representation of the result (Figure 3) shows that the relationship between the degree of power concentration in the manufacturing subsidiary portfolio and MNC performance is a linear curve (a flat curve close to a positive linear relationship) as presented in Model 2 ($\beta = 0.840$, $p = 0.114$).

[4] The mathematical formulations of the power concentration indices (PCI) are presented below. The degree of power concentration in the subsidiary portfolio of an MNC is measured by the mean of PCI (Manufacturing) and PCI (Downstream), weighted by the proportion of manufacturing and downstream subsidiaries in the subsidiary portfolio of the MNC:

$$\text{PCI by subsidiary age (MNC}_i\text{) (Manufacturing)} = \sum_j^k \left(\frac{\text{Age of manufacturing subsidiary}_j}{\text{Sum of all manufacturing subsidiary age of MNC}_i} \right)^2$$

$$\text{PCI by subsidiary age (MNC}_i\text{) (Downstream)} = \sum_j^k \left(\frac{\text{Age of downstream subsidiary}_j}{\text{Sum of all downstream subsidiary age of MNC}_i} \right)^2$$

$$\text{PCI by distance (MNC}_i\text{) (Manufacturing)} = \sum_j^k \left(\frac{\text{CAGE distance between HQ and manufacturing subsidiary}_j}{\text{Sum of CAGE distance of all manufacturing subsidiaries in MNC}_i} \right)^2$$

$$\text{PCI by distance (MNC}_i\text{) (Downstream)} = \sum_j^k \left(\frac{\text{CAGE distance between HQ and downstream subsidiary}_j}{\text{Sum of CAGE distance of all downstream subsidiaries in MNC}_i} \right)^2$$

where k denotes the number of subsidiaries of MNC$_i$, i denotes an MNC in the sample, and j indicates an individual subsidiary belonging to MNC$_i$.

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Figure 1. The inverted U-shape relationship between power concentration and MNC performance (with 95% confidence intervals)

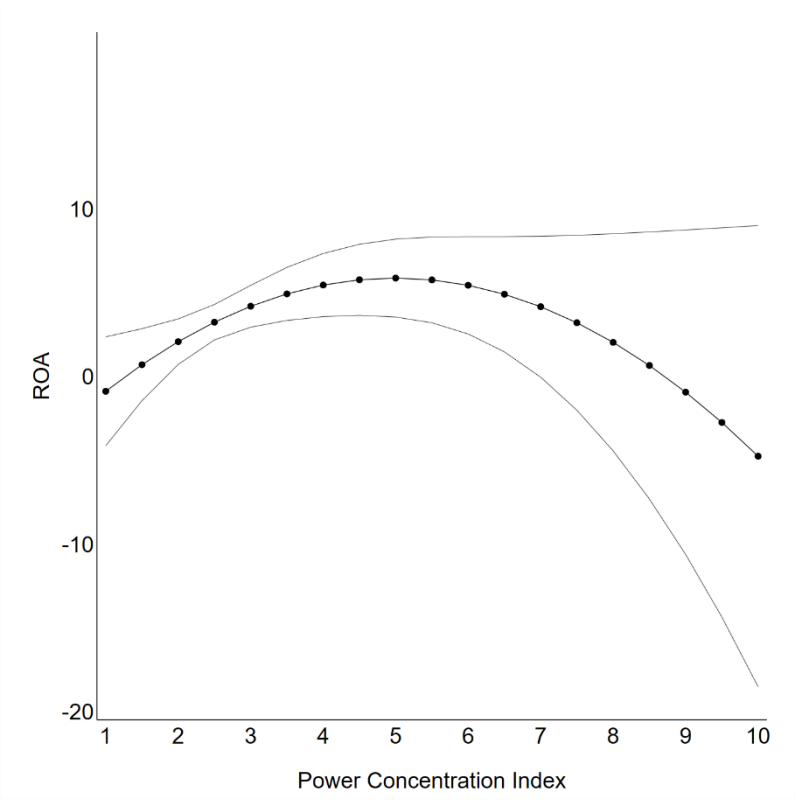

Figure 2. The inverted U-shape relationship between power concentration and expatriate utilization (with 95% confidence intervals)

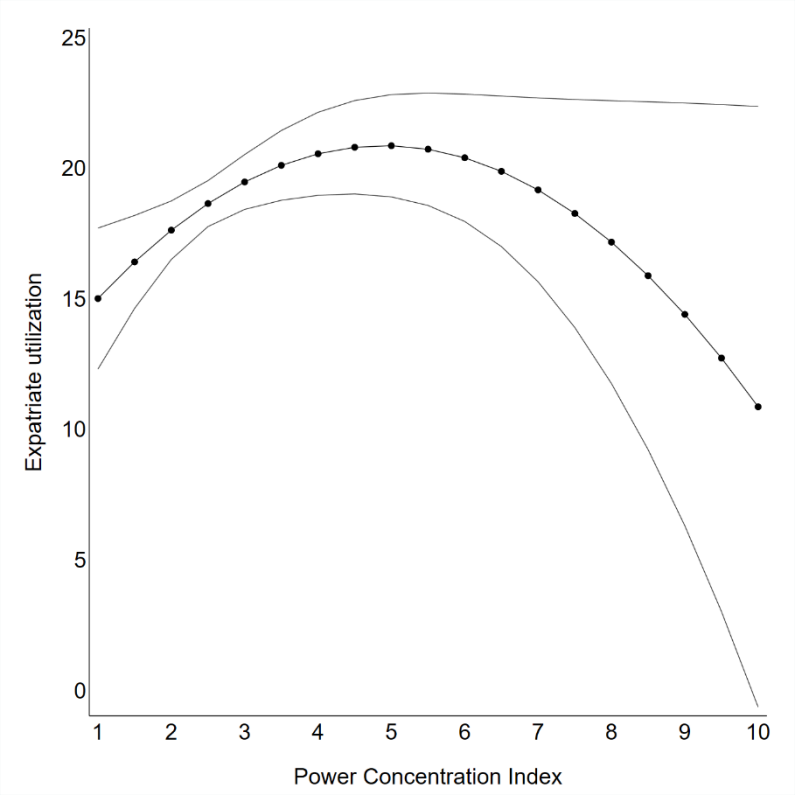

Figure 3. The moderating effect of subsidiary value chain activities on the relationship between power concentration and MNC performance (with 95% confidence intervals)

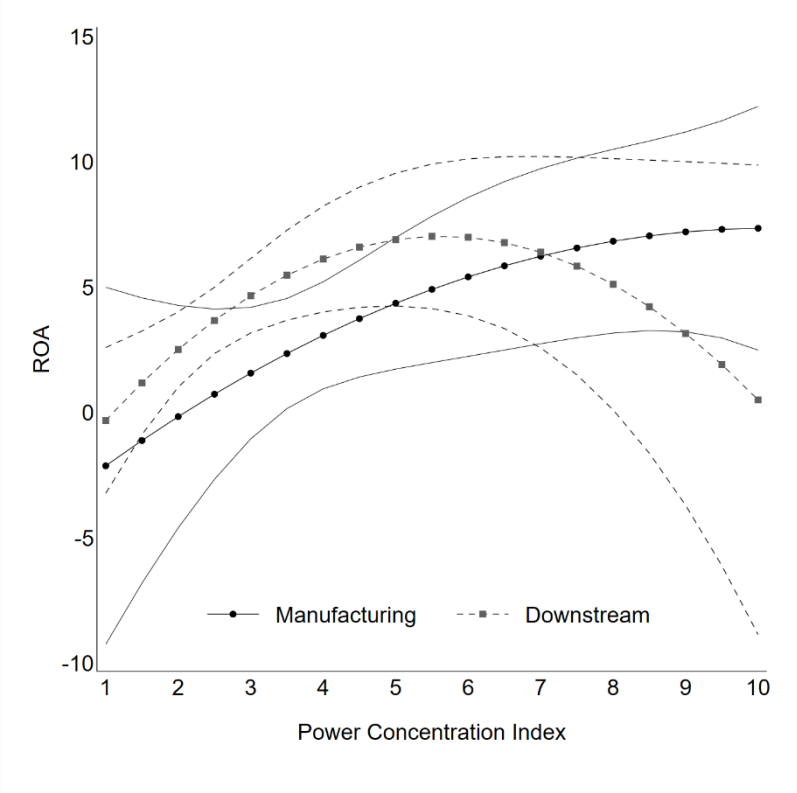

Figure 4. The moderating effect of subsidiary value chain activities on the relationship between power concentration and expatriate utilization (with 95% confidence intervals)

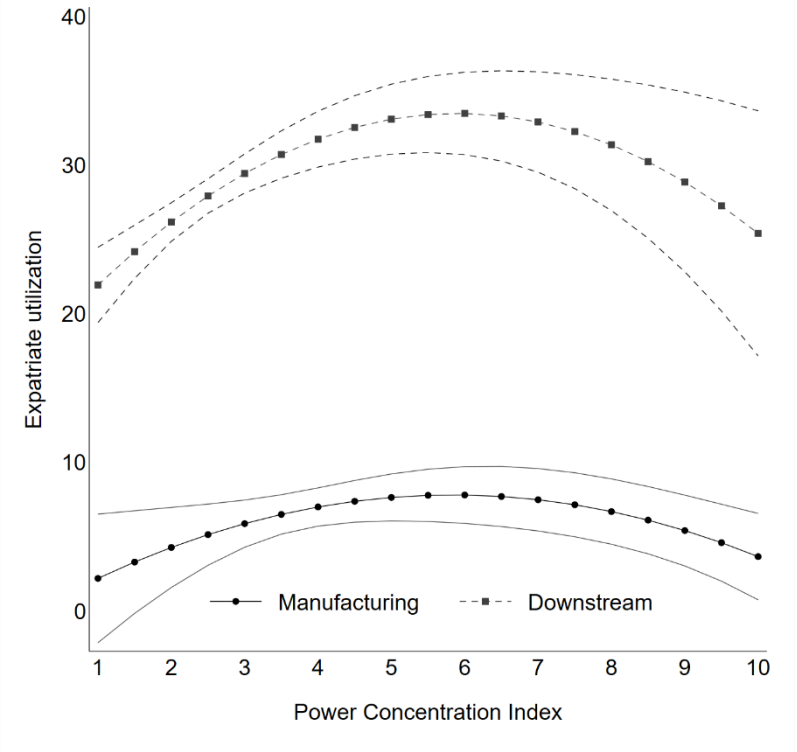

Table 1. Descriptive statistics and correlations

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1. MNC size	8.26	15.06																						
2. MNC age	37.28	21.04	0.17																					
3. ROA (T)	3.18	8.77	0.08	-0.07																				
4. R&D intensity	1.61	2.53	0.23	-0.16	0.09																			
5. Internationalization	39.56	28.08	-0.16	-0.29	-0.10	0.04																		
6. Economic freedom	63.34	4.30	0.09	0.13	0.01	0.18	-0.47																	
7. Government quality	7.60	0.33	-0.05	0.09	0.00	0.01	-0.07	0.00																
8. Host country GDP	4.58	2.25	-0.03	0.14	0.19	0.04	-0.29	0.23	0.26															
9. Average subsidiary size	4.86	1.41	0.08	-0.20	-0.02	0.19	0.68	-0.43	0.04	-0.19														
10. Average subsidiary size (M)	6.10	1.42	0.23	-0.14	0.00	0.31	0.46	-0.10	-0.01	-0.09	0.76													
11. Average subsidiary size (D)	3.47	1.13	0.20	-0.04	-0.06	0.01	0.13	-0.19	-0.01	-0.12	0.28	-0.07												
12. Average subsidiary age	13.93	4.95	0.02	0.26	-0.24	-0.02	-0.04	0.23	0.05	0.08	-0.11	0.05	-0.13											
13. Average subsidiary age (M)	12.65	4.64	0.07	0.00	-0.21	0.01	0.00	0.14	0.01	0.04	-0.07	0.13	-0.07	0.51										
14. Average subsidiary age (D)	14.46	5.70	0.01	0.24	-0.21	-0.02	-0.02	0.20	0.09	0.12	-0.05	0.06	-0.15	0.94	0.26									
15. Ownership	89.79	12.94	-0.05	0.08	0.03	0.15	-0.05	0.19	-0.06	-0.05	-0.06	0.04	-0.13	0.07	0.06	0.06								
16. Ownership (M)	80.82	27.96	-0.08	-0.08	0.18	0.02	0.10	-0.11	0.00	-0.01	0.08	-0.01	0.20	-0.10	0.00	-0.10	0.65							
17. Ownership (D)	93.45	11.60	-0.05	0.08	0.03	0.21	0.02	0.18	-0.03	0.02	0.06	0.14	-0.32	0.07	-0.01	0.06	0.78	0.01						
18. Power concentration	3.15	1.74	-0.14	-0.03	-0.05	-0.15	-0.10	-0.05	0.13	0.03	0.14	-0.17	0.09	-0.06	-0.09	-0.02	0.01	0.11	0.03					
19. Power concentration (M)	5.42	3.10	-0.09	-0.01	-0.11	-0.14	-0.42	0.29	0.05	-0.01	-0.47	-0.33	0.02	0.07	0.05	0.03	0.15	0.12	-0.15	0.37				
20. Power concentration (D)	3.29	2.33	-0.19	-0.03	-0.01	-0.18	0.20	-0.32	0.13	-0.07	0.36	0.02	0.07	-0.14	-0.10	-0.17	-0.06	0.13	0.06	0.78	-0.11			
21. Expatriate utilization	18.49	11.71	0.10	0.21	-0.02	-0.20	-0.52	0.23	0.05	0.04	-0.40	-0.29	-0.22	0.01	-0.12	-0.01	-0.14	-0.31	-0.07	0.24	0.19	0.12		
22. Expatriate utilization (M)	5.43	8.18	-0.03	0.02	-0.05	-0.19	-0.18	0.08	0.06	-0.16	-0.18	-0.37	0.03	0.11	-0.17	0.14	-0.24	-0.23	-0.19	0.13	0.26	-0.04	0.63	
23. Expatriate utilization (D)	27.54	14.77	0.07	0.14	0.00	-0.12	-0.28	0.07	0.07	0.05	-0.08	-0.10	-0.41	-0.08	-0.16	0.00	-0.14	-0.25	0.07	0.26	-0.05	0.20	0.82	0.25

Note: Pearson correlation (two-tailed). Correlation coefficients (absolute value) greater than 0.12 are significant at 0.05 level. Other correlations are not significant. (M) denotes the manufacturing subsidiary sample. (D) denotes the downstream subsidiary sample.

Table 2. Results from fixed-effects (within) regression of the effect of power concentration (full sample) on MNC performance and expatriate utilization

Dependent variable	MNC ROA(T+1)									Expatriate utilization								
	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.
Constant	29.89	24.54	0.23	31.57	24.52	0.20	18.87	25.07	0.45	41.39	20.45	0.04	42.79	20.44	0.04	31.39	20.86	0.13
MNC size	-0.20	0.22	0.38	-0.16	0.23	0.48	-0.21	0.22	0.35	-0.04	0.19	0.83	-0.01	0.19	0.97	-0.05	0.19	0.77
MNC age	0.02	0.13	0.89	0.01	0.13	0.97	0.00	0.13	0.98	-0.04	0.11	0.72	-0.05	0.11	0.65	-0.05	0.11	0.64
ROA (T)	-0.18	0.07	0.01	-0.18	0.07	0.01	-0.18	0.07	0.01	0.11	0.06	0.05	0.12	0.06	0.04	0.12	0.06	0.04
R&D intensity	-0.32	0.33	0.33	-0.30	0.33	0.37	-0.22	0.33	0.51	0.14	0.28	0.62	0.16	0.28	0.57	0.23	0.28	0.40
Internationalization	0.20	0.11	0.06	0.24	0.11	0.03	0.17	0.11	0.14	0.07	0.09	0.43	0.11	0.09	0.25	0.04	0.10	0.67
Economic freedom	-0.35	0.32	0.28	-0.32	0.32	0.32	-0.30	0.32	0.35	0.28	0.27	0.31	0.30	0.27	0.27	0.32	0.27	0.23
Government quality	0.09	1.54	0.95	0.00	1.54	1.00	0.17	1.53	0.91	-1.40	1.27	0.27	-1.48	1.27	0.24	-1.33	1.26	0.29
Host country GDP	0.60	0.67	0.37	0.59	0.67	0.38	0.47	0.67	0.48	0.60	0.56	0.29	0.59	0.56	0.30	0.48	0.56	0.39
Average subsidiary size	-2.45	1.70	0.15	-3.82	1.96	0.05	-2.21	2.09	0.29	-2.73	1.42	0.06	-3.83	1.64	0.02	-2.37	1.74	0.17
Average subsidiary age	0.13	0.41	0.74	0.08	0.41	0.85	0.07	0.40	0.86	-0.59	0.34	0.08	-0.64	0.34	0.06	-0.65	0.33	0.05
Ownership	-0.03	0.08	0.71	-0.02	0.08	0.82	-0.02	0.08	0.84	-0.15	0.06	0.02	-0.14	0.06	0.03	-0.14	0.06	0.03
Power concentration				0.72	0.51	0.16	4.23	1.75	0.02				0.58	0.43	0.18	3.77	1.46	0.01
Power concentration squared							-0.42	0.20	0.04							-0.38	0.17	0.02
Industry effects	Included			Included			Included			Included			Included			Included		
Year effects	Included			Included			Included			Included			Included			Included		
Number of observations	360			360			360			364			364			364		
Number of MNCs	124			124			124			124			124			124		
R-squared (within)	0.086			0.094			0.112			0.185			0.192			0.210		
F (*p*-value)	1.62 (0.08)			1.65 (0.07)			1.86 (0.03)			3.97 (0.00)			3.83 (0.00)			3.99 (0.00)		

Note: Coef, S.E., and Sig. denote coefficients, standard errors, and significance (*p*-value), respectively.

Table 3. Results from fixed-effects (within) regression of the effect of power concentration (manufacturing subsidiary sample) on MNC performance and expatriate utilization

Dependent variable	MNC ROA(T+1)									Expatriate utilization (M)								
	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.
Constant	-18.90	29.44	0.52	-31.53	30.35	0.30	-33.69	30.52	0.27	53.91	18.11	0.00	58.18	18.75	0.00	53.46	18.45	0.00
MNC size	-0.10	0.26	0.71	-0.04	0.26	0.88	-0.06	0.26	0.83	0.06	0.16	0.72	0.04	0.16	0.82	0.00	0.16	0.98
MNC age	0.91	0.58	0.12	1.05	0.58	0.07	1.03	0.58	0.08	-0.83	0.35	0.02	-0.88	0.35	0.01	-0.90	0.35	0.01
ROA (T)	-0.26	0.10	0.01	-0.27	0.10	0.01	-0.26	0.10	0.01	0.09	0.06	0.15	0.09	0.06	0.14	0.10	0.06	0.09
R&D intensity	-0.48	0.47	0.31	-0.60	0.48	0.21	-0.60	0.48	0.21	0.33	0.29	0.26	0.37	0.30	0.21	0.37	0.29	0.20
Internationalization	0.24	0.10	0.02	0.28	0.10	0.01	0.28	0.10	0.01	0.35	0.06	0.00	0.33	0.06	0.00	0.33	0.06	0.00
Economic freedom	-0.27	0.40	0.50	-0.23	0.40	0.56	-0.24	0.40	0.55	-0.05	0.24	0.85	-0.06	0.25	0.81	-0.07	0.24	0.78
Government quality	0.95	1.80	0.60	0.92	1.79	0.61	0.95	1.79	0.60	0.62	1.10	0.58	0.64	1.10	0.56	0.72	1.08	0.51
Host country GDP	0.39	0.78	0.62	0.54	0.79	0.49	0.55	0.79	0.48	0.35	0.48	0.47	0.29	0.48	0.55	0.30	0.47	0.53
Average subsidiary size (M)	-1.14	1.71	0.51	-1.13	1.70	0.51	-1.29	1.71	0.45	-7.17	1.05	0.00	-7.17	1.05	0.00	-7.51	1.04	0.00
Average subsidiary age (M)	-0.24	0.30	0.43	-0.39	0.32	0.22	-0.35	0.32	0.28	0.41	0.19	0.03	0.47	0.20	0.02	0.55	0.20	0.01
Ownership (M)	0.00	0.05	0.99	0.00	0.05	0.96	0.00	0.05	0.99	-0.02	0.03	0.52	-0.02	0.03	0.50	-0.03	0.03	0.39
Power concentration (M)				0.84	0.53	0.11	2.30	1.96	0.24				-0.29	0.32	0.37	2.80	1.19	0.02
Power concentration (M) squared							-0.11	0.15	0.44							-0.24	0.09	0.01
Industry effects	Included			Included			Included			Included			Included			Included		
Year effects	Included			Included			Included			Included			Included			Included		
Number of observations	253			253			253			256			256			256		
Number of MNCs	90			90			90			90			90			90		
R-squared (within)	0.13			0.14			0.15			0.31			0.31			0.34		
F (*p*-value)	1.85 (0.05)			1.92 (0.03)			1.82 (0.04)			5.71 (0.00)			5.33 (0.00)			5.67 (0.00)		

Note: Coef, S.E., and Sig. denote coefficients, standard errors, and significance (*p*-value), respectively.

Table 4. Results from fixed-effects (within) regression of the effect of power concentration (downstream subsidiary sample) on MNC performance and expatriate utilization

Dependent variable	MNC ROA(T+1)									Expatriate utilization (D)								
	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.
Constant	-30.21	26.12	0.25	-34.86	26.26	0.19	-39.34	26.04	0.13	82.72	23.58	0.00	75.31	23.37	0.00	69.24	22.71	0.00
MNC size	-0.21	0.23	0.36	-0.18	0.23	0.44	-0.19	0.23	0.41	-0.02	0.20	0.92	0.04	0.20	0.84	0.03	0.20	0.88
MNC age	1.10	0.54	0.04	1.18	0.55	0.03	1.28	0.54	0.02	-0.79	0.49	0.10	-0.67	0.48	0.17	-0.53	0.47	0.26
ROA (T)	-0.16	0.07	0.02	-0.15	0.07	0.04	-0.17	0.07	0.02	0.11	0.06	0.08	0.13	0.06	0.04	0.10	0.06	0.09
R&D intensity	-0.34	0.33	0.31	-0.29	0.34	0.39	-0.22	0.33	0.50	-0.27	0.31	0.37	-0.18	0.30	0.56	-0.08	0.29	0.78
Internationalization	0.14	0.08	0.08	0.15	0.08	0.06	0.14	0.08	0.07	0.08	0.07	0.27	0.10	0.07	0.16	0.09	0.07	0.20
Economic freedom	-0.23	0.33	0.48	-0.16	0.34	0.65	-0.25	0.33	0.46	0.24	0.30	0.43	0.38	0.30	0.21	0.24	0.29	0.41
Government quality	0.51	1.77	0.77	0.25	1.78	0.89	0.54	1.76	0.76	-0.65	1.57	0.68	-1.08	1.55	0.49	-0.72	1.51	0.63
Host country GDP	0.64	0.69	0.36	0.62	0.69	0.37	0.56	0.68	0.41	-0.40	0.62	0.52	-0.42	0.61	0.50	-0.50	0.60	0.40
Average subsidiary size (D)	-2.20	1.14	0.06	-3.55	1.49	0.02	-3.37	1.47	0.02	-4.64	1.04	0.00	-7.00	1.33	0.00	-6.74	1.29	0.00
Average subsidiary age (D)	0.02	0.31	0.95	-0.06	0.31	0.85	-0.09	0.31	0.77	-0.55	0.28	0.05	-0.68	0.28	0.02	-0.72	0.27	0.01
Ownership (D)	0.04	0.09	0.61	0.05	0.09	0.53	0.06	0.09	0.48	-0.12	0.08	0.11	-0.11	0.08	0.16	-0.10	0.07	0.17
Power concentration (D)				0.74	0.52	0.16	3.86	1.40	0.01				1.30	0.47	0.01	5.67	1.24	0.00
Power concentration (D) squared							-0.34	0.14	0.02							-0.48	0.13	0.00
Industry effects	Included			Included			Included			Included			Included			Included		
Year effects	Included			Included			Included			Included			Included			Included		
Number of observations	337			337			337			341			341			341		
Number of MNCs	119			119			119			119			119			119		
R-squared (within)	0.11			0.11			0.14			0.22			0.25			0.30		
F (*p*-value)	2.01 (0.02)			2.02 (0.02)			2.33 (0.01)			4.94 (0.00)			5.29 (0.00)			6.26 (0.00)		

Note: Coef, S.E., and Sig. denote coefficients, standard errors, and significance (*p*-value), respectively.

APPENDIX

Table 5. Robustness test results from fixed-effects (within) regression of the effect of power concentration (full sample) on MNC performance and expatriate utilization

Dependent variable	MNC ROA(T+1)									Expatriate utilization								
	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.
Constant	13.77	24.73	0.58	-3.45	25.30	0.89	17.93	24.36	0.46	41.35	20.92	0.05	30.90	21.47	0.15	31.72	20.26	0.12
MNC size	-0.14	0.22	0.52	-0.08	0.22	0.71	-0.14	0.22	0.54	-0.05	0.19	0.77	-0.01	0.18	0.97	-0.04	0.18	0.84
MNC age	0.01	0.13	0.94	0.03	0.12	0.81	-0.01	0.13	0.97	-0.04	0.11	0.70	-0.04	0.11	0.74	-0.05	0.11	0.62
ROA (T)	-0.14	0.07	0.05	-0.15	0.07	0.03	-0.17	0.07	0.01	0.11	0.06	0.06	0.11	0.06	0.05	0.10	0.06	0.07
R&D intensity	-0.11	0.33	0.75	-0.04	0.33	0.90	-0.14	0.33	0.66	0.16	0.28	0.56	0.18	0.28	0.51	0.25	0.27	0.37
Internationalization	0.28	0.11	0.01	0.26	0.10	0.01	0.26	0.11	0.02	0.06	0.09	0.48	0.07	0.09	0.46	0.06	0.09	0.49
Economic freedom	-0.32	0.32	0.33	-0.08	0.33	0.80	-0.29	0.32	0.37	0.20	0.27	0.46	0.24	0.28	0.39	0.22	0.27	0.42
Government quality	0.54	1.58	0.73	0.53	1.53	0.73	0.49	1.55	0.75	-0.84	1.31	0.52	-0.75	1.28	0.56	-0.59	1.27	0.65
Host country GDP	0.13	0.68	0.85	-0.24	0.69	0.73	0.25	0.67	0.71	0.57	0.57	0.32	0.44	0.58	0.45	0.39	0.56	0.48
Average subsidiary size	-3.49	1.71	0.04	-3.32	1.67	0.05	-4.48	1.85	0.02	-2.71	1.45	0.06	-2.68	1.42	0.06	-3.13	1.54	0.04
Average subsidiary age	0.11	0.40	0.78	-0.33	0.42	0.43	0.00	0.41	0.99	-0.51	0.34	0.13	-0.57	0.35	0.11	-0.55	0.34	0.10
Ownership	-0.01	0.08	0.89	0.05	0.08	0.56	0.00	0.08	0.99	-0.18	0.07	0.01	-0.12	0.06	0.06	-0.15	0.06	0.02
Power concentration	10.05	3.56	0.01	12.64	3.35	0.00	9.31	3.08	0.00	2.73	3.02	0.37	5.25	2.86	0.07	8.51	2.58	0.00
Power concentration squared	-1.18	0.51	0.02	-1.53	0.48	0.00	-1.19	0.49	0.02	-0.57	0.43	0.19	-0.97	0.41	0.02	-1.41	0.41	0.00
Industry effects	Included			Included			Included			Included			Included			Included		
Year effects	Included			Included			Included			Included			Included			Included		
Number of observations	360			360			360			364			364			364		
Number of MNCs	124			124			124			124			124			124		
R-squared (within)	0.124			0.147			0.130			0.196			0.211			0.226		
F (*p*-value)	2.08 (0.01)			2.54 (0.00)			2.17 (0.01)			3.65 (0.00)			4.00 (0.00)			4.37 (0.00)		

Note: Models 1 and 4 (power concentration index based on subsidiary age), Models 2 and 5 (power concentration index based on CAGE distance), Models 3 and 6 (power concentration index based on a composite measure of subsidiary size, age, and CAGE distance). Coef, S.E., and Sig. denote coefficients, standard errors, and significance (*p*-value), respectively.

Table 6. Robustness test results from fixed-effects (within) regression of the effect of power concentration (manufacturing subsidiary sample) on MNC performance and expatriate utilization

Dependent variable	MNC ROA(T+1)									Expatriate utilization (M)								
	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.	Coef.	S.E.	Sig.
Constant	-23.19	30.44	0.45	-25.78	30.89	0.41	-30.51	30.84	0.32	65.43	17.39	0.00	59.77	18.09	0.00	58.52	17.86	0.00
MNC size	-0.08	0.26	0.76	-0.07	0.26	0.78	-0.05	0.26	0.85	0.00	0.15	0.99	0.03	0.15	0.82	0.02	0.15	0.87
MNC age	0.95	0.58	0.11	1.02	0.59	0.09	1.04	0.58	0.08	-0.93	0.33	0.01	-0.93	0.34	0.01	-0.93	0.33	0.01
ROA (T)	-0.26	0.10	0.01	-0.26	0.10	0.01	-0.26	0.10	0.01	0.10	0.06	0.09	0.09	0.06	0.12	0.10	0.06	0.09
R&D intensity	-0.50	0.48	0.30	-0.49	0.48	0.30	-0.53	0.48	0.27	0.40	0.27	0.15	0.40	0.28	0.16	0.41	0.28	0.14
Internationalization	0.27	0.11	0.02	0.27	0.10	0.01	0.29	0.10	0.01	0.26	0.06	0.00	0.30	0.06	0.00	0.30	0.06	0.00
Economic freedom	-0.28	0.40	0.49	-0.26	0.40	0.51	-0.26	0.40	0.51	-0.05	0.23	0.83	-0.06	0.23	0.78	-0.07	0.23	0.77
Government quality	0.92	1.81	0.61	0.91	1.81	0.62	0.86	1.80	0.63	0.66	1.03	0.52	0.59	1.05	0.57	0.57	1.04	0.58
Host country GDP	0.40	0.79	0.61	0.36	0.79	0.65	0.44	0.79	0.58	0.28	0.45	0.53	0.34	0.46	0.46	0.29	0.45	0.53
Average subsidiary size (M)	-1.05	1.73	0.54	-1.07	1.72	0.54	-1.14	1.72	0.51	-7.63	0.99	0.00	-7.45	1.01	0.00	-7.67	1.00	0.00
Average subsidiary age (M)	-0.27	0.31	0.38	-0.33	0.32	0.30	-0.35	0.32	0.28	0.54	0.18	0.00	0.54	0.19	0.00	0.58	0.18	0.00
Ownership (M)	0.00	0.05	0.97	0.00	0.05	0.96	0.00	0.05	0.98	-0.03	0.03	0.37	-0.02	0.03	0.61	-0.02	0.03	0.50
Power concentration (M)	0.35	2.27	0.88	0.32	2.14	0.88	1.47	2.12	0.49	0.74	1.30	0.57	1.54	1.25	0.22	2.72	1.23	0.03
Power concentration (M) squared	0.01	0.15	0.96	0.02	0.15	0.88	-0.05	0.15	0.74	-0.17	0.09	0.06	-0.20	0.09	0.03	-0.28	0.09	0.00
Industry effects	Included			Included			Included			Included			Included			Included		
Year effects	Included			Included			Included			Included			Included			Included		
Number of observations	253			253			253			256			256			256		
Number of MNCs	90			90			90			90			90			90		
R-squared (within)	0.13			0.14			0.14			0.40			0.38			0.39		
F (*p*-value)	1.60 (0.08)			1.67 (0.07)			1.71 (0.06)			7.32 (0.00)			6.63 (0.00)			7.03 (0.00)		

Note: Models 1 and 4 (power concentration index based on subsidiary age), Models 2 and 5 (power concentration index based on CAGE distance), Models 3 and 6 (power concentration index based on a composite measure of subsidiary size, age, and CAGE distance). Coef, S.E., and Sig. denote coefficients, standard errors, and significance (*p*-value), respectively.

Table 7. Robustness test results from fixed-effects (within) regression of the effect of power concentration (downstream subsidiary sample) on MNC performance and expatriate utilization

Dependent variable	MNC ROA(T+1)									Expatriate utilization (D)								
	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.	Coef.	SE	Sig.
Constant	-43.01	27.26	0.12	-48.41	27.75	0.08	-44.58	26.78	0.10	83.26	22.78	0.00	88.17	23.04	0.00	74.47	21.76	0.00
MNC size	-0.18	0.23	0.43	-0.18	0.22	0.42	-0.15	0.23	0.52	0.02	0.19	0.94	0.02	0.19	0.93	0.07	0.18	0.70
MNC age	1.21	0.55	0.03	1.24	0.55	0.03	1.31	0.55	0.02	-0.90	0.45	0.05	-1.00	0.45	0.03	-0.65	0.44	0.14
ROA (T)	-0.15	0.07	0.03	-0.16	0.07	0.02	-0.15	0.07	0.03	0.08	0.06	0.15	0.08	0.06	0.16	0.08	0.06	0.16
R&D intensity	-0.28	0.34	0.40	-0.27	0.33	0.43	-0.23	0.33	0.50	-0.18	0.28	0.53	-0.23	0.28	0.42	-0.11	0.27	0.70
Internationalization	0.15	0.08	0.05	0.15	0.08	0.05	0.16	0.08	0.05	0.08	0.07	0.23	0.08	0.07	0.22	0.09	0.06	0.17
Economic freedom	-0.18	0.34	0.59	-0.12	0.34	0.74	-0.16	0.34	0.64	0.03	0.28	0.93	0.02	0.29	0.95	0.08	0.28	0.78
Government quality	0.48	1.78	0.79	0.69	1.77	0.70	0.47	1.77	0.79	0.42	1.46	0.78	0.48	1.44	0.74	0.20	1.41	0.89
Host country GDP	0.45	0.70	0.52	0.35	0.70	0.62	0.47	0.68	0.49	-0.35	0.59	0.55	-0.38	0.58	0.52	-0.48	0.56	0.39
Average subsidiary size (D)	-2.20	1.14	0.06	-2.09	1.13	0.07	-3.71	1.30	0.01	-4.31	0.96	0.00	-4.46	0.95	0.00	-6.12	1.07	0.00
Average subsidiary age (D)	-0.11	0.32	0.73	-0.33	0.36	0.36	-0.22	0.33	0.50	-0.50	0.27	0.06	-0.42	0.30	0.16	-0.70	0.26	0.01
Ownership (D)	0.07	0.09	0.45	0.07	0.09	0.40	0.07	0.09	0.42	-0.11	0.07	0.13	-0.10	0.07	0.16	-0.10	0.07	0.16
Power concentration (D)	4.16	2.26	0.07	5.21	2.16	0.02	4.96	1.80	0.01	6.40	1.90	0.00	5.05	1.81	0.01	8.91	1.48	0.00
Power concentration (D) squared	-0.34	0.21	0.10	-0.48	0.20	0.02	-0.44	0.18	0.02	-0.92	0.18	0.00	-0.87	0.17	0.00	-1.14	0.15	0.00
Industry effects	Included			Included			Included			Included			Included			Included		
Year effects	Included			Included			Included			Included			Included			Included		
Number of observations	337			337			337			341			341			341		
Number of MNCs	119			119			119			119			119			119		
R-squared (within)	0.12			0.13			0.14			0.34			0.36			0.39		
F (*p*-value)	1.98 (0.02)			2.19 (0.00)			2.32 (0.01)			7.72 (0.00)			8.28 (0.00)			9.41 (0.00)		

Note: Models 1 and 4 (power concentration index based on subsidiary age), Models 2 and 5 (power concentration index based on CAGE distance), Models 3 and 6 (power concentration index based on a composite measure of subsidiary size, age, and CAGE distance). Coef, S.E., and Sig. denote coefficients, standard errors, and significance (*p*-value), respectively.