

The effects of spatial and contextual factors on headquarters resource allocation to MNE subsidiaries

HENRIK DELLESTRAND*

Assistant professor
Uppsala University
Department of Business Studies
Box 513, SE-751 20 Uppsala, SWEDEN
Phone: +46-18-471 13 67
Fax: +46-18-471 68 10
E-mail: henrik.dellestrand@fek.uu.se

PHILIP KAPPEN

Assistant professor
Uppsala University
Department of Business Studies
Box 513, SE-751 20 Uppsala, SWEDEN
Phone: +46-18-471 25 81
Fax: +46-18-471 68 10
E-mail: philip.kappen@fek.uu.se

*Corresponding author

The effects of spatial and contextual factors on headquarters resource allocation to MNE subsidiaries

Abstract

Subsidiaries of the multinational enterprise are located in a multitude of environments, being exposed to organizational, country and sub-national characteristics. Economic resources are not distributed equally; instead they are agglomerated in specific countries, or even regions, and the subsidiaries located in these different environments have a heterogeneous resource configuration. This implies that distance dimensions related to geography and subsidiary network relationships may affect how the firm is managed. The current paper investigates the effects of spatial and contextual distance and subsidiary network embeddedness within multinational enterprises on headquarters resource allocation to specific innovation transfer projects between subsidiaries. By integrating the organizational and geographic dimensions we add to the knowledge about drivers behind headquarters resource allocation to subsidiaries, thus extending theories related to the way subsidiaries can evolve within the multinational enterprise with the support of headquarters.

Keywords: multinational enterprise, distance, embeddedness, resource allocation, subsidiary-headquarters relationship, innovation transfer, subsidiary evolution

The effects of spatial and contextual factors on headquarters resource allocation to MNE subsidiaries

INTRODUCTION

In order to make the most of innovations developed in geographically dispersed subsidiaries, the multinational enterprise (MNE) needs to transfer these innovations to other subsidiaries within the organization. This activity often entails transferring innovations over vast geographic distances as well as across national, cultural, economic, institutional and linguistic distances. In fact, distance has been identified as a key element in research dealing with the global economy (Ghoshal & Westney, 1993; Nachum, 2003). There is an unresolved discussion whether distance still prevails (Ghemawat, 2001; Tsang & Yip, 2007) or whether the concept of distance is dead due to better tools for communication and coordination (Cairncross, 1997). Distance can have its advantages in that novel solutions are developed in different external environments (Ambos & Ambos, 2009; Andersson, Forsgren & Holm, 2002; Dicken & Malmberg, 2001), implying that there may be an incentive to locate units in different host country environments and to invest in overcoming distance. Distance can also be seen as a barrier to the innovation transfer process that subsidiaries engaged in the transfer process have to overcome, i.e., there are negative aspects connected to distance (Goodall & Roberts, 2003). As argued by Tsang and Yip (2007), cultural distance has been thoroughly researched by management scholars. However, other distance variables have received much less attention in the literature, and the approach to taking a multitude of distance stimuli into account has not been extensively adopted (Dow & Karunaratna, 2006).

This paper is a response to the call for a differentiated investigation of distance capturing its various dimensions in relation to doing business on a global scale (Nachum & Zaheer, 2005). Moreover, not only distance affects the functioning of MNE subsidiaries but another potentially important factor is the context in which subsidiaries are embedded (Beugelsdijk, 2007; Dicken & Malmberg, 2001; McCann & Mudambi, 2005). Consequently, it is necessary to account for country level factors but also to delve into relational aspects such as the embeddedness of subsidiaries (Arita & McCann, 2002; Dicken & Malmberg, 2001; McCann & Mudambi, 2005), i.e., the diversity of firms matter as well as the heterogeneity of different environments (Cantwell, 2009). In this paper, the approach adopted by Doz and Santos (1997) is followed; special attention is paid to spatial location of subsidiaries, i.e.,

geographic, cultural, linguistic, economic, and institutional distance between subsidiary locations. We also account for relationship specific factors at the sub-national level by investigating the degree of the sending subsidiary's network embeddedness. The connection between distance, context and headquarters resource allocation to subsidiaries has, to the best of our knowledge, received little attention in the literature. This lack of attention to geography is surprising given Buckley and Ghauri's (2004) suggestion that strategic aspects of the MNE can be enhanced by getting a better understanding of the geographical factors.

This paper follows the assumption that resources in the MNE are limited, and given the key strategic importance of innovations for MNEs (Baumol, 2002; Franko, 1989; Hitt, Hoskisson, Johnson, & Moesel, 1996), headquarters has an incentive to support promising innovations subject to internal MNE transfer. The resource cost of innovation transfer is generally lower than that of developing new innovations, providing the headquarters the opportunity to use the internal MNE market to allocate corporate resources to transfer projects taking place between a sending and a receiving subsidiary. In this way, headquarters operates an internal market for its limited resources, often conceptualized as an internal market for capital, in order to effectively use its strategic resources (Khanna & Tice, 2001; Lamont, 1997; Mudambi, 1999; Mudambi & Aulakh, 2005; Shin & Stulz, 1998; Stein, 1997).

In this paper, we develop a model that investigates the effects of spatial and contextual distance and subsidiary network embeddedness within MNEs on headquarters resource allocation to specific innovation transfer projects between subsidiaries. This approach allows us to connect subsidiary location, spatially and contextually on a national and sub-national level, to an issue of key strategic importance (Beugelsdijk, 2007; McCann & Mudambi, 2005), namely resource allocation. Resource allocation also has implications for subsidiary evolution in the sense that it offers an understanding of which subsidiaries involved in innovation transfer projects become favored on the internal MNE market for resources, with the corollary of the subsidiary gaining intra-MNE power and of a higher likelihood of it achieving a mandate (Birkinshaw, 1996) and being recognized as a center of excellence (Holm & Pedersen, 2000).

Our data set allows for a fine-grained analysis of how MNE strategy is affected by the spatial distance of a transfer project as well as the contextual characteristics of the sending and receiving subsidiaries' host countries, thus enabling us to distinguish between location and space dimensions (McCann & Mudambi, 2005). The data set consists of 169 specific dyadic innovation transfer projects between a sending and receiving subsidiary within MNEs. The subsidiaries hosting these innovation transfer projects belong to 23 different

MNEs and are located in 14 countries in Europe, Asia and North America. The receiving subsidiaries are sited in 31 countries in Europe, Asia, North America, South America, Africa and Oceania.

The results from our analysis suggest that relationship specific factors, such as the embeddedness of the sending subsidiary, offer a stronger explanation of headquarters resource allocation than country level distances in different dimensions – at the same time we find both positive and negative significant effects of distance lending overall support to the notion that distance is far from dead and that geography matters when dealing with innovation transfer in the global economy. We contribute to the existing literature in management and economic geography by jointly discussing innovation transfer, subsidiary relationships and distance in connection to headquarters resource allocation. Thus, we are able to explore spatial and contextual strategic considerations underlying headquarters resource allocation, which allows us to extend the work on subsidiary evolution (Birkinshaw & Hood, 1998) by specifying the role of headquarters and identifying spatial and contextual properties driving resource allocation considerations.

The rest of the paper is organized as follows: the next section outlines a short theoretical background. This theoretical framework is then specified in relation to the hypotheses postulated in the subsequent section. After this, the framework is confronted with our empirical material in the data and methods section. This is followed by a presentation of the results from our statistical analysis. The paper then moves on to discussing the results and ends with conclusions, theoretical and managerial implications and limitations of our framework.

THEORETICAL BACKGROUND

Geography can be seen as one key explanation behind research phenomenon linked to the global economy, where different markets contain unique assets and capabilities (Buckley & Ghauri, 2004; Dunning, 1988; 1998; Maskell, Barthelt & Malmberg 2006), and multinationality allows the MNE to tap into these local resources (Almeida, 1996). The internal organization and multinationality create spatial separation of units, i.e., of both headquarters and subsidiaries (Bel & Fageda, 2008). Hence, a distinguishing feature of MNEs is the boundary spanning nature of the activities performed within the firm, and the geographic dispersion of subsidiaries.

The MNE has been conceptualized as geographically dispersed networks or global factories (Buckley, 2009). In the MNE, subsidiaries have been identified as key actors,

irrespective of the organization having been conceptualized as a 'heterarchy' (Hedlund, 1986), 'transnational firm' (Bartlett & Ghoshal, 1989), 'differentiated network' (Nohria & Ghoshal, 1997) or 'metanational' (Doz, Santos & Williamson, 2001). The dispersion of MNE subsidiaries has the consequence of presenting subsidiaries with a multitude of environments, creating challenges as well as opportunities (Andersson et al., 2002). Furthermore, the fact that subsidiaries are located in a host country, embedded in specific relationships, and at the same time part of the overall MNE organization places a strain between internal consistency and local adaptation. This is a key issue that has been thoroughly investigated in research on the MNE (Rosenzweig & Singh, 1991). This further implies that subsidiaries, as well as their transfer projects, are connected in a network of sometimes vast spatial and contextual distances. In such a setting, the MNE headquarters is put in a position where it can rank-order and support certain promising projects, anticipating that such activity is value-adding to the MNE. Headquarters role and function is then unique as it is not performed by anyone else besides headquarters itself. More specifically, the allocation of resources to a subsidiary or a project is an act of involvement from headquarters and has the potential to be of value to the overall MNE as well as the subsidiary or specific project.

Innovation activities within the MNE – space and context

A traditional view, which over the years has been increasingly challenged, is that the MNE develops its competitive advantage in the home country and exploits this advantage in other markets (Hymer, 1960; Vernon, 1966). Recent work has emphasized the important role of foreign subsidiaries as sources of competitive advantage (Frost, 2001). In fact, Birkinshaw and Hood (2001) noted that innovations often evolve at the subsidiary level and not at headquarters. This observation is an important one for the MNE and the role of subsidiaries owing to the fact that innovations are a key driver behind long-run economic growth (Baumol, 2002) and the development of competitive advantage within the firm (Franko, 1989; Hitt et al., 1996).

Innovations can be seen as an integral part of the knowledge based view of the firm (Grant, 1996; Kogut & Zander, 1992; 1993) owing to the closeness between these two concepts since innovations are often conceptualized as bearers of knowledge (Kreiner & Mouritzen 2003; Teece, 1986). However, innovations are costly and time consuming to develop (Teece, 1977), which consequently provides an incentive for the MNE to transfer innovations developed at one location to another part of the organization, attempting to close

the gap between what is known and what is currently being used throughout the organization (Cool, Dierickx & Szulanski, 1997; Repenning, 2002; Pfeffer & Sutton, 2000). The transfer process can serve to enhance performance in one location observed in another by generating or economizing on knowledge (Schulz, 2001; Szulanski, Capetta & Jensen, 2004).

The MNE has been put forth as a superior vehicle for these transfer processes owing to the notion that they are social communities (Kogut & Zander, 1993) in comparison to transacting knowledge on the external market. Even if MNEs can be conceptualized as having relatively good transfer potential vis-à-vis the external market, it does not mean that innovation transfer will occur automatically or without problems within the MNE. There is an abundance of literature on the stickiness of knowledge and the arduous process that knowledge transfer can entail. This is also true for knowledge transfer within the MNE despite the advantage of being perceived as a superior vehicle for knowledge transfer (cf., Gupta & Govindarajan, 2000; Szulanski, 1996; Zander & Kogut, 1995). More specifically, it can be hard to transfer across distances (Buckley & Carter, 2004; Hansen & Løvås, 2004; Monteiro, Arvidsson & Birkinshaw, 2008).

Following Dicken and Malmberg (2001), we assert that, even though MNE subsidiaries may be deeply rooted in one particular place, they can still be connected both locally and globally. The transfer of innovations across vast physical distances is, in general, more costly (Beugelsdijk, 2007), and spatial proximity can act as a governance mechanism, reducing transaction costs (Maskell et al., 2006). Put differently, innovation transfer will be easier and less costly, the shorter the physical distance between sender and receiver (Maskell & Malmberg, 2007). Additionally, social, cultural and cognitive proximity usually follows spatial proximity (Gertler, 1995). As a consequence of innovation transfer across distances, the knowledge received by the target subsidiary can be less than the amount sent, i.e., transmission losses occur (Shannon & Weaver, 1998). Transmission losses can be reduced by using rich transmission channels, for instance, personal contacts (Daft & Lengel, 1986; Mudambi 2002). The use of such rich channels will be facilitated by short distances or by other organizational mechanisms, such as additional resources.

Being located in a host country means that the subsidiary is embedded in an environment (Grabher, 1993; Granovetter, 1985) that provides local connections and a contact network that is formed by subsidiaries through interaction (Dicken & Malmberg, 2001). Similarly, Beugelsdijk (2007) stresses the fact that “all firms have partners and are embedded in networks of dyadic organizational relationships” (p. 194). Furthermore, he highlights the importance of analyzing the interactions and relationships between firms. In a similar vein,

McCann and Mudambi (2005) identify the social network as one type of cluster relevant for geography in that spatial proximity, often found in the social network of a firm, will affect the local business environment of that firm. By looking at the actual relationships and interactions of a firm it is possible to capture activities that are of crucial importance for the firm (Beugelsdijk, 2007; Forsgren, Holm & Johanson, 2005), which can attract additional headquarters resources. Consequently, it is necessary to include subsidiary network embeddedness when analyzing space and context.

In sum, innovation transfer projects are costly, i.e., resource consuming, and may need to be facilitated. In the MNE, headquarters has been claimed to have the potential to influence knowledge flows between subsidiaries (Birkinshaw, 2001; Ghoshal & Bartlett, 1990), and in some cases headquarters needs to get involved and support promising subsidiary projects by intervention (Rugman & Verbeke, 2001). This makes distance and differences between locations a relevant factor to investigate in relation to headquarters resource allocation to innovation transfer projects (see Figure 1 for an illustration), but also to account for relational factors.

Insert Figure 1 about here

HYPOTHESES DEVELOPMENT

We base our conceptual framework on the knowledge based view of the firm (cf., Grant, 1996; Kogut & Zander, 1993; Zander & Kogut, 1995), i.e., the advantages of innovations and internal MNE transfer, and we recognize the difficulties inherent in innovation transfer. Within this view, headquarters has an important role to play in relation to subsidiary evolution and resource allocation (Birkinshaw & Hood, 1998, p. 787). The MNE can be seen as an organization operating under resource constraints with headquarters engaging itself in resource allocation activities across subsidiaries, with the hope of adding value, thus enhancing the competitive advantage of its foreign subsidiaries in relation to local firms (Hymer, 1960). Headquarters has to decide which innovation transfer projects get favored for additional resources in the MNE network. Thus, headquarters performs a function derived from its holistic responsibility for the overall operations of the MNE, i.e., it is responsible for running an internal resource market in terms of possessing the formal power and control

rights when it comes to allocating resources to the innovation transfer projects deemed most promising or most arduous. In turn, the subsidiaries can compete for headquarters resources.

This perspective is in line with Mudambi (1999), and with the conceptualization of the MNE as a federative arena where subsidiaries compete for influence and resources, with headquarters as the actor with formal power on this arena (Andersson, Forsgren & Holm, 2007). Involvement in innovation transfer projects is a key critical resource that can be allocated by headquarters within the MNE in order to give strategic support to the subsidiaries engaged in a transfer project. This involvement can, for instance, take the form of a formal instruction to transfer the innovation, thus signalling an interest in and awareness of subsidiary activities by headquarters. In that way, headquarters takes responsibility, but it also exercises governance and control functions related to its formal position and power within the MNE. In addition, headquarters can more actively participate in the transfer process or assume increased responsibility for the innovation transfer process. This active engagement in subsidiary level activities entails committing limited headquarters resources and can add value to the subsidiaries (Uzzi & Gillespie, 1999). Whether or not this is sought by the focal subsidiaries is another matter, outside of the scope of the current paper.

Headquarters activities are impossible to price since they are not sold on the market (Bel & Fageda, 2008). However, involvement in innovation transfer by headquarters is a supportive and value-added activity aimed at allocating resources in order to facilitate the transfer process. This type of involvement by headquarters is a valuable resource since it has the potential to add to the efficiency and effectiveness of the organization. It is rare, since it can hardly be sourced from the external market, in comparison to financial resources, which are more easily obtained from the external financial market thanks to the generic nature of financial resources, more easily priced in comparison to the more specific resource discussed here in terms of headquarters involvement. Also, it is difficult to imitate the hierarchical position of headquarters. Hence, headquarters involvement is a more tangible and value-adding activity compared to headquarters attention (Bouquet & Birkinshaw, 2008; Bouquet, Morrison & Birkinshaw, 2009; Ocasio, 1997). Thus, headquarters involvement includes headquarters attention but also goes beyond attention by being a more specific and direct activity undertaken by headquarters (Bouquet et al., 2009).

Distance

As discussed earlier, distance and context are likely to affect innovation transfer and consequently headquarters resource allocation in the form of its involvement. This is

consistent with the local environmental determinism discussed by Birkinshaw and Hood (1998). At the same time, we need to consider multiple environments when dealing with dyadic innovation transfers within the MNE. Thus, both distance and embeddedness need to be considered in our framework.

We build our distance conceptualization on the notion of psychic distance (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977), which is proposed to consist of differences in language, culture, education, political systems and industrial development etc. This allows of an analysis of different distances in dyadic relations, based on an established framework within the field of global management research.

Geographic distance

Theories related to geographic proximity, i.e., spatial distance, of actors can help us understand under what conditions distance has strategic implications for the MNE. A close geographic proximity between actors enables face-to-face contact (Audretsch, 1998; Rosenfeld, 1997), which should facilitate the transfer in an innovation transfer project between a sending and receiving subsidiary, mediating the effect of potential barriers to transfer and the inherent stickiness of knowledge (Szulanski, 1996). Moreover, close geographic proximity makes it possible for the innovation receivers to develop strong relational ties with the innovation providers and facilitates personal contact (Audretsch, 1998; Granovetter, 1973; Harrison, 1992; Henry & Pinch, 2000; Shenkar, 2001). These strong ties reduce uncertainty in the dyadic relationship and enhance trust (Etzioni & Etzioni, 1999). Consequently, geographic proximity reduces the transmission losses that can occur during an innovation transfer process. Strong ties are important for developing a positive disposition toward sending and receiving innovations for the subsidiaries engaged in the transfer process. Geographic proximity has been argued to lower transportation costs, the need for coordination and communication, as well as for control and monitoring (Shenkar, 2001). In sum, this implies that a less arduous innovation transfer process will take place. Hence, there are compelling reasons for headquarters to get involved in a transfer taking place between actors in geographic distant locations by allocating additional resources. Consequently, the following hypothesis is suggested:

Hypothesis 1: Headquarters resource allocation to innovation transfer projects will be positively influenced by greater geographic distance between the sending and receiving subsidiary.

Cultural distance

Cultural distance is one of the most empirically tested concepts in international business, mostly employing Hofstede's (2001) dimensions and the Kogut and Singh (1988) index. Hofstede's conceptualization and measurement of culture has gained wide acceptance (Sivukumar & Nakata, 2001) but has also been the subject of criticism (Schwartz, 1994; Shenkar, 2001; Sivukumar & Nakata, 2001). Research has indicated that perceptual measurements of cultural distance, or the use of Schwartz's (1994) or Hofstede's (2001) cultural dimensions, render similar results (Drogendijk & Slangen, 2006). Cultural distance is the extent to which norms, values, beliefs and assumptions in one country differ from those in another (Hofstede, 2001; Kogut & Singh, 1988). At firm level, this implies that the larger the cultural distance, the larger the difference in managerial and organizational practices (Kogut & Singh, 1988). Organizational units are firmly rooted in their respective host country environments and cultural values, suggesting that the culture of headquarters and its subsidiaries are likely to correspond with their respective national cultural contexts (Harzing & Sorge, 2001; House, Hanges, Javidan, Dorfman & Gupta, 2004; van Oudenhoven, 2001). Culture not only influences the behavior of individuals but also our perception of others' behaviour. A large cultural distance increases the likelihood of misinterpretation, and it will be more costly and difficult to interpret information (Boyacigiller, 1990), i.e., culture affects how we behave, perceive others and are perceived by others.

In the case of innovation transfer, a large cultural distance implies increased costs and expected difficulties of the transfer project, and the absorptive capacity (Cohen & Levinthal, 1990) is lower in such a situation owing to the fact that the subsidiary receiving the innovation will have a more difficult time in understanding, interpreting and assimilating the innovation because of cultural differences between sender and receiver. This arduousness will affect headquarters propensity to allocate resources positively in order to facilitate the transfer process. Hence, the following hypothesis is proposed:

Hypothesis 2: Headquarters resource allocation to innovation transfer projects will be positively influenced by a greater cultural distance between the sending and receiving subsidiary.

Linguistic distance

It is common not to treat language as part of MNE theory when explaining strategic issues. Most often language is an implicit assumption or bundled together with cultural distance (Luo & Shenkar, 2006). However, research has found that language competence does not correlate with cultural distance (Björkman & Piekkari, 2009). Therefore, linguistic distance should not be considered as a part included in other distances but instead treated in its own right. For instance, West and Graham (2004) used a linguistic distance measure developed by Chen, Sokal and Ruhlen (1995) in order to capture cultural differences in another way compared to traditional value surveys.

It can be argued that MNEs have a common working language, most often English, but the literature reveals that subsidiaries are still embedded in different linguistic environments based on their respective host countries (Andersen & Rasmusen, 2004; Marschan-Piekkari, Welch & Welch, 1999) and that the language in question is culturally embedded and context specific (Björkman & Piekkari, 2009). The corollary is that linguistic communication entails more than just mastering the language, i.e., it has to be used in a culturally appropriate and accurate fashion (Hymes, 1971). Furthermore, language affects our way of thinking and linguistic barriers can lead to misunderstandings, misconceptions and a perceived differentiation in power (Ambos & Ambos, 2009). This implies that linguistic barriers are part of the liability of foreignness facing firms, and should be part of the impediments to innovation transfer between subsidiaries not speaking the same language. In such a transfer project, difficulties can be expected and in order to achieve both an effective and efficient innovation transfer process headquarters may want to add additional resources. Hence, the following hypothesis is postulated:

Hypothesis 3: Headquarters resource allocation to innovation transfer projects will be positively influenced by a greater linguistic distance between the sending and receiving subsidiary.

Economic distance

Because of differences in the economic development of countries, subsidiaries are faced with disparities in the cost and quality of financial, human and other resources (Ghemawat, 2001). Overall, a large economic distance between the interacting subsidiaries is likely to present differences in the aforementioned factors, which could cause implementation problems in innovation transfers. Headquarters thus has incentives to allocate additional resources to such projects to lessen the hurdles economic distance may bring with it.

As an additional explanation for headquarters to allocate additional resources, subsidiaries operating in more economically developed countries are exposed to a broader range of technological and business opportunities, and as a corollary more opportunities for recombining diverse ideas and resources within the local context are created. A favorable economic situation in the host country of a subsidiary can have a positive effect on the resource exploration activities of that subsidiary, which may affect the autonomy of the subsidiary and headquarters relationship with the subsidiary (Birkinshaw, 1997; Hedlund, 1981; Ghoshal & Bartlett, 1988). Therefore, subsidiaries located in more economically developed countries are more likely to be technologically advanced, which should be reflected in the innovations developed by these subsidiaries.

Agglomeration effects tend to cluster advanced R&D activities in more sophisticated economies. In such clusters, a more skilled workforce is abundant. Thus, the potential positive knowledge spill-over effects from the host country environment to the firm located in the cluster are greater, and the focal subsidiary is more likely to develop increasingly advanced R&D responsibilities (Feinberg & Gupta, 2004). Research has shown that foreign investment in advanced host countries are part of headquarters strategic choice (Blomström & Kokko, 1998; Dunning, 2000; Dunning & Lundan, 2008). Thus, it is reasonable for headquarters to select projects where the innovation subject to be transferred was developed in a country with a high level of economic development, relative to the recipient subsidiary's host country, because of the expected value an innovation developed in a conducive environment offer the innovation receiver. Therefore, the following hypothesis is suggested:

Hypotheses 4: Headquarters resource allocation to innovation transfer projects will be positively influenced when sending subsidiaries operate in countries that are more economically developed than receiving subsidiaries' country.

Institutional distance

Countries can vary in their respective institutional environments, which in turn affects control and coordination in processes taking place between subsidiaries located in dissimilar host countries which is likely to increase the cost of doing business (Eden & Miller, 2004; Kostova, 1999; Xu & Shenkar, 2002). Innovations can be embedded in the institutional environment in which they have been developed (Kostova, 1999), with the corollary of making the challenge of transfer greater between subsidiaries located in dissimilar

institutional host country environments. This rests on the logic that transfer performance is dependent on amongst other things the adoption and understanding of formal and informal rules affecting the subsidiaries participating in the transfer process. Building on Scott (1995) Gaur, Delios and Singh (2007, p. 614) conceptualizes institutional distance as “differences in regulative, normative, and cultural-cognitive aspects of institutional environments”. Put differently, institutional distance is a measure of cross-country differences in terms of similarity or dissimilarity between the institutional contexts of two countries (Kostova & Zaheer, 1999; Xu & Shenkar, 2002). In relation to innovation transfer this means that it is more difficult the greater the distance owing to differences in procedures of how to do things, regulations of what is allowed and what is accepted and organizational differences (Kostova, 1999). For headquarters, this signals that the need for coordination and control is greater in transfers taking place between subsidiaries located in distant environments (Anderson & Gatignon, 1986), and its propensity to involve itself in the transfer process is therefore greater. Since the arduousness of the transfer process is likely to be more prominent, the transfer process will also be more costly making headquarters activity of resource allocation seem likelier, assuming that headquarters wish to exploit innovations located in one subsidiary at other locations within the MNE. Hence, the following hypothesis can be suggested:

Hypothesis 5: Headquarters resource allocation to innovation transfer projects will be positively influenced by a greater institutional distance between the sending and the receiving subsidiary.

Subsidiary network embeddedness

There is a need to go beyond country level and investigate factors at sub-national level by looking at social networks, interactions and relationships (Beugelsdijk, 2007; Dicken & Malmberg, 2001; McCann & Mudambi, 2005). Research has shown that by being embedded in networks, subsidiaries are exposed to new knowledge, ideas and opportunities (Andersson et al., 2002; Forsgren et al., 2005), and this embeddedness will increase the subsidiaries level of competence (Holm & Pedersen, 2000). Consequently, the network will be of importance for the subsidiaries developing an innovation. By closely collaborating and making use of other firms in the network, it is possible for the developing subsidiary to utilize competencies within its network. An innovation can even be partly developed within the facilities of such partners.

The notion of subsidiary network embeddedness driving headquarters resource allocations has the following logics. First, drawing on many competencies, as is possible when being embedded in networks, the innovation is likely to be perceived as complex and difficult to transfer by both the subsidiary and headquarters. Second, by drawing on a multitude of competencies, the innovation may be perceived as adding more to the competitive advantage of the MNE as a whole, making a smoother transfer process desirable by headquarters. Third, as embeddedness can be linked to autonomy (Andersson et al., 2007) and that deeply embedded subsidiaries are to a greater extent self-contained and have fewer reasons to engage in internal MNE innovation transfer. Headquarters has incentives to involve itself in order to ensure that innovations are made use of within the MNE (Kogut & Zander, 1993). These lines of reasoning, that is, that transfer does not take place automatically and that barriers to transfer exist, will lead headquarters to involve itself in the transfer process and allocate resources to it. Thus, the following hypothesis is suggested:

Hypothesis 6: Headquarters resource allocation to innovation transfer projects will be positively influenced by the embeddedness of the sending subsidiary during the innovation development process.

In Figure 2, the conceptual model is summarized, and the control variables are indicated, i.e., subsidiary and MNE features as well as the variables entered in a post-hoc analysis.

 Insert Figure 2 about here

DATA AND METHODS

The focus of the present study is on innovations transferred from a sending to a receiving subsidiary belonging to the same MNE but geographically dispersed around the world, which implies spatial and contextual distances between the subsidiaries.

The data used in this study was collected between 2002 and 2005 and contain information from 63 subsidiaries, located in 14 countries in Europe, Asia and North America.¹

¹ This study is part of a broader research project with the intention of increasing our knowledge about a multitude of questions related to the development and transfer of innovations in MNEs.

These subsidiaries belong to 23 different MNEs. The sample contains data from 72 innovations developed at the subsidiaries, and these 72 innovations have been transferred within the MNEs to 169 receiving subsidiaries located in 31 countries throughout Europe, Asia, North America, South America, Africa and Oceania. The sending subsidiaries are engaged in activities such as manufacturing, telecommunications, transportation and steel. On average, the subsidiaries are experienced having been in business for 51 years, are internationalized with 9 percent of employees and 49 percent of sales abroad, and with significant R&D budgets of €7.8 million. The number of employees ranges from 9 to 6000, with a mean of 589. In sum, this indicates a well distributed sample in terms of industry, size and geographic location.

In this paper we follow the Oslo OECD (2005) definition of innovations and define them as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (p. 47). The innovations included in the sample are, as estimated by the developing/sending subsidiary, major innovations. This approach is similar to that of Zander and Kogut (1995) and it can be expected that such a sample creates an implicit control of variations in demand, importance and profitability of the innovations.

To collect the data on the MNEs, an initial letter was sent to headquarters asking them to participate in the study. The first meeting was usually held at headquarters and had the objective of getting acquainted with the organization and asking for contact details at the subsidiary level. Using a snowball sampling technique we focused on the subsidiaries since these actors were assumed to be the most knowledgeable about their ongoing operations, especially related to innovation transfer projects hosted by these subsidiaries. At the subsidiary level a set of questions were answered in face-to-face interviews with the help of a structured questionnaire, i.e., a questionnaire based approach differing from surveys in that respondents were approached in person. The interviews lasted two hours and the respondent was the person considered to be the most appropriate to answer the questions. The respondents had been involved in the development and transfer of the innovations and most of them belonged to one of the following categories: R&D managers, project managers, subsidiary CEOs or equivalent. The questionnaire had been pre-tested in two pilot interviews and minor changes were made during this stage in order to eliminate ambiguous questions as well as to exclude erroneous indicators. The possibility to directly meet with the respondents enabled the interviewers to target the appropriate respondent and detect inconsistencies in

answers during the interview, thus increasing the reliability and face validity of the data. In sum, the quality of the data obtained via personal interviews, as well as the size, international composition and industry coverage suggest that our dataset is a basis on which we can contribute substantially to the international business field. The interview data was subsequently matched with secondary data sources for the various distances as described in more detail in the following sections.

Measures

For calculating the scores of the different distances we connected our primary data material to secondary data sources. For instance, if the subsidiary sending the innovation was based in Taiwan and the subsidiary receiving the innovation was based in Spain, the different distances calculated were based on this specific dyadic relationship. In total, the current data set contains 169 such dyadic innovation transfer projects, i.e., a calculation was made for every distance dimension and for every transfer project. This allows of a very detailed analysis of distances in individual transfer projects with the possibility of capturing both space and location of the subsidiaries involved in the innovation transfer. Moreover, our data make it possible to analyze firm level characteristics related to the MNE and the subsidiaries involved in the dyadic relationship.

Dependent variable

The variable *headquarters involvement in innovation transfer* captures different forms of headquarters allocation of human and organizational resources (Barney, 1991) to subsidiaries hosting innovation transfer projects. This activity was captured with a three item construct where the respondents were asked to indicate, on a scale from (1) totally disagree to (7) totally agree, to what extent: <The MNE HQ has formally instructed you to share this innovation with the counterpart>, <The MNE HQ has themselves been heavily involved in conducting the actual transfer process with the counterpart>, and finally, <The MNE HQ has taken complete responsibility for the transfer of this innovation to this counterpart>. An extracted factor score was used to form the dependent variable. Internal reliability of the construct had a coefficient alpha of 0.697, which can be deemed satisfactory given the recommendation of 0.7 as made by Nunnally (1978). The dependent variable builds on and extends the attention based perspective on MNE headquarters (Bouquet & Birkinshaw, 2008; Bouquet et al., 2009; Ocasio, 1997). As discussed by Bouquet et al. (2009), headquarter attention is a meta-construct and “research investigating the unique qualities of effective global research should

broaden its focus to include their concrete attention practices, rather than focusing solely on the particular cognitive tendencies they demonstrate in strategic decision-making activities” (p. 124). By conceptualizing headquarters involvement in three distinct categories, we thereby create a multifaceted operationalization of our dependent variable, thus building on and extending previous research.

The indicators for headquarters involvement in the innovation transfer were examined in a factor analysis (principal component with varimax rotation and Kaiser normalization). The factor analysis approach was appropriate since the Kaiser-Mayer-Olkin (KMO) measure of sampling adequacy exceeded the acceptable level (0.6) with a value of 0.648 (Tabachnick & Fidell, 2001). Sufficient correlations existed between the indicators as indicated by the Bartlett’s test of sphericity, which returned at a 0.001 significance level. The eigen value for the only factor extracted was 1.996 and the value for the second factor was 0.627 indicating that only one factor could be extracted from the items used in the dependent variable. This construct explains 66.519 percent of the variance in relation to the extraction of the sums of squared loadings.

Insert Table 1 about here

Independent variables

Geographic distance between the sending and receiving subsidiaries was assessed by calculating the number of kilometers between the participants in the transfer project using distance calculation applications (e.g., MapCrow). This was done for every observation, i.e., transfer project. To control for distributional skewness of the distances, the geographic distance was transformed using the natural log of the distance based on the reasoning that the perceived burden of an increased distance is not likely to increase linearly. This approach is similar to that of Ganesan, Malter & Rindfleisch (2005) and Hansen and Løvås (2004).

Cultural distance can be calculated in many different ways. In this paper, despite the criticism against Hofstede’s cultural dimensions they are used based on research arguing that the scores can still be employed (Drogendijk & Slangen, 2006) and the fact that they still are the most extensively used measures of culture. We calculated cultural distance based on the Kogut and Singh (1988) index, where the differences in scores between national cultures in four dimensions between the sending subsidiary’s host country and the receiving subsidiary’s host country were entered. The deviations were corrected for differences in the

variances of each dimension and then arithmetically averaged. Expressed algebraically, we get

$$CD_j = \sum_{i=1}^4 \{(I_{ij} - I_{iN})^2 / V_i\} / 4 ,$$

where CD is the cultural distance between the host country of the sending subsidiary and the host country of the receiving subsidiary, I_{ij} is the score of the receiving subsidiary's country on the i th dimension and I_{iN} is the score of the sending subsidiary's country in this dimension. V_i represents the variance of this score in the specific dimension.

The *linguistic distance* between the sending and receiving subsidiary was captured by using scores calculated by Dow and Karunaratna (2006). This measure captures the linguistic distance between countries using the differences between the major languages of two countries on a scale from 1 to 5.

The level of economic development of the sending subsidiary's host country relative to that of the receiving subsidiary's host country was used to capture the *economic distance*. This builds on the concept as introduced by Ghemawat (2001) and empirically investigated by Tsang and Yip (2007). The measure is based on differences in GDP per capita between the sending subsidiary's host country and the receiving subsidiary's host country, and the data were obtained through the Total Economy Database (2006). All economic distance measures were separated into two groups for ease of interpretation and separation of effects, making it possible to identify the economic distance but also to distinguish effects related to whether the sending subsidiary was located in a lower or higher environment relative to the receiver. For the purpose of this analysis, a measure was created for relatively more developed countries in relation to the other part of the dyad, which can be expressed as:

$$\ln(GDP_{\text{sender}}) - \ln(GDP_{\text{receiver}}) \text{ if } GDP_{\text{sender}} \geq GDP_{\text{receiver}} \text{ and } = 0 \text{ if } GDP_{\text{sender}} < GDP_{\text{receiver}}$$

In order to calculate *institutional distance* we used the factor scores developed by Dow and Karunaratna (2006), capturing differences in political systems between countries. These factor scores were matched to the dyadic transfer projects between the sending and receiving subsidiaries in our dataset.

Finally, in order to capture the sending subsidiary's social network at relational level, we built on studies on embeddedness (Andersson, Blankenburg Holm & Johanson, 2007;

Andersson et al., 2002; Forsgren et al., 2005). In order to capture the interaction and participation by the *subsidiary's network embeddedness*, we asked the respondents to indicate, in relation to a maximum of the six most important business relationships, on a scale from (1) totally disagree, to (7) totally agree, to what extent: <This counterpart has closely participated in developing the innovation>, <This counterpart has brought competence of use for the development of the innovation>, and <The innovation has partly been developed within the facilities of this counterpart>. These items were summed and averaged in order to form the construct. Internal reliability of the construct was somewhat below the 0.7 criterion as recommended by Nunnally (1978), returning with a value of 0.64. It is not uncommon to find low alphas when including few indicators in the construct. In such cases it is appropriate to calculate the mean inter-item correlation. Given the same inter-item correlation and the inclusion of additional variables, the alpha value will increase (Carmines & Zeller, 1979). The optimal range for the inter-item correlation is between 0.2 and 0.4 (Briggs & Cheek, 1986). The inter-item correlation of this construct is 0.389; thus it is within the optimal range and we deem it appropriate to include this construct despite the marginally low alpha value.

Control variables

In order to control for unobserved firm specific heterogeneity or alternative possible explanations, a number of controls were included in the model. The analysis controls for subsidiary related characteristics, innovation transfer related characteristics and primary industry orientation.

Larger subsidiaries can be assumed to have greater autonomy and more bargaining power internal MNE (Mudambi & Navarra, 2004), thus having better possibilities of affecting headquarters resource allocation activities in terms of generating more resources to the transfer projects (Gupta & Govindarajan, 2000; Tsai, 2002). Moreover, size has been found to affect reverse knowledge transfer activities, i.e., larger subsidiaries can engage in reverse knowledge transfer even when the relevance of the knowledge is low (Yang, Mudambi & Meyer, 2008), which implies that size affects headquarters involvement and attention in subsidiary level activities. Consequently, *subsidiary size*, measured as the natural logarithm of its number of employees, was included in the regression equation. *Establishment mode* relates to whether or not the sending subsidiary was acquired or set up as a greenfield investment. The variable was dichotomously coded, where 1 denotes an acquired subsidiary, and 0 a greenfield investment. The rationale this control variable rests on is that different

equity establishment modes are likely to affect headquarters strategic choice; research has found that subsidiaries are managed differently depending on the type of equity establishment mode (Harzing, 2002).

We included a control variable to account for the geographic dispersion of value-chain activities of the MNE. The variable, *dyadic value-chain position*, is set to capture how the sending and receiving subsidiaries are related to each other in their value-chain activities. According to Gupta and Govindarajan (2000) and Mudambi (2002), innovation transfer can occur in complementary and substitutive contexts with the former representing transfer vertical to the subsidiaries' value-chain activities and the latter representing transfer lateral to the subsidiaries' value-chain activities. They speculate that innovation transfer in the complementary context is easier since it is more collaborative in nature and, similarly, that an innovation transfer in the substitutive context is more difficult because of the possible competition that arises. Given that headquarters allocated activities across geographic distances are targeted to control and coordinate subsidiaries, it is feasible that it will want to involve itself in innovation processes as well. To capture this, we defined two main activity relations between the sending and receiving subsidiaries and created a dichotomous variable to represent them. The respondents placed the receiving subsidiaries into one or more of 5 pre-defined categories (customer, supplier, sister production, sister sales, R&D). These categorizations were used to create two groups. The substitutive group comprised receiving subsidiaries in sister production or sister sales whereas the complementary group included receiving subsidiaries in the customer, supplier, or R&D categories as well as cases where activities were overlapping. Thus, we applied a conservative approach to the categorizations when using the complementary group as our baseline.

Regarding characteristics of the transfer of innovation, knowledge has been found to be sticky (Szulanski, 1996), and owing to this inherent stickiness and the arduousness of the transfer process, there are also considerable costs associated with innovation transfer (Teece, 1977). Taken together, this inevitably means that subsidiaries engaging in innovation transfer processes have to allocate resources to invest in the transfer, i.e., the transfer consumes subsidiary resources for the dyadic partners – irrespective of the distances. As the orchestrating unit within the MNE, headquarters has a responsibility for making sure that transfer of innovations occurs since the barriers to transfer are most likely to prevent this activity from taking place automatically. Accordingly, headquarters has the option of supporting transfer projects with additional resources and is more likely to support transfer projects in situations where both transferring parties lack the necessary resources.

Consequently, a variable was included, measured as a two item construct based on the answers from the respondents indicating, on a scale from (1) totally disagree to (7) totally agree, if: <Lack of necessary resources within your unit to put in this specific relationship makes the transfer difficult>, and <Lack of necessary resources in the counterpart to put in this specific relationship makes the transfer difficult>. The internal reliability of the construct *lack of resources* was 0.691. A variable controlling for the level of interaction between the sending and receiving subsidiary in the transfer process was included. *Previous interaction*, i.e., dyadic transfer experience in the sender-receiver relationship, is a two item construct where the respondents indicated to what extent (besides the focal innovation discussed during the data collection), on a scale from (1) not at all to (7) very much, if: <They previously have cooperated with the receiver>, and <They previously have shared knowledge>. The construct has a coefficient alpha of 0.738.

Finally, three *industry dummies* (broadly defined as mechanical engineering, processing and automotive industries) were included as it has been suggested that industry orientation can influence resource flows in the MNE (Mudambi & Aulakh, 2005). This left a group of MNEs involved in a variety of industries such as conglomerate firms, to serve as a baseline.

RESULTS

Descriptive statistics on the sample MNEs are presented in Table 2. The correlation matrix in Table 2 reveals relatively high correlations between the distance variables, which is only to be expected. For the other variables modest correlations are found. The variance inflation factor was estimated to check for potential multicollinearity issues, see Table 2 for the variance inflation factor values. Results from these estimations showed no excessively high values, in models 1 and 2 respectively, and as such the risk of misinterpretations because of multicollinearity appears to be limited (Hair, Black, Babin, Anderson & Tatham, 2006).

Hierarchical regression analysis (Hoffman, 1997) was used to analyze the effect of distance and embeddedness on headquarters resource allocation to innovation transfer taking place at subsidiary level. The results from the analysis are contained in Table 3. The first model presents the results for the control variables whereas the second model adds the distance and embeddedness variables.

The first model shows statistically significant effects for three of the five control variables, not counting the industry fixed effects, at the 5 or 10 percent level. It appears that headquarters favors acquired subsidiaries for resource support to a greater extent than

greenfield ones. The control variable aimed at capturing the dyadic value-chain position found significant and negative effects for headquarters resource allocation to subsidiary dyads characterized by substitutive activities. Regarding the transfer of the specific innovation and characteristics of that process, lack of resources in the transfer dyad (sender and receiver) appropriated more involvement from headquarters whereas the level of previous interaction between the dyadic partners did not show a significant effect on headquarters resource allocation.

 Insert Table 2 and 3 about here

The second model introduced the spatial and contextual variables, showing significant effects for five of the six distance and embeddedness dimensions. First, there seems to be no support for the institutional distance dimension in terms of affecting headquarters resource allocation to innovation transfer projects. Second, two distance dimensions returned with effects opposite to those hypothesized, geographic and cultural distance, indicating that higher such distances are associated with receiving less resources from headquarters. Third, the economic distance variable is significant and in line with expectations. Thus, subsidiaries transferring innovations to relatively less prosperous environments tend to be favored for additional resources allocated from headquarters. Finally, the subsidiary network embeddedness variable was, as expected, significant and positive in relation to headquarters resource allocation. This variable also returned the strongest in terms of coefficient direction and t-value. In sum, hypotheses 1, 2, and 5 are rejected whereas hypotheses 3 and 6 are supported.

Both models include industry dummies as a robustness check for the observed results, with outcomes for the independent variables qualitatively similar as if the dummies were omitted from the models. Overall, the two models are highly significant at the 0.1 percent level and the adjusted R^2 increases significantly over model specifications.

Post-Hoc Analysis

In order to gain additional insights and provide a more fine-grained analysis of our conceptual framework, we ran a number of additional regression models. Like many other measures, distance measures are not universal in that there is only one way of measuring them. To

accommodate differences in approaches to some of the distance variables, alternative measures were explored. Regarding the cultural distance measure, a Euclidian measure (Barkema & Vermeulen, 1997; Drogendijk & Slangen, 2006) was tested. The results were not affected by how the cultural distance was calculated, i.e., the Kogut and Singh index and the Euclidian distance calculation returned with similar results and did not affect the other estimates of the model. For the spatial distance, we explored a perceptual measure of geographic distance by asking the respondents to evaluate, on a scale from (1) totally disagree to (7) totally agree: <To what extent the innovation transfer was driven by geographical vicinity to the receiver>. In line with the initial results, this variable did not seem to significantly explain variance in the dependent variable. For the linguistic distance, the measure developed by Chen et al. (1995), and used by West and Graham (2004) was tested but did not alter the estimation outcomes. Institutional distance can be measured in different ways and in many dimensions. As a post-hoc test of our regression result we developed an alternative measure using a similar approach as Gaur et al. (2007), Chau and Kumar (2010), and Xu, Pan and Beamish (2004). In particular, we explored institutional dimensions found in the Executive Opinion Survey of the Global Competitiveness Report (2005) and conducted a factor analysis (principal component with varimax rotation and Kaiser normalization), resulting in a seven item construct loading as a single factor capturing the institutional environment. This construct had a cronbach alpha of 0.961. We matched this data, i.e., used the factor scores for the individual countries, to our dataset calculating the institutional distance between the host countries of the sending and receiving subsidiaries. Subsequently, we ran the regression model with this measure of institutional distance. The analysis rendered similar results, in terms of beta values and levels of significance, as when using the institutional distance scores developed by Dow and Karunaratna (2006).

Additional models testing for MNE size effects in terms of fixed-effects for the five largest MNEs in the sample was used and found not to affect the results qualitatively. Lastly, we calculated the distance between headquarters and the subsidiary hosting the innovation transfer project, i.e., the sending subsidiary, in all distance dimensions as for the independent variables in the original models in order to test if distance to headquarters had any effect on headquarters resource allocation. Presented in Table 4, the results indicate that these distances do not affect headquarters resource allocation to internal MNE innovation transfer projects with the exception of a positive effect from the institutional distance variable.

Insert Table 4 about here

DISCUSSION

This paper set out to investigate drivers behind the MNE headquarters resource allocation process, with a focus on the question whether different spatial and contextual factors that multinationality entails can help us predict headquarters strategic behavior in relation to innovation transfer processes and resource allocation. This approach, taking both country level and sub-national level factors into consideration, has helped us gain new insights into the MNE's resource allocation process and the way space and context affect the management of MNEs.

In brief, the results from our analysis suggest that sub-national factors, such as the network embeddedness of the sending subsidiary, offer a strong explanation of headquarters resource allocation and at the same time we find both positive and negative effects of distance, implying that distance matters for headquarters resource allocation activities. Our conceptual model and results allow us to identify how spatial and contextual properties drive headquarters resource allocation, thus explaining factors behind subsidiary evolution (Birkinshaw & Hood, 1998) and headquarters strategic behavior in the MNE. Headquarters and its resource allocation activities are key elements for subsidiary evolution (Birkinshaw & Hood, 1998). Additional corporate resources allocated to the transfer project will not only facilitate the transfer process, but can also pave the way for more attention, achieving mandates, a position as a center of excellence and similar evolutionary events. In this paper it was our aim to contribute to existing knowledge by adding and specifying the role of space and context in this process, highlighting geographical factors of potential importance for MNE strategy (Buckley & Ghauri, 2004).

The effect of space and context on headquarters resource allocation

Our results suggest that the spatial effect, in terms of physical distance between the sending and receiving subsidiary, negatively influence headquarters involvement in terms of resource allocation by headquarters. The reason for this may be that physical distance is not a key issue in terms of being prioritized for additional headquarters resources owing to the existence of modern forms of communication in an increasingly globalized world suggesting that difficulties associated with physical distance can be handled. Headquarters may deem the

problem of transmission losses to be low due to new and enhanced forms of communication (Mudambi, 2002; Shannon & Weaver, 1998).

As our results indicate, other contextual distances are of importance, as well as the embeddedness and organizational characteristics of the MNE and its subsidiaries. Cultural distance was shown to have a significantly negative impact on the resource allocation process, contrary to our expectations. This result is in itself interesting and highlights the importance of being aware of the cultural dimension when conducting business on a global scale. For headquarters, a large cultural distance between subsidiaries can indicate a potentially arduous and costly transfer process and signal that its involvement in terms of allocating resources may be wasteful. Furthermore, a large cultural distance implies a lower degree of absorptive capacity in the dyad which can influence transfer performance in the effectiveness and efficiency dimension (Kostova, 1999). Thus, transfer projects taking place between culturally distant subsidiaries are not picked as winners by headquarters in terms of getting favored for additional corporate resources. Another explanation may be that headquarters, often located in a third country and thus originating in a third culture, is aware of the difficulties connected to culture and does not want to increase the cultural dilemma by getting involved, thus introducing a third culture in the transfer project.

Linguistic distance, introduced by West and Graham (2004) as an alternative way of capturing cultural distance, does have a significant effect on headquarters resource allocation activities in the hypothesized direction. The effect of linguistic distance is opposite to the effect of cultural distance suggesting that different rationales exist in terms of headquarters resource allocation vis-à-vis cultural distance and linguistic distance. The differences in language may be more prominent and easily observed compared to cultural differences that can be more difficult to pinpoint. The results indicate that the interplay between language, organization and culture is an arena that needs to be further researched.

The relative distance in economic development between the countries where the subsidiaries involved in the innovation transfer are located significantly influences headquarters resource allocation. We find a positive effect when the transfer is hosted by subsidiaries located in environments with a relatively high level of economic development in comparison to the host country of the receiving subsidiary. Our findings suggest that the local economic environment matters for the involvement of headquarters, thus having an impact on MNE strategy. In the knowledge transfer literature, GDP has been used as a proxy for the value of the sending subsidiaries' stock, i.e., more valuable knowledge has been assumed to have been developed by subsidiaries located in environments with a high GDP (Björkman,

Barner-Rasmussen & Li, 2004; Gupta & Govindarajan, 2000). Valuable knowledge should attract more attention and consequently act as a facilitator for getting additional resources (Davenport & Prusak, 1998). Our results suggest that disparities in economic development can signal difficulties in the transfer process or valuable knowledge, influencing headquarters resource allocation. Institutional distance does not seem to influence headquarters resource allocation activities. This non-finding is surprising and may be explained by the fact that this study deals with innovations, which may be less affected by the institutional setting compared to more casually ambiguous forms of knowledge.

In sum, our findings indicate that distance prevails and is still an important concept and phenomenon to be studied from different perspectives and that distance can have a bearing on the subsidiary's strategic role driven by headquarters activities. Our results suggest that, besides the geographic analysis, interactions at the relational level, i.e., subsidiary embeddedness, offer a strong explanation of headquarters resource allocation. Further inference from the results is that headquarters, as the organizational unit responsible for the overall orchestration and management of the MNE (Dhanaraj & Parkhe, 2006; Forsgren et al., 2005), values and supports subsidiary projects developed in cooperation with other counterparts. Thus, embeddedness is important for subsidiaries and their possibilities of attracting headquarters resources. This is similar to the conclusion reached by Dicken and Malmberg (2001) that territorial embeddedness is central to the nature and influence of a subsidiary within the MNE. Embeddedness and interaction with the network during the innovation development stage have a positive effect on headquarters resource allocation during the transfer. This is an interesting finding, indicating that the relational context and other sub-national factors, such as social clusters and local competencies, are important for headquarters resource allocation. We may conclude that subsidiaries embedded in specific supportive relationships during the development process are in a better position to attract additional corporate resources during the transfer phase. This in turn has implications for the focal subsidiary in terms of setting it on an evolutionary trajectory aided by headquarters involvement.

The organizational characteristics of the MNE and its subsidiaries

Our results indicate that the organizational characteristics of the MNE and its subsidiaries have implications for headquarters resource allocation activities.

Subsidiary size was found to be insignificantly related to resource allocation. This is surprising given that larger subsidiaries can be assumed to possess greater bargaining power

within the MNE, thus making it more likely that they will get favored by headquarters for resource allocation. However, subsidiary size can be an indication of resources possessed by the subsidiary hosting the innovation transfer. Consequently, larger subsidiaries should possess more resources and may not be considered to be prioritized for additional ones. Moreover, our results identify acquired subsidiaries as prioritized for additional resources in comparison with equivalent greenfield ones. One explanation for this behavior on the part of headquarters may be that the reason for acquiring the focal subsidiary was to get access to a specific resource, which subsequently became the object of transfer, thus influencing headquarters to support the specific transfer project. Moreover, headquarters involvement and resource allocation can be one way of instilling shared values into the acquired subsidiary, thus integrating the unit more into the MNE (Nohria & Ghoshal, 1997). Such action taken by headquarters promotes internal consistency, with the possible downside of having a subsidiary less adapted to the local environment of the host country.

Naturally, headquarters supports innovation transfer projects when there is a lack of resources in the dyad whereas the previous transfer history between the sending and receiving subsidiary does not seem to offer a significant explanation for headquarters resource allocation activity. This raises the question of how much headquarters knows about subsidiary level activities and the time frame of the knowledge and the way it is acquired, i.e., how much does headquarters rely on easily attained information when making strategic decisions? An alternative explanation can be that subsidiaries lacking resources are more actively seeking headquarters resources, making it aware of the resource constrained transfer environment.

Regarding the relative position between the sending and receiving subsidiaries, i.e., dyadic value chain position, the estimations suggest a statistically significant negative difference in terms of resource allocation to substitutive subsidiaries. This means that units that are complimentary to each other receive relatively more resources. It indicates that headquarters allocates more resources than when there is a competitive context between the subsidiaries in the transfer dyad. A potential explanation may be that headquarters believes that the issue of differences in absorptive capacity between subsidiaries is a greater threat to the transfer than possible internal competition.

CONCLUSIONS

This research is of course not without its flaws. Many of the contextual distances employed in this paper are components of psychic distance (Johanson & Wiedersheim-Paul, 1975; Johanson & Vahlne, 1977). There are different ways of approaching this concept and its sub-

components (Dow & Karanuratna, 2006). Shenkar (2001) has pointed out that many of the distances entail a perception and that this perception should be measured when the transaction is taking place, and that the respondents then should be key decision makers (Evans, Treadgold & Mavondo, 2000). Furthermore, looking at the concept of cultural distance, the Kogut and Singh index has been criticized, but research has shown that cultural distance based on Hofstede's or Schwartz's dimensions of culture renders similar results. The same is true for perceptual measures of cultural distance, even if the results obtained with this measurement technique were not so strong (Drogendijk & Slangen, 2006).

Another limitation of the spatial contextual distances, as pointed out by Shenkar (2001), is that they assume homogeneity within the context. Our way of operationalizing distance suffers from this deficiency, and only geographic distance and network embeddedness are measured at the sub-national level. Moreover, the concept of corporate culture can be claimed to be captured in each dyadic relationship in our data, but not across dyads. This is unfortunately something we cannot control for. Also, we have not explicitly dealt with financial resources allocated by headquarters. The interplay between financial and non-financial resources is an interesting arena for future research. As indicated earlier, the interplay between culture, language and organization can prove important for MNE strategy and needs to be investigated more in depth.

A final limitation is that our data come from subsidiary managers and does not include headquarters perspective in any other way than the subsidiary managers' view on headquarters resource allocation. However, the estimation made by our respondents is likely to be restrictive compared to the estimation that headquarters managers would have given. While the paper only offers initial insights into headquarters resource allocation, distances and innovation transfer, it highlights the role of the firm in space as well as organizational issues related to the MNE, connecting this to an event of key strategic importance for the MNE. Thus, this paper integrates geographic space, organizational characteristics and MNE behavior.

The location of MNE subsidiaries and their forming of relationships have implications for the strategic role of subsidiaries and the support they attract from headquarters. This paper has focused on innovation transfer but the findings can also have more general implications for resource allocation to MNE subsidiaries. For instance, geographic space and organizational characteristics are likely to be relevant for headquarters involvement and support to innovation development taking place at the subsidiary level, an area of research that deserves more attention. Another research agenda to investigate is the

effect of distance on knowledge transfer performance. Additionally, delving further into sub-national regional characteristics as well as different forms of embeddedness will be an important task for future research in order to better understand the role of geography and space for MNE strategy.

Headquarters resource allocation can be of great value for subsidiaries and be an underlying explanation of subsidiary evolution (Birkinshaw & Hood, 1998). Subsidiaries that are allocated additional resources are likely to gain a specific position within the MNE, evolving into a center of excellence (Holm & Pedersen, 2000) and being granted a mandate (Birkinshaw, 1996). For MNE managers, these findings can add insights into the key importance of geographic issues, such as where to locate subsidiaries and sub-units of a subsidiary. Finally, the importance of forming embedded network ties is highlighted in our study. Distances are factors that can be taken into account and handled when managing MNEs. However, it is not possible for a subsidiary to actively change a distance. The dimension that is possible to influence and actively strategize about is the relational contacts that the subsidiary has.

REFERENCES

- Almeida, P. 1996. Knowledge Sourcing by Foreign Multinationals: Patent Citation Analysis in the U.S. Semiconductor Industry. *Strategic Management Journal*, Winter Special Issue 17: 155-165.
- Ambos, T.C. & Ambos, B. 2009. The Impact of Distance on Knowledge Transfer Effectiveness in Multinational Corporations. *Journal of International Management*, 15(1): 1-14.
- Andersen, H. & Rasmusen, E.S. 2004. The Role of Language Skills in Corporate Communication. *Corporate Communication: An International Journal*, 9(2): 231-242.
- Anderson, E. & Gatignon, H. 1986. Modes of foreign entry: A transaction cost analysis and propositions. *Journal of International Business Studies*, 17(3): 1-26.
- Andersson, U., Blankenburg Holm, D. & Johanson, M. 2007. Moving or Doing? Knowledge flow, problem solving, and change in industrial networks. *Journal of Business Research*, 60(1): 32-40.
- Andersson, U., Forsgren, M. & Holm, U. 2002. The Strategic Impact of External Networks: Subsidiary Performance and Competence Development in the Multinational Corporation. *Strategic Management Journal*, 23(11): 979-996.
- Andersson, U., Forsgren, M. & Holm, U. 2007. Balancing Subsidiary Influence in the Federative MNC – a Business Network Perspective. *Journal of International Business Studies*, 38(5): 802-818.
- Arita, Y. & McCann, P. 2002. The relationship between the spatial and hierarchical organization of multiplant firms: observations from the global semiconductor industry. *Journal of International Management*, 8(1): 121-139.
- Audretsch, D.B. 1998. Agglomeration and the Location of Innovative Activity. *Oxford Review of Economic Policy*, 14(2): 18-29.
- Barkema, H.G. & Vermeulen, F. 1997. What Differences in the Cultural Backgrounds of Partners are Detrimental for International Joint Ventures? *Journal of International Business Studies*, 28(4): 845-864.
- Barney J.B. 1991. Firm Resources and Competitive Advantage. *Journal of Management*, 17(1): 99-120.
- Bartlett, C.A. & Ghoshal, S. 1989. *Managing Across Borders. The Transnational Solution*. Boston, MA: Harvard Business School Press.
- Baumol, W.J. 2002. *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*. Princeton: Princeton University Press.

- Bel, G. & Fageda, X. 2008. Getting there fast: globalization, intercontinental flights and location of headquarters. *Journal of Economic Geography*, 8(4): 471-495.
- Beugelsdijk, S. 2007. The Regional Environment and a Firm's Innovative Performance: A Plea for a Multilevel Interactionist Approach. *Economic Geography*, 83(2): 181-199.
- Birkinshaw, J. 1996. How Multinational Subsidiary Mandates are Gained and Lost. *Journal of International Business Studies*, 27(3): 467-495.
- Birkinshaw, J. 1997. Entrepreneurship in Multinational Corporations: The Characteristics of Subsidiary Initiatives. *Strategic Management Journal*, 18(3): 207-229.
- Birkinshaw, J. 2001. Strategies for Managing Internal Competition. *California Management Review*, 44(1): 24-38.
- Birkinshaw J. & Hood N. 1998. Multinational subsidiary evolution: Capability and charter change in foreign-owned subsidiary companies. *Academy of Management Review*, 23(4): 773-795.
- Birkinshaw, J. & Hood, N. 2001. Unleash Innovation in Foreign Subsidiaries. *Harvard Business Review*, 79(3): 131-137.
- Björkman, I., Barner-Rasmussen, W. & Li, L. 2004. Managing Knowledge Transfers in MNCs: The Impact of Headquarters Control Mechanisms. *Journal of International Business Studies*, 35(5): 443-455.
- Björkman, A. & Piekkari, R. 2009. Language and Foreign Subsidiary Control: An Empirical Test. *Journal of International Management*, 15(1): 105-117.
- Blomström, M. & Kokko, A. 1998. Multinational Corporations and Spillovers. *Journal of Economic Surveys*, 12(2): 247-277.
- Bouquet, C. & Birkinshaw, J. 2008. Weight Versus Voice: How Foreign Subsidiaries Capture the Attention of Corporate Headquarters. *Academy of Management Journal*, 51(3): 577-601.
- Bouquet C., Morrison A. & Birkinshaw J. 2009. International Attention and Multinational Enterprise Performance. *Journal of International Business Studies*, 40(1): 108-131.
- Boyacigiller, N. 1990. The Role of Expatriates in the Management of Interdependence, Complexity and Risk in Multinational Corporations. *Journal of International Business Studies*, 21(3): 357-381.
- Briggs, S.R. & Cheek, J.M. 1986. The role of factor analysis in the development and evaluation of personality scales. *Journal of Personality*, 54(1): 106-148.
- Buckley, P.J. 2009. The Impact of the Global Factory on Economic Development. *Journal of World Business*, 44(2): 131-143.

- Buckley, P.J. & Carter, M.J. 2004. A Formal Analysis of Knowledge Combination in Multinational Enterprises. *Journal of International Business Studies*, 35(5): 371-384.
- Buckley, P.J. & Ghauri, P.N. 2004. Globalisation, Economic Geography and the Strategy of the Multinational Enterprise. *Journal of International Business Studies*, 35(2): 81-98.
- Cairncross, F. 1997. *The Death of Distance: How the Communications Revolution Will Change Our Lives*. Cambridge, MA: Harvard Business School Press.
- Cantwell, J. 2009. Location and the Multinational Enterprise. *Journal of International Business Studies*, 40(1): 35-41.
- Carmines, E.G. & Zeller, R.A. 1979. *Reliability and Validity Assessment*. Beverly Hills, CA: Sage.
- Chao, M.C-H. & Kumar, V. 2010. The impact of institutional distance on the international diversity–performance relationship. *Journal of World Business*, 45(1): 93-103.
- Chen, J., Sokal, R.R. & Ruhlen, M. 1995.. Worldwide Analysis of Genetic and Linguistic Relationships of Human Populations. *Human Biology*, 67(4): 595-612.
- Cohen, W.M. & Levinthal, D.A. 1990. Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, 35(1): 128-152.
- Cool, K.O., Dierickx, I. & Szulanski, G. 1997. Diffusion of Innovations Within Organizations: Electronic Switching in the Bell System 1971-1982. *Organization Science*, 8(5): 543-559.
- Daft, R.L. & Lengel, R.H. 1986. Organizational and information requirements, media richness and structural design. *Management Science*, 32(5): 554-571.
- Davenport, T.H. & Prusak, L. 1998. *Working Knowledge*. Boston, MA: Harvard Business School Press.
- Dhanaraj, C. & Parkhe, A. 2006. Orchestrating Innovation Networks. *Academy of Management Review*, 31(3): 659-669.
- Dicken, P. & Malmberg, A. 2001. Firms in Territories: A Relational Perspective. *Economic Geography*, 77(4): 345-363.
- Dow, D. & Karunaratna, A. (2006. Developing a Multidimensional Instrument to Measure Psychic Distance Stimuli. *Journal of International Business Studies*, 37(5): 578-602.
- Doz, Y. & Santos, J.F.P. 1997. On the Management of Knowledge: From the Transparency of Collocation and Co-setting to the Quandary of Dispersion and Differentiation. *INSEAD Working Paper Series*, 97(119)SM.
- Doz, Y., Santos, J. & Williamson, P. 2001. From Global to Metanational. How Companies Win in the Knowledge Economy. Boston, M.A: Harvard Business School Press.

- Drogendijk, R. & Slangen, A. 2006. Hofstede, Schwartz or Managerial Perceptions? The Effects of Different Cultural Distance Measures on Establishment Mode Choices by Multinational Enterprises. *International Business Review*, 15(4): 361-380.
- Dunning, J. 1988. The Eclectic Paradigm of International Production: A Restatement and Some Possible Extension. *Journal of International Business Studies*, 19(1): 1-32.
- Dunning, J. 1998. Location and the Multinational Enterprise: A Neglected Factor? *Journal of International Business Studies*, 29(1): 45-66.
- Dunning, J.H. 2000. The Eclectic Paradigm as an Envelope for Economic and Business Theories of MNE Activity. *International Business Review*, 9(2): 163-190.
- Dunning, J.H. & Lundan, S.M. 2008. *Multinational Enterprises and the Global Economy* (2nd ed.). Cheltenham, UK: Edward Elgar.
- Eden, L. & Miller S.R. 2004. Distance Matters: Liability of foreignness, institutional distance and ownership strategy. Bush School working paper no. 404. College Station, TX: Texas A&M University.
- Egelhoff, W.G. 1988. *Organizing the Multinational Enterprise: An Information Processing Perspective*. Cambridge, MA: Ballinger.
- Etzioni, A. & Etzioni, O. 1999. Face-to-Face and Computer Mediated Communities: A Comparative Analysis. *Information Society*, 15(4): 241-248.
- Evans, J., Treadgold, A. & Mavondo, F. 2000. Explaining Export Development Through Psychic Distance. *International Marketing Review*, 17(2): 164-169.
- Feinberg, S.E. & Gupta, A.K. 2004. Knowledge Spillovers and the Assignment of R&D Responsibilities to Foreign Subsidiaries. *Strategic Management Journal*, 25(8-9): 823-845.
- Forsgren, M., Holm, U. & Johanson, J. 2005. *Managing the Embedded Multinational*. Cheltenham, UK: Edward Elgar Publishing.
- Franko, L.G. 1989. Global Corporate Competition: Who's Winning, Who's Losing, and the R&D Factor as One Reason Why. *Strategic Management Journal*, 10(5): 449-474.
- Frost, T.S. 2001. The Geographic Sources of Foreign Subsidiaries' Innovations. *Strategic Management Journal*, 22(2): 101-123.
- Ganesan, S., Malter, A.J. & Rindfleisch, A. 2005. Does Distance Still Matter? Geographic Proximity and New Product Development. *Journal of Marketing*, 69(October): 44-60.
- Gaur, A.S., Delios, A. & Singh, K. 2007. Institutional environments, staffing strategies, and subsidiary performance. *Journal of Management*, 33(4): 611-636.

- Gertler, M.S. 1995. Being there – proximity, organization, and culture in the development and adoption of advanced manufacturing technologies. *Economic Geography*, 71(1): 1-26.
- Ghemawat, P. 2001. Does Distance Still Matters: The Hard Reality of Global Expansion. *Harvard Business Review*, 79(9): 137-147.
- Ghoshal, S. & Bartlett, C.A. 1988. Innovation Processes in Multinational Corporations. In Tushman, M.L. & Moore, W.L. (Eds). *Readings in the Management of Innovation*. Cambridge, M.A.: Ballinger.
- Ghoshal, S. & Bartlett, C. 1990. The Multinational Corporation as an Interorganizational Network. *Academy of Management Review*, 15(4): 603-625.
- Ghoshal, S. & Westney, E.D. 1993. An Introduction and Overview. In: Ghoshal, S. and Westney, E.D. (Eds), *Organization Theory and the Multinational Corporation.*, New York: St.Martin's Press, pp. 1-23.
- Global Competitiveness Report. 2005. World Economic Forum. Geneva.
- Goodall, K. & Roberts, J. 2003. Repairing Managerial Knowledge-Ability Over Distance. *Organization Studies*, 24(7): 1153-1175.
- Grabher, G. 1993. *The Embedded Firm: On the Socioeconomics of Industrial Relations*. London: Routledge.
- Granovetter, M. 1973. The Strength of Weak Ties. *American Journal of Sociology*, 78(6): 1360-1380.
- Granovetter, M.S. 1985. Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, 91(3): 481-510.
- Grant, R.M. 1996. Towards a Knowledge Based Theory of the Firm. *Strategic Management Journal*, Winter Special Issue 17: 109-122.
- Gupta A.K. & Govindarajan V. 2000. Knowledge Flows within Multinational Corporations. *Strategic Management Journal*, 21(4): 473-496.
- Hair J.F., Black W.C., Babin B.J., Anderson R.E. & Tatham R.L. 2006. *Multivariate Data Analysis* (6th edn). Upper Saddle River, New Jersey: Prentice Hall.
- Hansen, M.T. & Løvås, B. 2004. How Do Multinational Companies Leverage Technological Competencies? Moving From Single to Interdependent Explanations. *Strategic Management Journal*, 25(8-9): 801-822.
- Harrison, B. 1992. Industrial Districts: Old Wine in New Bottles. *Regional Studies*, 26(5): 469-483.
- Harzing, A-W. 2002. Acquisitions versus Greenfield Investments: International Strategy & Management of Entry Modes. *Strategic Management Journal*, 23(3): 211-227.

- Harzing, A-W. & Sorge, A. 2003. The Relative Impact of Country of Origin and Universal Contingencies on Internationalization Strategies and Corporate Control in Multinational Enterprises: Worldwide and European Perspectives. *Organization Studies*, 24(2): 187-214.
- Hedlund, G. 1981. Autonomy of Subsidiaries and Formalization of Headquarters-Subsidiary Relationships in Swedish MNCs. In Otterbeck, L. (Ed). *The Management of Headquarters-Subsidiary Relationships in Multinational Corporations*. Gower.
- Hedlund, G. 1986. The Hypermodern MNC – a Heterarchy. *Human Resource Management*, 25(1): 9-35.
- Henry, N. & Pinch, S. 2000. Spatialising Knowledge: Placing the Knowledge Community of Motor Sports Valley. *Geoforum*, 31(May): 191-208.
- Hitt, M.A., Hoskisson, R.E., Johnson, R.A. & Moesel, D.D. 1996. The Market for Corporate Control and Firm Innovation. *Academy of Management Journal*, 39(5): 1084-1119.
- Hoffman D.A. 1997. An Overview of the Logic and Rational of Hierarchical Linear Models. *Journal of Management*, 23(6): 723-744.
- Hofstede, G. 2001. *Culture's Consequences: Comparing Values, Behaviours, Institutions and Organizations Across Nations* (2nd ed). Thousand Oaks, CA: Sage Publications.
- Holm, U. & Pedersen, T. 2000. *The Emergence and Impact of MNC Centres of Excellence: A Subsidiary Perspective*. London: MacMillan.
- House, R.J., Hanges, P.J, Javidan, M., Dorfman, P.W. & Gupta, V. 2004. *Culture, Leadership, and Organizations: The GLOBE Study of 62 Societies*. Thousand Oaks: Sage Publications.
- Hymer, S.H. 1960. *The International Operations of National Firms: A Study of Direct Foreign Investment*. Ph.D Dissertation. Cambridge, Mass: MIT Press.
- Hymes, D.H. 1971. *On Communicative Competence*. Philadelphia, PA: University of Pennsylvania Press.
- Johanson, J. & Vahlne, J-E. 1977. The Internationalization Process of the Firm: A Model of Knowledge Development and Increasing Foreign Market Commitments. *Journal of International Business Studies*, 8(1): 23-32.
- Johanson, J. & Wiedersheim-Paul, F. 1975. The Internationalization of the Firm: Four Swedish Cases. *Journal of Management Studies*, 12(3): 305-322.
- Khanna, N. & Tice, S. 2001. The Bright Side of Internal Capital Markets. *Journal of Finance*, 56(4): 1489-1528.
- Kogut, B. & Singh, H. 1988. The Effect of National Culture on the Choice of Entry Mode. *Journal of International Business Studies*, 19(3): 411-432.

- Kogut, B. & Zander, U. 1992. Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology. *Organization Science*, 3(3): 383-397.
- Kogut, B. & Zander, U. 1993. Knowledge of the firm and the evolutionary theory of the multinational corporation. *Journal of International Business Studies*, 24(4): 625-645.
- Kostova, T. 1999. Transnational transfer of strategic organizational practices: A contextual perspective. *Academy of Management Review*, 24(2): 308-324.
- Kostova, T. & Zaheer, S. 1999. Organizational legitimacy under conditions of complexity: The case of the multinational enterprise. *Academy of Management Review*, 24(1): 64-81.
- Kreiner, K. & Mouritzen, J. 2003. Knowledge Management as Technology: Making Knowledge Manageable. In Czariewska, B. & Sevón G. (Eds). *The Northern Lights – Organization Theory in Scandinavia*. Trelleborg: Copenhagen Business School Press.
- Lamont, O. 1997. Cash Flow and Investment: Evidence from Internal Capital Markets. *Journal of Finance*, 52(1): 83-109.
- Luo, Y. & Shenkar, O. 2006. The Multinational Corporation as a Multilingual Community: Language and Organization in a Global Context. *Journal of International Business Studies*, 37(3): 321-339.
- Marschan-Piekkari, R., Welsch, D. & Welsch, L. 1999. In the Shadow: The Impact of Language on Structure, Power and Communication in the Multinational. *International Business Review*, 8(4): 421-440.
- Maskell, P., Bathelt, H. & Malmberg, A. 2006. Building Global Knowledge Pipelines: The Role of Temporary Clusters. *European Planning Studies*, 14(8): 997-1013.
- Maskell, P. & Malmberg, A. 1999. Localised Learning and Industrial Competitiveness. *Cambridge Journal of Economics*, 23(2): 167-186.
- Maskell, P. & Malmberg, A. 2007. Myopia, knowledge development and cluster evolution. *Journal of Economic Geography*, 7(5): 603-618.
- McCann, P. & Mudambi, R. 2005. Analytical Differences in the Economics of Geography: The Case of the Multinational Firm. *Environment and Planning A*, 37(10): 1857-1876.
- Monteiro, F.L., Arvidsson, N. & Birkinshaw, J. 2008. Knowledge Flows in Multinational Corporations: Explaining Subsidiary Isolation and its Performance Implications. *Organization Science*, 19(1): 90-107.
- Mudambi, R. 1999. MNE Internal Capital Markets and Subsidiary Strategic Independence. *International Business Review*, 8(2): 197-211.
- Mudambi, R. 2002. Knowledge Management in Multinational Firms. *Journal of International Management*, 8(1): 1-9.

- Mudambi, R. 2007. Offshoring: Economic Geography and the Multinational Firm. *Journal of International Business Studies*, 38(1): 206.
- Mudambi, R. 2008. Location, Control and Innovation in Knowledge-Intensive Industries. *Journal of Economic Geography*, 8(5): 699-725.
- Mudambi, R. & Aulakh, P.S. 2005. Financial Resource Flows in Multinational Enterprises: The Role of External Capital Markets. *Management International Review*, 45(3): 307-325.
- Mudambi, R. & Navarra, P. 2004. Is Knowledge Power? Knowledge Flows, Subsidiary Power and Rent-Seeking within MNCs. *Journal of International Business Studies*, 35(5): 385-406.
- Nachum, L. 2003. International Business in a World of Increasing Returns. *Management International Review*, 43(3): 219-245.
- Nachum, L. & Zaheer, S. 2005. The Persistence of Distance? The Impact of Technology on MNE Motivations for Foreign Investment. *Strategic Management Journal*, 26(8): 747-767.
- Nohria, N. & Ghoshal, S. 1997. *The Differentiated Network: Organizing Multinational Corporations for Value Creation*. San Francisco, California: Jossey-Bass.
- Nunnally, J. 1978. *Psychometric theory* (2nd ed). New York: Mc-Graw Hill.
- Ocasio, W. 1997. Towards an Attention-Based View of the Firm. *Strategic Management Journal*, Summer Special Issue 18: 187-206.
- OECD. 2005. *Oslo Manual. Guidelines for Collecting and Interpreting Innovation Data* (3rd ed.). OECD Publishing.
- Pfeffer, J. & Sutton, R.I. 2000. *The Knowing-Doing Gap: How Smart Companies Turn Knowledge Into Action*. Boston, MA: Harvard Business School Press.
- Repenning, N.P. 2002. A Simulation-Based Approach to Understanding the Dynamics of Innovation Implementation. *Organization Science*, 13(2): 109-127.
- Rosenfeld, S.A. 1997. Bringing Business Clusters into the Mainstream of Economic Development. *European Planning Studies*, 5(1): 3-23.
- Rosenzweig, P.M. & Singh, J.V. 1991. Organizational Environments and the Multinational Enterprise. *Academy of Management Review*, 16(2): 340-361.
- Rugman, A.M. & Verbeke, A. 2001. Subsidiary-Specific Advantages in Multinational Enterprises. *Strategic Management Journal*, 22(3): 237-250.
- Schulz, M. 2001. The Uncertain Relevance of Newness: Organizational Learning and Knowledge Flows. *Academy of Management Journal*, 44(4): 661-681.

- Schwartz, S.H. 1994. Beyond Individualism/Collectivism: New Cultural Dimension of Values. In Kim, U., Triandis, H.C., Kagitcibasi, C., Choi, S.C. & Yoon, G. (Eds.). *Individualism and Collectivism: Theory, Method and Applications*. Thousand Oaks, CA: Sage Publications, pp. 85-119.
- Scott, W. R. 1995. *Institutions and Organizations*. Thousand Oaks, CA: Sage.
- Shannon, C.E. & Weaver, W. 1998. *The Mathematical Theory of Communication*. Urbach, IL: University of Illinois Press.
- Shenkar, O. 2001. Cultural Distance Revisited: Towards a More Rigorous Conceptualization and Measurement of Cultural Differences. *Journal of International Business Studies*, 32(3): 519-535.
- Shin, H. & Stulz, R.M. 1998. Are Internal Capital Markets Efficient? *Quarterly Journal of Economics*, 113(2): 531-552.
- Sivukumar, K. & Nakata, C. 2001. The Stampede Toward Hofstede's Framework: Avoiding the Sample Design Pit in Cross-Cultural Research. *Journal of International Business Studies*, 32(3): 555-575.
- Stein, J. 1997. Internal Capital Markets and the Competition for Corporate Resources. *Journal of Finance*, 52(1): 111-133.
- Szulanski, G. 1996. Exploring Internal Stickiness: Impediments to the Transfer of Best Practice Within the Firm. *Strategic Management Journal*, Winter Special Issue 17: 27-43.
- Szulanski, G, Cappetta, R. & Jensen, R.J. 2004. When and How Trustworthiness Matters: Knowledge Transfer and the Moderating Effect of Causal Ambiguity. *Organization Science*, 15(5): 600-613.
- Tabachnick, B.G. & Fidell, L.S. 2001. *Using Multivariate Statistics* (4th ed.). New York: Harper Collins.
- Teece, D.J. 1977. Technology Transfer by Multinational Firms: The Resource Cost of Transferring Technological Know-how. *Economic Journal*, 87(346): 242-261.
- Teece, D.J. 1986. Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy. *Research Policy*, 15(6): 285-305.
- Tsai, W. 2002. Social Structure of "Coopetition" Within a Multiunit Organization: Coordination, Competition, and Intraorganizational Knowledge Sharing. *Organization Science*, 13(2): 179-190.
- Tsang, E.W.K. & Yip, P.S. 2007. Economic Distance and the Survival of Foreign Direct Investments. *Academy of Management Journal*, 50(5): 1156-1168.

- Uzzi, B. & Gillespie, J.J. 1999. Interfirm ties and the organization of the firm's capital structure in the middle financial market. In, Knoke, D. & Grabbay, S. (Eds.). *Corporate Social Capital*. Dordrecht, Netherlands: Kluwer Press.
- Van Oudenhoven, J.P. 2001. Do Organizations Reflect National Cultures? A 10-nation Study. *International Journal of Intercultural Relations*, 25(1): 89-107.
- Vernon, R. 1966. International Investment and International Trade in the Product Life Cycle. *Quarterly Journal of Economics*, 80(2): 190-207.
- West, J. & Graham, J.L. 2004. A linguistic-based measure of cultural distance and its relationship to managerial values. *Management International Review*, 44(3): 239-260.
- Xu, D., Pan, Y. & Beamish, P.W. 2004. The effect of regulative and normative distances on MNE ownership and expatriate strategies. *Management International Review*, 44(3): 285-307.
- Xu, D. & Shenkar, O. 2002. Institutional distance and the multinational enterprise. *Academy of Management Review*, 27(4): 608-618.
- Yang, Q., Mudambi, R. & Meyer, K. 2008. Conventional and Reverse Knowledge Flows in Multinational Corporations. *Journal of Management*, 34(5): 882-902.
- Zander, U. & Kogut, B. 1995. Knowledge and the Speed of Transfer and Imitation of Organizational Capabilities: An Empirical Test. *Organization Science*, 6(1): 76-92.

Figure 1 Illustration of Headquarters Resource Allocation to Innovation Transfer Projects

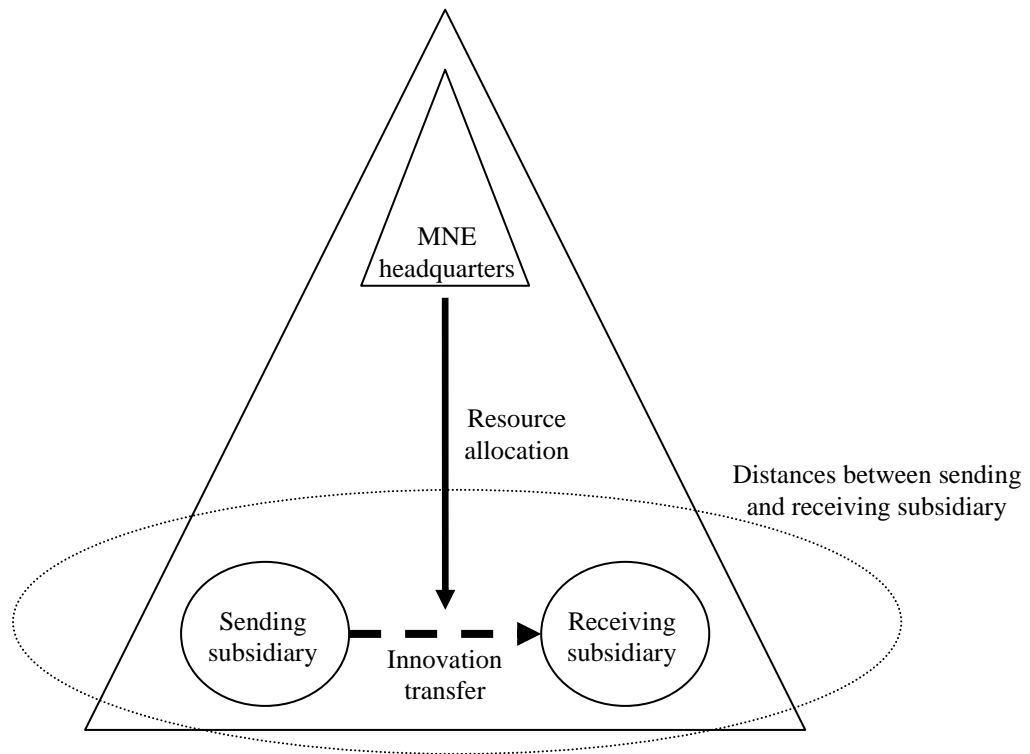


Figure 2 The Hypothesized Model

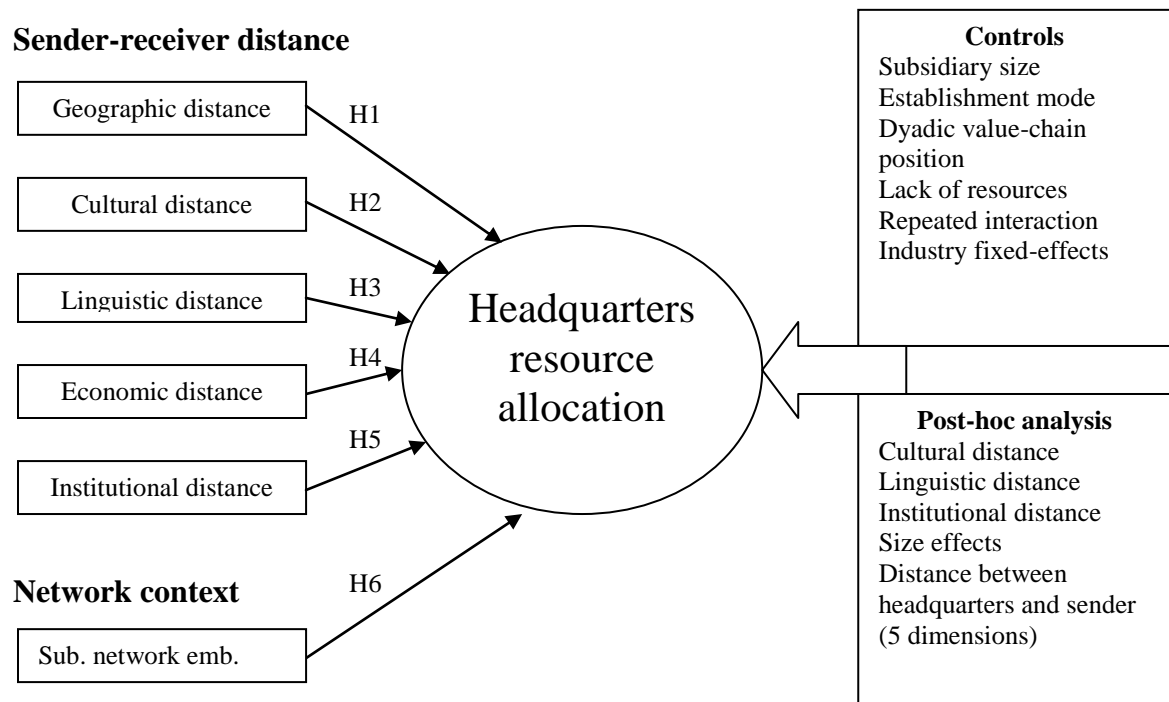


Table 1 Factor Analysis with Varimax Rotation

<i>Headquarters involvement in the innovation transfer</i>	Components	Communality
The MNE HQ has formally instructed you to share this innovation with the counterpart	0.807	0.652
The MNE HQ have themselves been heavily involved in conducting the actual transfer process with the counterpart	0.874	0.764
The MNE HQ have taken complete responsibility for the transfer of this innovation to this counterpart	0.762	0.580

Table 2 Correlations and descriptive statistics ^a

	Mean	Std. Deviation	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Geographic distance	5.427	3.595	1										
2. Cultural distance	0.516	0.753	0.635**	1									
3. Linguistic distance	2.897	1.583	0.726**	0.555***	1								
4. Economic distance	0.059	0.130	0.391**	0.270***	0.187*	1							
5. Institutional distance	0.201	0.424	0.606**	0.456***	0.592**	0.176*	1						
6. Subsidiary network embeddedness	4.425	1.236	-0.001	-0.034	-0.019	-0.040	0.134	1					
7. Subsidiary size	5.756	1.624	0.024	-0.148	0.083	0.060	0.018	-0.024	1				
8. Establishment mode	0.427	0.497	-0.182*	-0.187*	-0.189*	-0.094	-0.064	-0.136	-0.007	1			
9. Dyadic value-chain position	0.761	0.429	0.131	0.202**	0.160*	-0.194*	0.126	-0.040	0.132	-0.102	1		
10. Lack of resources	2.645	1.510	0.178*	0.151	0.068	0.097	-0.010	0.074	0.054	-0.096	0.017	1	
11. Previous interaction	4.761	1.694	-0.110	0.009	-0.051	0.002	-0.104	-0.104	0.046	-0.145	0.138	-0.200*	1
Variance Inflation Factor ^b	1.837	-	2.879	1.643	2.356	1.448	1.213	1.205	1.351	1.255	1.682	1.388	1.307

^a Spearman's correlation coefficients reported.

^b Variance Inflation Factor scores calculated based on model 2, Table 3.

* Correlation is significant at the 0.05 level (two-tailed).

** Correlation is significant at the 0.01 level (two-tailed).

Table 3 Results from the Hierarchical Regression Analysis ^a

Subsidiary – subsidiary distances	Model 1		Model 2	
<i>Independent variables</i>	Estimate	s.e.	Estimate	s.e.
Geographic distance	-	-	-0.254*	0.027
Cultural distance	-	-	-0.245**	0.099
Linguistic distance	-	-	0.283**	0.058
Economic distance	-	-	0.241*	0.811
Institutional distance	-	-	0.008	0.115
Subsidiary network embeddedness	-	-	0.308**	0.076
<i>Control variables</i>				
Subsidiary size	0.082	0.041	0.110	0.044
Establishment mode	0.164 [†]	0.157	0.138 [†]	0.141
Dyadic value-chain position	-0.192*	0.191	-0.175*	0.166
Lack of resources	0.174*	0.064	0.258**	0.057
Previous interaction	0.072	0.033	0.073	0.039
Industry fixed-effects	YES		YES	
<i>Diagnostics</i>				
N	169		169	
R ²	0.281		0.449	
Adjusted R ²	0.231		0.374	
ΔR ²	0.281		0.168	
F-statistic	5.630**		5.940**	

^a Estimates significant at the 0.1, 0.05 and 0.01 level are indicated with [†], *, and ** respectively. Standard errors and t-statistics corrected by White's heteroscedastic consistent covariance matrix. Standardized beta coefficients reported. All tests are two-tailed.

Table 4 Results from the Hierarchical Regression Analysis ^a

Headquarters – subsidiary distances	Model 1		Model 2	
<i>Independent variables</i>	Estimate	s.e.	Estimate	s.e.
Geographic distance	-	-	0.074	0.051
Cultural distance	-	-	-0.087	0.078
Linguistic distance	-	-	0.086	0.134
Economic distance	-	-	-0.029	0.859
Institutional distance	-	-	0.286*	0.970
Subsidiary network embeddedness	-	-	0.216 [†]	0.089
<i>Control variables</i>				
Subsidiary size	0.082	0.041	-0.070	0.066
Establishment mode	0.164 [†]	0.157	0.201*	0.170
Dyadic value-chain position	-0.192*	0.191	-0.190**	0.147
Lack of resources	0.174*	0.064	0.277**	0.052
Previous interaction	0.072	0.033	0.046	0.039
Industry fixed-effects	YES		YES	
<i>Diagnostics</i>				
N	169		169	
R ²	0.281		0.450	
Adjusted R ²	0.231		0.375	
ΔR ²	0.281		0.169	
F-statistic	5.630**		5.970**	

^a Estimates significant at the 0.1, 0.05 and 0.01 level are indicated with [†], *, and ** respectively. Standard errors and t-statistics corrected by White's heteroscedastic consistent covariance matrix. Standardized beta coefficients reported. All tests are two-tailed.