

# **The Impact of Distance on Subsidiary Decision-making Autonomy**

## **ABSTRACT**

Prior work has established the importance of firm or context characteristics for understanding the decision-making autonomy of subsidiaries. Despite all efforts, however, the determinants of decision-making autonomy are still subject of ongoing debate following inconclusive findings. We suggest that the subsidiary literature has largely overlooked distance between home and host country contexts as an essential determinant of decision-making autonomy. Theoretical arguments for distance and subsidiary decision-making autonomy go in both directions. Agency theory suggests a negative relationship between distance and autonomy and business network theory predicts a positive effect of distance on autonomy. Our study is among the first to examine the impact of distance on autonomy with a unique multi-country and multi-industry dataset from 170 subsidiaries located in five Central and Eastern European countries. The subsidiaries serve headquarters in twenty-one different home countries. The results show that a fine-grained perspective of distance is required and that cultural, geographic and economic distance limit decision-making autonomy of subsidiaries.

**Key words:** distance, decision-making autonomy, business network theory, agency theory.

# **The Impact of Distance on Subsidiary Decision-making Autonomy**

## **INTRODUCTION**

Foreign subsidiaries have the potential to embed themselves within different types of knowledge networks, in order to accumulate their capabilities needed for innovation, thereby strengthening their sustainable competitive advantages (Cantwell & Mudambi, 2005; Phene & Almeida, 2008), and thus the whole multinational enterprise (MNE) group. This focus on subsidiary innovation has direct implications for the role of foreign subsidiaries, particularly regarding the distribution of decision-making autonomy in relationships between headquarters and subsidiaries.

Subsidiaries with high levels of decision-making autonomy are able to respond to changing circumstances, develop local business networks, gain local market legitimacy thereby fostering creativity and new idea generation. Alternatively, to exclude the risk of subsidiaries not following corporate R&D strategy, headquarters will be inclined to take key decisions themselves ensuring that subsidiaries pursue the goals of headquarters. The latter is associated with lower levels of decision-making autonomy for subsidiaries (centralization) (Brooke, 1984; O'Donnell, 2000). In the context of MNEs crossing national borders, the distance between headquarters and subsidiaries complicates the above trade-off between centralization and decentralization substantially.

International business theory clearly informs us that crossing borders implies a change of the context in which business is done (Hymer, 1976; Zaheer 1995). These contextual changes lead to a liability of foreignness for multinationals. An increased distance between home and host country contexts is of direct relevance to the question on the distribution of decision-making autonomy between headquarters and subsidiary. Theoretically, a larger distance is associated both with higher and lower levels of decision-making autonomy for subsidiaries. A larger distance arguably triggers the need for more direct control by headquarters, but also increases the

importance of subsidiaries to be locally responsive. In this paper we address the question how distance – conceptualised and measured as a multidimensional construct including economic, geographic, and cultural dimensions – affect level of subsidiary decision-making autonomy, while controlling for MNE and subsidiary specific characteristics.

In this paper, we explore whether home- and host country context affects subsidiary decision-making autonomy. In particular, we aim to study how distance between home- and host countries determines subsidiary's decision-making autonomy. The developed theoretical arguments and empirical findings in this paper provide new insights on the role of home- and host country context in a subsidiary's decision-making autonomy in the headquarters-subsidiary relationship.

Our hypotheses on how distance affects levels of subsidiary decision-making autonomy are derived from two complementary theoretical perspectives often used in the context of studies on headquarters-subsidiary relationships: agency theory and business network theory. Agency theory (Eisenhardt, 1989; Jensen & Meckling, 1976) deals with bounded rationality resulting in information asymmetry between headquarters and subsidiaries that may create goal incongruence between the two sides of the relationship (O'Donnell, 2000; Roth & O'Donnell, 1996). This explains why headquarters implement control mechanisms and limit decision-making autonomy to ensure that the subsidiary aligns with the headquarters strategy (O'Donnell, 2000). Business network theory highlights the importance of local legitimacy for the performance of affiliates (Andersson & Forsgren, 1996; Andersson & Holm, 2010; Ciabuschi et al., 2011a; Forsgren et al., 2005; Forsgren, 2008; Forsgren & Holm, 2010). It assumes that headquarters predominantly suffers from accessing and obtaining local information and knowledge. This requires a decentralisation rather than a centralisation of decision-making autonomy (Andersson et al., 2007). These two theoretical perspectives are associated with two

different predictions on the nature of the relationship between distance and subsidiary decision-making autonomy.

We test our distance hypotheses on a dataset of 170 subsidiaries located in five Central and Eastern European countries: the Czech Republic, Hungary, Poland, Romania, and the Slovak Republic. These countries are relevant because they have been entered by MNEs worldwide following the support for foreign direct investments of these countries and new market opportunities due to liberalization policies of these transition economies. The 170 subsidiaries serve headquarters in twenty-one different home countries resulting in 55 country pairs. Controlling for multinational and subsidiary specific characteristics, industry and country characteristics, we find that geographic, economic and cultural distance are associated with lower levels of subsidiary decision-making autonomy. Our study re-affirms the central role of distance in international business research. Our study also implies that business processes for which local responsiveness and subsidiary decision-making autonomy are required are complicated when contextual distance between home and host countries increases. Our finding that distance is generally associated with lower levels of subsidiary decision-making autonomy means that multinationals face a tension: distance to the host market has been argued to increase the need to be locally responsive for which subsidiary decision-making autonomy helps (especially in the case of innovation), but distance – as our study shows - is at the same time associated with lower levels of subsidiary decision-making autonomy.

## **BACKGROUND**

### **Distance**

Firms and managers are faced with additional challenges when crossing borders and becoming operationally active in a host country context that differs from their home country. Although the

change in context might in principle also relate to intra-country variation, IB research is concerned with firms crossing national borders and the development of economic activities in other nations (Beugelsdijk, 2011). In order to explore and exploit the location specific advantages abroad, firms and managers have to overcome the distance between the home and the host country. These contextual differences, driven by the geographic, cultural, institutional and economic differences are associated with a liability of foreignness (Hymer, 1976; Zaheer, 1995), meaning that internationalizing firms incur costs that domestic firms do not have. As the contextual differences between the home and the host country increase, the liability of foreignness is generally argued to increase as well.

The role of contextual differences has a long history in IB, and is fundamentally related to the concept of psychic distance. Psychic distance refers to perceptions of managers and was originally defined as “the sum of factors” contributing to perceived differences in home and host country contexts following “differences in language, culture, political systems, level of education, level of industrial development, etc.” (Johanson & Wiedersheim-Paul, 1975: 308). The concept of psychic distance puts an emphasis on the extent to which environmental differences between home and host countries present information flows and generate barriers to learning about these markets (Dikova, 2009; O’Grady & Lane, 1996). For that reason, firms tend to select overseas markets in accordance with the psychic distance from the home country (Johanson & Vahlne, 1977). A lower psychic distance means that a country is more likely to be selected, and vice versa. The greater the psychic distance between home and host countries, the more difficult it is to collect, analyze and correctly interpret information about these differences (Håkanson & Ambos, 2010).

Over the years, the importance of psychic distance for IB theory and MNE practice has been consistently reported (see, for example, Boyacigiller, 1990; Brewer, 2007; Dow &

Karunaratna, 2006; Evans et al., 2008; Nordstrom & Vahlne, 1994; O’Grady & Lane, 1996). Psychic distance matters for subsidiary performance (Dikova, 2009; Evans & Mavondo, 2002; O’Grady & Lane, 1996), the selection of foreign markets (Stottinger & Schlegelmilch, 1998; Whitelock & Jobber, 2004) and a firm’s entry strategy (Ellis, 2007, 2008). Notwithstanding the importance of psychic distance, the theory focuses on perceptions of managers per se (and hence, requires ditto measures to address these). Such data is often not available, at least not at a large scale. Very often, IB researchers use distance measure such as economic, language, geographic and cultural distance, also referred to as *drivers* of psychic distance (Dow & Karunaratna, 2006). Although managerial perceptions of distance are ideally used to proxy for such contextual differences, the lack of such measures on a large scale leads scholars to use sets of (secondary) distance measures taken from secondary databases such as the World Bank (for economic distance), Hofstede (1980) and Globe (House et al., 2004) (for cultural distance), and CEPII (for geographic distance).

### **Subsidiary decision-making autonomy**

Research on the headquarters-subsidaries relationship is a classic research theme in IB (Dunning & Lundan, 2008), and received a substantial push in recent years (Birkinshaw & Hood, 1998; Birkinshaw et al., 1998). It is widely acknowledged that subsidiary decision-making autonomy – defined as “the degree to which the foreign subsidiary of the MNE has strategic and operational decision-making authority” (O’Donnell, 2000: 528) – plays a pivotal role in the relationship between headquarters and subsidiary (Asakawa, 1996, 2001; Garnier, 1982; Gammelgaard et al., 2012a, b; Gates & Egelhoff, 1986; Hedlund, 1981; Johnston & Menguc, 2007; O’Donnell, 2000 for comprehensive reviews). Research on the determinants of subsidiary decision-making autonomy has focused on MNE and subsidiary characteristics (Fenton-O’Creevy et al., 2008; Schüler-Zhou & Schüller, 2013; Simões et al., 2002; Taggart & Hood, 1999; Vachani, 1999;

Williams & Van Triest, 2009), industry peculiarities (Birkinshaw & Hood, 2000; Katrin et al., 2005) or the embeddedness of the subsidiary in the host country (Ambos et al., 2011; Chiao & Ying, 2013). For example, several studies report that subsidiary innovation (measured by, for example, R&D intensity) is positively related to subsidiary decision-making autonomy. This decision-making autonomy enhancing effect of innovative orientation is explained by the need to quickly respond to local market forces and preferences (Simões et al., 2002; Taggart & Hood, 1999). Other studies show that decision-making autonomy is related to the entry mode chosen. A greenfield entry mode, for instance, is negatively associated with decision-making autonomy (Gammelgaard et al., 2012b; Luo, 2006; Slangen & Hennart, 2008). Birkinshaw and Hood (2000) found that subsidiaries in leading-edge industries are more autonomous as well as more locally embedded and more internationally oriented than subsidiaries in other sectors. Subsidiaries in high technology industries develop cooperative and close ties with suppliers and customers, experiment with new ideas and transfer some of their learning to headquarters, all of which require high levels of decision-making autonomy (Katrin et al., 2005). Despite the crucial role played by distance in IB research in general, no study has explicitly addressed how distance between home and host countries affects subsidiary decision-making autonomy. In what follows we develop hypotheses on exactly this relationship, thereby combining distance research with headquarters-subsidiary research.

### **Hypotheses development**

#### *Agency theory and subsidiary decision-making autonomy*

Agency theory sheds light on the potential negative effects of distance on subsidiary decision-making autonomy. High levels of distance between home and host countries are likely to increase agency problems in the headquarters-subsidiary relationship and therefore increase the control of headquarters over subsidiaries (that is, decrease the level of subsidiary decision-

making autonomy) (Chang & Taylor, 1999). Different explanations exist for a negative relationship between distance and decision-making autonomy. First, a large distance between two groups of individuals in a business network increases the cost of interpreting information flows between parties and also increases the risks of misinterpretation (Boyacigiller, 1990). It means that the costs of doing business in foreign countries increase with distance, or at least accelerates at a rate higher than the benefits do. As distance increases, subsidiaries face difficulties in being locally responsive because more specific information from the headquarter is required to effectively coordinate local R&D, production or marketing (Bartlett & Ghoshal, 1989).

Second, subsidiary managers will have an information advantage over their headquarters management (Vachani, 1999) when differences in characteristics between headquarters market and the market of foreign subsidiary increase. This implies that agency problems arise when subsidiary managers make self-interested decisions that are not congruent with those desired by headquarters. Furthermore, with increased distance, complete and accurate information about subsidiaries' performance becomes more difficult and expensive to attain, and subsidiary activities thus become more difficult to interpret (Roth & O'Donnell, 1996). Agency problems occur because subsidiary managers have greater specialized knowledge regarding the influence of the local environment and strategic context on its task performance (Gomez-Mejia & Balkin, 1992). In essence, as distance increases, a headquarters becomes more dependent on the subsidiary for information that is either not directly available to the headquarters or extremely costly to acquire. Thus, this information asymmetry occurring from distance increases the agency problem in the headquarters-subsidiary relationship. A crucial note that the argumentations of agency theory on problems in the headquarters-subsidiary relationship stem from subsidiary side, not headquarters and these argumentations are stucked in central decisions made by headquarters. Hence, several scholars stated that to reduce the agency problem



headquarters takes decisions over their foreign subsidiaries (Chang & Taylor, 1999; O'Donnell, 2000).<sup>1</sup>

Third, high levels of distance are likely to constitute a barrier to headquarters' learning about a foreign environment not only because there are differences with how business is conducted locally, but also because it impedes information flows which headquarters attempt to obtain (Gregersen & Hite, 1996; Roth & O'Donnell, 1996). These constraints result from the fact that headquarters faces high levels of uncertainty (Evans & Mavondo, 2002) and generic management difficulties in distant markets (Ellis, 2008). It is the root cause of inconsistencies in cognitive firm frameworks. Consequently, distance between home and host countries increases uncertainty, which increases agency problems in the headquarters-subsidiary relationship. To reduce the agency problem, the headquarters will take decision-rights over the subsidiaries for ensuring the interests of the headquarters of the MNE (Nohria & Ghoshal, 1994).

Taken together, the arguments above suggest that distance between home and host countries increases information asymmetry, which increases agency problems in the headquarters-subsidiary relationship. To resolve these agency problems, the headquarters cannot relinquish decision-rights to the subsidiaries since the local interests of subsidiaries may not always be in line with those of the headquarters (Nohria & Ghoshal, 1994). Therefore, the headquarters will closely monitor and supervise the behaviour of a subsidiary, which limits the ability and the incentives of subsidiaries for engaging in self-interested behaviour.

To summarize, in line with agency theory, it can be argued that when distance between home and host countries increases, agency problems arise increasing the need to control subsidiaries and hence, lowering subsidiary decision-making autonomy. We propose the following hypothesis:

---

<sup>1</sup> This prediction is also in line with transaction cost theory: uncertainty, high distance, high transaction cost, and control.

**Hypothesis 1:** A larger distance between home and host countries is associated with lower levels of subsidiary's decision-making autonomy.

*Business network theory and subsidiary decision-making autonomy*

Business network theory offers an alternative perspective on distance and decision-making autonomy (Andersson & Forsgren, 1996; Andersson & Holm, 2010; Ciabuschi et al., 2011a; Forsgren et al., 2005; Forsgren, 2008; Forsgren & Holm, 2010). Following business network theory, it can be argued that increasing distance between home and host countries is likely to enhance subsidiary decision-making autonomy. Several explanations exist for a positive relationship between distance and decision-making autonomy.

First, each subsidiary operates in its own unique task environment in a host country, which constrains or determines the activities of that subsidiary. In order to survive, subsidiary managers need to conform and adapt to the rules, norms and belief systems prevailing in their local business environment (DiMaggio & Powell, 1983) – a process also referred to as normative rationality (Oliver, 1997). Accordingly, to increase a subsidiary's ability to understand its local business environment (Birkinshaw et al., 1998), and to obtain local business legitimacy (Bartlett & Ghoshal, 1989; Prahalad & Doz, 1987), business network theory suggests that headquarters will delegate decision-making autonomy to distant subsidiaries to increase local legitimacy.

Second, first-hand knowledge of local circumstances is a crucial competence within an MNE network because it allows subsidiaries to develop and adopt new products, processes or administrative systems locally using their own technical and managerial resources to respond to local circumstances (Forsgren, 2008). High levels of uncertainty accompany subsidiaries operating in a particular business network in distant markets from the MNE point of view (Dikova, 2009; Evans & Mavondo, 2002). Headquarters will decentralize decisions to

subsidiaries for the purpose of reducing uncertainty. As a result, the subsidiary can undertake more extensive research and planning, which improves performance (Evans & Mavondo, 2002; Evans et al., 2008). To sum up, greater distance between home and host countries increases the cost of doing business and the level of uncertainty for obtaining local resources and legitimacy. Therefore, headquarters will decentralize decision-making autonomy to subsidiaries. Hence, we hypothesize:

**Hypothesis 2:** A larger distance between home and host countries is associated with higher levels of subsidiary's decision-making autonomy.

Whereas agency theory suggests a negative relationship, business network theory suggests a positive relation exists between subsidiary decision-making autonomy and distance. In what follows, we describe our data and method to test this relationship empirically.

## **RESEARCH METHODS**

### **Data sources, surveys and samples**

To test our hypotheses, we used data from a unique multi-country, multi-industry database. We constructed the database from different sources of information. Our first data source was the 2011 subsidiary-level survey of MNE subsidiaries conducted in the Czech Republic, Hungary, Romania, Poland, and the Slovak Republic by the Institute for Economic Research Halle (IWH). This 2011 IWH survey database offered us the opportunity to measure the dependent variable (i.e., the decision-making autonomy of subsidiary) as well as the different control variables that are included in our model (concerning the characteristics of the headquarters, subsidiaries, industries and countries, see below).

The 2011 IWH survey database is part of a larger project aimed to systematically collect information about innovation activities and the role of foreign investors in former Eastern and Central European (CEE) countries. These countries are located in proximity to large European markets, and most transition economies embarked on a comprehensive privatisation process at time when FDI flows were starting to peak on a global scale. Yet, in distinction to many developing countries, the CEE economies started out with a long history of industrialization and a relatively well educated work force (Stephen & Jindra, 2005). In fact, since the early 1990s, the transitional countries in CEE – including the Czech Republic, Hungary, Romania, Poland, and the Slovak Republic – have been characterized by institutional change from a planned to a market economy. This process entailed policies targeted at privatization, liberalization and macroeconomic stabilization (Gabrisch & Hölscher, 2006). Post-communist countries also quickly integrated with the global, and in particular West European, economy via international trade and foreign direct investment. This process was influenced significantly by MNEs with regard to firm restructuring (Djankov & Murrell, 2002), private enterprise R&D (Kalotay & Hunya, 2000; UNCTAD, 2005), export competitiveness (Rugraff, 2006; UNCTAD, 2002), and productivity growth (Jindra, 2006; Schadler et al., 2006). Differences in the developmental experience of individual transition economies are largely explained by initial conditions, macroeconomic policies and structural reforms (Berg et al., 1999). For example, several studies showed that foreign subsidiaries are deeping trade likages; that direct effects of FDI materialize in significantly higher productivity compared to domestic firms (Giroud et al., 2012; Jindra et al., 2009; Meyer, 1998; Meyer & Peng, 2005; Resmini, 2000).

The overall population of subsidiaries from which the IWH sample is taken from Orbis (broken down per ownership for each country) and consists of foreign-owned manufacturing and service subsidiaries located in the five CEE countries. The selection of these countries in economic transition balances country size, geographic location, and the level of economic

development that varies strongly in this region. The population includes different types of foreign investors such as pension funds, banks, foundations, individuals, families, or any combination of these different types of owners. The surveys in the various countries were implemented by means of computer assisted telephone interviews (CATI) and executed by the Institute for Applied Social Sciences (IFAS). IFAS is an research institute specialized in doing surveys in CEE countries. A CATI method helps to foster response rates in these CEE countries where managers are less experienced to answer questions from a survey. In order to further increase response rates, the directors of the subsidiaries were first invited to participate in the research via a letter or a brief telephone call. They then received information about the purposes of the survey as well as data confidentiality per fax and/or e-mail upon request. The questionnaire was the same in all countries. It was first tested for coherency to at least four pre-tests per country before being submitted to the subsidiaries between 6 August and 3 September 2009. The final questionnaire required 15 minutes on average for completion. The IFAS interviewers received intensive training by IWH regional experts concerning innovation and business activities in CEE countries. The interviews were conducted by native speakers from each of the countries under observation. The 2011 IWH survey used selection question for various parts of the survey implying that very few companies answered all questions in the survey.

The IWH database for our research includes 637 observations in the five CEE countries. Our sample in this study is derived from this IWH database. After correction for missing values because of incomplete responses, the useable final sample in this paper is 170 observations. This implies that out of the total observation, 170 subsidiaries were willing to complete the questionnaire, leading to a response rate of 26.69 percent of 637 subsidiaries that were contacted. The response rate was the highest in Poland (83 observations, 48.83 percent) followed by the Czech Republic (32 observations, 18.82 percent), Romania (22 observations, 12.94 percent),

Hungary (17 observations, 10.0 percent) and the Slovak Republic (16 observations, 9.41 percent).

With regard to industry breakdown, this sample contains firms from all industries at NACE 2 digit level. The sample includes manufacturing (NACE Rev.2: 05 to 39) and service industries (NACE Rev.2: 45-47, 49-53, 58-68, and 69-82). We performed statistical tests to discern whether or not there are differences in the distribution of enterprises ordered by firm size and industry. Chi-squared tests showed that there are no statistically significant differences both in terms of the number of employees and industry ( $p = 0.26$ ,  $p = 0.32$ , respectively).

Our other data sources are the Dow and Karunaratna (2006) and the Hofstede databases, respectively. These databases enabled us to measure a wide variety of distance characteristics, including language, religious and cultural distances between particular sets of countries. The IWH survey database enabled the identification of the country of origin (i.e., headquarters location) for each subsidiary. The subsidiaries were located in five CEE (host) countries. The headquarters of these subsidiaries were located in twenty-one different (home) countries. We were able to make 55 country pairs with 16 country pairs for Poland, 11 country pairs for the Czech Republic, 11 country pairs for Romania, 9 country pairs for the Slovak Republic, and 8 country pairs for Hungary (see Appendix A for more details). We used this information on country pairs to measure the different distance dimensions that are included in this study.

### **Dependent variable: Subsidiary decision-making autonomy**

Following leading studies on subsidiary decision-making autonomy (for example, Birkinshaw & Hood, 2000; Johnston & Menguc, 2007; O'Donnell, 2000) (see Appendix E), we determined the level of subsidiary decision-making autonomy by means of a particular questionnaire item (see Appendix B). We asked the director of the subsidiary to indicate to which extent independent decisions for particular business activities were taken by the subsidiary or the headquarters. As

shown in the Appendix, we asked them to do so for seven different business activities, each rated on a four-point Likert scale. The Cronbach's alpha for the decision-making autonomy of the seven business activities of 0.83 is satisfactory because it is substantially above the threshold value of 0.70 (Hair et al., 2006). A Principal Component Factor analysis showed that the seven business activities load on one factor (with one eigenvalue larger than 1, i.e. 3.51). We summed the individual scale items for this construct and used the aggregate measure of the level of subsidiary's decision-making autonomy in the analysis. The aggregated index ranges from a minimum of 7 to a maximum of 28: the higher the score of the index, the higher level of a subsidiary's decision-making autonomy.

#### **Independent variable: Home-host country distance**

Home-host country distance can be measured on many different dimensions. Home-host country distance is a multidimensional construct and its measurement a subject of ongoing debate (Prime et al., 2009). Our study uses the Dow & Karunaratha (D&K) (2006) database. This database presents various so-called drivers of psychic distance. The drivers of psychic distance are a solution to the lack of data for perceptual measures of distance, as is the case in the present study as well (for a discussion, see also Dikova, 2009). The Dow and Karunaratna (2006) measure of distance comprises macro-level factors identified by other distance researchers (Boyacigiller, 1990; Evans et al., 2000; Evans & Mavondo, 2002; Johanson & Vahlne, 1977). Language, religion, level of education, level of industrial development, political systems, geography, and culture are the most often used components of distance (Håkanson & Ambos, 2010). We use these seven aspects as a measure of distance in our study.<sup>2</sup>

---

<sup>2</sup> We do not take time zone differences and colonial ties between home and host- countries into account because i) time zone difference and geographic distance in our sample are highly correlated ( $r = 0.94$ ), and ii) Central and Eastern European countries have no or very few colonial ties.

The first five dimensions (that is, differences in language, religion, education, industrial development and political systems) are based on Dow and Karunaratna's analysis of 120 country pairs. That is, based on the Dow and Karunaratna's (2006) database, we extracted the value for each of the 55 country pairs in our sample. A major language for a given country is defined as any language, which can be spoken by more than 20 percent of the population, or a language that holds a special official status within the country. The raw D&K value for language distance in our sample varies between -3.38 and 0.52, with low values indicating a small linguistic distance and high values indicating large linguistic distances between home and host countries. The second dimension concerns differences in the major religions between home and host countries. A major religion is defined as any religion to which more than 20 percent of the population claims an affiliation. Furthermore, within a major religion, only divisions that represent at least one quarter of that religion's adherents are considered to be relevant. The raw D&K value for religious distance in our sample varies between -1.29 and 1.27, with low values indicating a small religious distance between countries and high values indicating a large religious distance between home and host countries.

The third dimension concerns differences in the educational level between home and host countries. Differences in the educational levels between countries is measured by using three scales, i.e. the difference in the proportion of literate adults between home and host countries, the differences in the proportion of the population enrolled in second and third-level education. The raw D&K value for educational distance in our sample varies between -1.25 and 2.25, with low values indicating a small educational distance between home and host countries and high values indicating a large educational distance between home and host countries. The fourth dimension concerns differences in the industrial development between home and host countries. This dimension is measured by differences in the degree of industrial development between home and host countries through nine different aspects: GDP per capita, the consumption of energy,



vehicle ownership, the percentage of employment in agriculture, the percentage of GDP from manufacturing, the difference in the degree of urbanisation, and the differences in the development of the communication infrastructures (newspaper, radios, telephones, and televisions per 1,000 population). The raw D&K value for industrial development distance in our sample varies between  $-1.78$  and  $1.78$ , with low values indicating a small industrial development distance between home and host countries and high values indicating a large industrial development distance between home and host countries. The fifth component concerns differences in the political system between home and host countries. Two distinct aspects measure the difference in the political systems between home and host countries: the degree of democracy and the political ideology of the group in power. The raw D&K value for political system distance in our sample varies between  $-0.50$  and  $2.04$ , with low values indicating a small political system distance between home and host countries and high values indicating a large political system distance between home and host countries.

The remaining two distance dimensions are cultural and geographic distance. Concerning geographical distance, we obtained information on the countries in which the subsidiary and the headquarters were located, but not on their exact location within each country (in order to maintain survey anonymity). We therefore measured geographical distance as the logarithm of the kilometre difference between the capitals (Håkanson & Ambos, 2010). The geographical information was obtained from the *Centre d'études prospectives et d'information internationales* (CEPII, 2012), which provided the pair-wise country kilometre distance for all the country capital pairs in our sample. The geographic distance measure ranges between  $4.08$  and  $9.65$ , with higher scores corresponding to higher geographic distance. With regard to cultural distance, following the previous studies (e.g., Dikova, 2009; Dow & Karunaratna, 2006; Håkanson & Ambos, 2010) we used the six updated cultural dimensions of Hofstede and applied the formula suggested by Kogut and Singh (1988) to measure cultural distance for each of the country pairs

in our sample. The composite measure for cultural distance ranges between –1.28 and 4.13, with higher scores corresponding to higher cultural distance between home and host countries.

Before testing our hypotheses, we performed a factor analysis on the seven dimensions of distance to discern whether or not they cluster on different dimensions. A Principal Component Factor analysis with varimax rotation (see Appendix C) report two factors with eigenvalues larger than 1 (i.e., 2.47 and 1.68 for factor 1 and factor 2, respectively). Educational, industrial development and political system distance between home and host countries are clustered into the first factor and the other dimensions are clustered into the second factor. For the first factor, the Cronbach's alpha is 0.81, which satisfies the threshold value of 0.70 (Hair et al., 2006). We therefore used the factor scores from the Principal Component Factor analysis of these three dimensions as the measure of distance measure in our study. We labeled this factor as *economic distance*. The economic distance measure ranges from –2.31 to 3.76 (standardized value), with higher scores corresponding to higher economic distance. However, the Cronbach's alpha for the other four dimensions is 0.54, which is below the threshold value of 0.70. This implies that we cannot take religious, language, cultural and geographic distance into one common factor. Therefore, these dimensions were included as separate distance measures in our analysis (taking standardized scores of the four distance measures in order to maintain consistency with the economic distance measure).

### **Control variables**

We included three sets of control variables in our model. The first set of control variables accounts for subsidiary characteristics. First, we include the R&D intensity of the subsidiary – measured by the number of R&D employees working in R&D area in subsidiaries currently as a percentage of the subsidiary's total employees – because it is well-known that R&D intensity is an important determinant of subsidiary decision-making autonomy (Taggart & Hood, 1999).

Second, we include subsidiary size – measured by the natural logarithm of the number of employees at the subsidiary – because larger subsidiaries have better bargaining positions and therefore larger decision-making autonomy (Gates & Egelhoff, 1986; Johnston & Menguc, 2007; Schüler-Zhou & Schüller, 2013). Third, we include the age of the subsidiary – calculated by subtracting the year the subsidiary was founded from the current year, thus measured by the natural logarithm of the number of years subsidiary operated – because older subsidiaries may have more decision-making autonomy than younger ones because of aggregated knowledge and experience offering them seniority over other subsidiaries and more decision-making autonomy (Björkman & Piekkari 2009; Chiao & Ting, 2013; Gates & Egelhoff, 1986; Schüler-Zhou & Schüller, 2013).

The second set of control variables concerns the headquarters characteristics. First, we control for the original MNE's form of entry mode. Subsidiary decision-making autonomy inherently may be different given the entry mode of the MNE. We account for this by including a dummy variable that equals one if the subsidiary is a greenfield location, and zero otherwise (Gammelgaard et al., 2012b; Luo, 2006; Slangen & Hennart, 2008). Second, we include five entry motives of MNEs: to access operational efficiency, foreign markets, location-bound knowledge and technology, local assets, or local natural resources, respectively. Subsidiaries have different positions in the overall MNE network depending on the entry motive and this may determine decision-making autonomy *ex ante* (Dunning, 1993; Nachum & Zaheer, 2005; Prahalad & Doz, 1987; Slangen & Beugelsdijk, 2010). We used three aspects concerning cost advantages (i.e., labour, capital and land) to measure the “access to operational efficiency” motive, which each was ranked according to their importance on a four-point Likert scale (ranging completely unimportant to extremely important). A Principal Component Factor analysis showed that these three cost aspects load on one factor (one factor with an eigenvalue larger than 1, i.e. 1.69). We measured this motive by the factor scores of these subdimensions.

The remaining four motives were each measured according to their importance on a four-point Likert scale (ranging from completely unimportant to extremely important).

The third set of control variables relates to country and industry characteristics. First, we control for industry effects on subsidiary decision-making autonomy. For this, we used the broad structure classification of NACE Rev.2 (2008) and classified subsidiaries into (1) mining and quarrying (NACE 05–09), (2) manufacturing (NACE 10–33), (3) electricity; gas, steam and air conditioning supply (NACE 35), (4) water supply; sewerage, waste management and remediation activities (NACE 36–39), (5) wholesale and retail trade; repair of motor vehicles and motorcycles (NACE 45–47), (6) transportation and storage (NACE 49–53), (7) information, communication, financial and insurance activities (NACE 58–68), and (8) professional, scientific, technical, administrative and support service activities (NACE 69–82). We constructed seven dummies for the first seven types of industries taking the eighth (i.e., professional, scientific, technical, administrative and support service activities) as the benchmark case. Second, we control for home-country effects. The headquarters of the subsidiaries in the sample are located in twenty-one different countries. Unfortunately, we cannot include twenty home-country dummies in our model because of insufficient observations and the resulting degrees of freedom. As an alternative solution we include a dummy to differentiate between developing and developed home countries. Subsidiaries in developed countries have an advantage of foreignness in innovation through the transfer of product innovations from other parts of the MNE (Un, 2011). Headquarters from developed countries (18 countries in our sample) by definition may have a stronger inclination to innovate because their competitive environment requires them to do so in order to survive than those in developing countries. According to the World Bank, a developed country is defined as the nation having GDP per capita from US \$12,000 per year. We used this information to construct the home-country dummy, that is, we distinguished whether the MNE comes from a developed country or not.

## EMPIRICAL RESULTS

### Main regression results

Means, standard deviations and correlations are provided in Table 1. Results from the hierarchical OLS regression analyses are summarized in Table 2. In preparing the data for the regression analysis, we performed the usual tests to obtain reliable estimates (Hair et al., 2006). The latter yielded satisfactory results: neither heteroskedasticity nor non-normality is an issue. The maximum value of the correlation coefficients is 0.41, which is far below the threshold value of 0.80 indicating that there are no issues with multicollinearity. We additionally tested for possible biases caused by collinearity among variables by calculating the variance inflation factor (VIF) for each of the regression coefficients. The maximum VIF value is 1.65 and thus well below the cut-off value of 10 recommended by Neter et al. (1985).

[Insert Tables 1 and 2 about here]

The regression results offer two conclusions. First, the various fit parameters show that our models fit the data well. Model 1 is a model with control variables and a constant only. The various dimensions of distance were added in Model 2, 3, 4, 5, 6 and 7, respectively. The R-squared improves from 15.04 percent in Model 1 to 20.51 percent in Model 7. The parameter estimates remain robust in terms of signs. In Model 2 and 3 the first two dimensions of distance – language distance and religious distance – were included, respectively. The results show that language distance and religious distance are positively related to degree of decision-making autonomy, but they are not significant ( $\beta = 0.14$ , n.s for language distance,  $\beta = 0.12$ , n.s for religious distance). Next to these, we added cultural distance, geographic distance and economic distance in Model 4, 5 and 6, respectively. These three models show that cultural distance, geographic distance and economic distance are negatively associated with degree of decision-

making autonomy and not significant ( $\beta = -0.56$ , n.s for cultural distance;  $\beta = -0.45$ , n.s for geographic distance;  $\beta = -0.19$ , n.s for economic distance).

Model 7 includes all dimensions of distance and shows that language distance and religious distance are positively related to subsidiary decision-making autonomy, but they are not significant implying that subsidiary decision-making autonomy does not respond to differences with respect to language distance ( $\beta = 0.70$ , n.s) and religious distance ( $\beta = 0.74$ , n.s).

Interestingly, the other three dimensions of distance are negatively and significantly related to decision-making autonomy. Model 7 shows that cultural distance ( $\beta = -0.96$ ,  $p < 0.05$ ), geographic distance ( $\beta = -1.01$ ,  $p < 0.05$ ), and economic distance ( $\beta = -1.46$ ,  $p < 0.05$ ) reduce degree of decision-making autonomy of subsidiaries. Taken together, it can be concluded that our Hypothesis 1 is supported by our data whereas Hypothesis 2 needs to be rejected. Our results generally support the agency perspective suggesting that distance induces MNEs to increase control and lower subsidiary decision-making autonomy.

The significant results for the control variables are in line with expectations. A green-field entry mode is associated with lower levels of the decision-making autonomy ( $\beta = -1.98$ ,  $p < 0.01$ ). This result confirms that the parent of subsidiaries has to share information requirements and information processing systems with foreign subsidiaries with greenfield mode. This sharing propels the parents control over their subsidiaries (Luo, 2006). The results of Model 7 also show that the level of subsidiary decision-making autonomy is limited by the MNE's motive to access operational efficiency in host countries ( $\beta = -0.92$ ,  $p < 0.05$ ). This result means that subsidiaries undertaking efficiency-seeking activities aim to take advantage of inter-country differences in factor endowments such as natural resources and inexpensive labor (Nachum & Zaheer, 2005). These subsidiaries often have close ties with other subsidiaries within the MNE network and are supplied by other subsidiaries rather than local firms. This implies that such subsidiaries are

more integrated within the network of their parent and thus receive less decision-making autonomy (Pralhalad & Doz, 1987; Slangen & Beugelsdijk, 2010).

### **Robustness analyses**

To explore the robustness of the above findings, we performed additional analyses.<sup>3</sup> Table 3 reports these results.

[Insert Table 3 about here]

First, we determined whether our results were robust for the measure of the dependent variable, i.e. the subsidiary decision-making autonomy (see Panel B). Recall that our decision-making autonomy measure is an aggregated measure of seven different business activities. As a test for robustness we estimated our models with the factor scores for decision-making autonomy. This did not affect our findings (with  $\beta = -0.21$ ,  $p < 0.05$  for cultural distance,  $\beta = -0.23$ ,  $p < 0.05$  for geographic distance, and  $\beta = -0.33$ ,  $p < 0.05$  for economic distance, respectively). Second, we estimated the models controlling for the possibility of R&D instead of for R&D intensity (see panel C). The possibility of R&D, and R&D intensity are highly correlated ( $r = 0.92$ ). The regression results are the same (with  $\beta = -0.45$ ,  $p < 0.05$  for cultural distance,  $\beta = -0.88$ ,  $p < 0.01$  for geographic distance, and  $\beta = -1.26$ ,  $p < 0.01$  for economic distance, respectively). Third, the correlation coefficient between time zone difference and geographic distance between home and host countries is high ( $r = 0.94$ ). We estimated our models with the control of geographic distance as a test for robustness to discern whether our findings are different due to time zone effects or to the effects of transportation costs (Dow & Karunaratna, 2006). This also did not affect the results reported in Table 2 (with  $\beta = -0.84$ ,  $p <$

---

<sup>3</sup> We tested non-linear effects of distance aspects on subsidiary decision-making autonomy and found no empirical support.

0.05 for cultural distance,  $\beta = -1.02$ ,  $p < 0.05$  for geographic distance, and  $\beta = -1.26$ ,  $p < 0.05$  for economic distance, respectively).

Fourth, Berry et al. (2010) used the Mahalanobis method to calculate cross-national distances, which is scale-invariant and takes into consideration the variance-covariance matrix. We used their database for an alternative measure of distance. We performed a factor analysis on the nine dimensions of Berry et al. (2010) for our sample. A Principal Component Factor analysis (see Appendix D) showed that the nine dimensions are grouped into three different factors with three eigenvalues larger than 1 (i.e., 3.17, 1.94 and 1.50, respectively). Political, knowledge, global, and economic distance between home and host countries are clustered into the first factor. Administrative, financial, and cultural distance are clustered into the second factor. The third factor includes geographic and demographic distance. The Cronbach's alpha of the first four items was 0.78, which satisfies the threshold value of 0.70 (Hair et al., 2006). Thus, we used factor scores from the Principal Component Factor analysis of these four items as a first alternative measure of distance and labeled this *economic distance*. However, the Cronbach's alpha of the second and the third factor are 0.65 and 0.34, respectively. Therefore, cultural, geographic, administrative, demographic and financial distance were taken as separate measures of distance (taking standardized scores of the five distance measures in order to maintain consistency with the economic distance measure).

The results in Panel D show that three of these alternative measures of distance – i.e., administrative, demographic, and financial distance – have non-significant positive effects on subsidiary decision-making autonomy. The other measures – i.e., cultural, geographic and economic distance – have negative effects on subsidiary decision-making autonomy with significant negative findings for geographic and economic distance, respectively (with  $\beta = -1.17$ ,  $p < 0.01$  and  $\beta = -0.04$ ,  $p < 0.05$ , respectively). In summary, these robustness tests confirm our



main regression results reported in Table 2 and offer support to the conclusion that home-host country distance limits the decision-making autonomy of subsidiaries.

## **DISCUSSION AND CONCLUSION**

Our study advances our understanding of how distance is related to subsidiary decision-making autonomy. We build on agency and business network theory, leading us to develop two opposite hypotheses on the relation between distance and subsidiary decision-making autonomy.

Theoretically, arguments go both ways, leading us to ex-ante predict both a positive and a negative association between distance and subsidiary decision-making autonomy. Building on a micro-dataset from 170 subsidiaries in Czech Republic, Hungary, Poland, Romania and the Slovak Republic, our empirical results show that the cultural distance, geographic distance and economic distance – are negatively associated with the degree of decision-making autonomy of a subsidiary. This suggests that as distance between home and host country increases, a tendency for centralization associated with lower levels of subsidiary decision-making can be observed.

We should mention three limitations of our study that could serve as roadmaps for future research. First, the distance measures are based on the average value of each country's score. This assumes country level homogeneity and excludes the possibility that within country variation exists. For example, headquarters and subsidiaries can locate in different regions or cities within home and host countries, respectively (e.g., Asmussen et al., 2013). Whereas we see no reason to expect our results will be different, the explicit control for subnational variation is a logical next step in distance research (Beugelsdijk & Mudambi, 2013), including research on distance and headquarters-subsidiary relations. Second, our study measured distance by using the existing secondary data at macro-level, we did not measure distance by individual perception. This may be important in the headquarters-subsidiary relationship because the individual perception measure may capture the relationship between distance issues and power in MNE

network better than macro-level measures. Ideally, future research could possibly resolve both individual perception measures and macro-level measures by applying in a single study with individual perception measures of distance affecting subsidiary decision-making autonomy, and macro-level measures of distance in a comparative way. Third, although this paper examines the characteristics of parent company, subsidiary, industry and country-context impacting on subsidiary's decision-making autonomy, the aspect of the individual manager is not taken into account – that is personal relationship among managers in MNE network. Personal relationships form a central determinant of success, both within the firms and in its external interactions (Conklin, 2011). Thus, the personal relationships increase the level of trust between the hierarchical levels of management in an organization. Moreover, continual changes in the environment of business may require ongoing renegotiation of contracts – a process that may be most effective in the context of longstanding interpersonal relationships and trust (see Ertug et al., 2013 for a comprehensive review). Taken together, we suggest that subsidiary decision-making autonomy may increase as trust between subsidiary managers and top managers is high because of a deep personal relationship among them. We thus recommend that future work examines this aspect in more detail.

Although our finding on the negative distance role fits the prediction of agency theory, it does not necessarily contradict business network theory. A larger distance to the host country can be associated with the need to be locally responsive (as business network theory suggests) for which high levels of subsidiary decision-making autonomy are required, even when faced with an increased distance between home and host countries. In other words, future research would do well to explore the question how local embeddedness and subsidiary decision-making autonomy affect processes like innovation of which business network theory suggests that subsidiary decision-making autonomy is important.

## REFERENCES

- Ambos, T.C., Andersson, U. and Birkinshaw, J. 2010. What are the consequences of initiative-taking in multinational subsidiaries. *Journal of International Business Studies*, 41: 1099–1118.
- Ambos, B., Asakawa, K. and Ambos, T.C. 2011. A dynamic perspective of subsidiary autonomy. *Global Strategic Journal*, 1: 301–316.
- Andersson, U. and Forsgren, M. 1996. Subsidiary embeddedness and control in the multinational corporation. *International Business Review*, 5: 487–508.
- Andersson, U., Forsgren, M. and Holm, U. 2007. Balancing subsidiary influence in the federative MNC: A business network perspective. *Journal of International Business Studies*, 38: 802–818.
- Andersson, U. and Holm, U. 2010. Introduction and overview. In U. Andersson and U. Holm, (Eds.), *Managing the contemporary multinational: The role of headquarters. New horizons in international business* (pp. 1–29). Cheltenham, UK, Northampton, MA, USA: Edward Elgar.
- Asakawa K. 1996. External-internal linkages and overseas autonomy-control tension: The management dilemma of the Japanese R&D in Europe. *IEEE Transactions on Engineering Management*, 43: 24–32.
- Asakawa, K. 2001. Organizational tension in international R&D management: The case of Japanese firms. *Research Policy*, 30: 735–757.
- Asmussen, C.G., Goerzen, A. and Nielsen, B.B. 2013. Global cities and multinational enterprise location strategy. *Journal of International Business Studies* (forthcoming).
- Aylmer, R.J. 1970. Who makes marketing decisions in the multinational firm? *Journal of Marketing*, 34: 25–30.
- Bartlett, C.A. and Ghoshal, S. 1989. *Managing across borders: The transnational solution*. Boston, MA: Harvard Business School Press.
- Berry, H., Guillén, M.F. and Zhou, N. 2010. An institutional approach to cross-national distance. *Journal of International Business Studies*, 41: 1460–1480.
- Berg, A., Borenzstein, E.R., Sahay, R. and Zettelmayer, J. 1999. *The evolution of output in transition economies—Explaining the differences*. IMF Working Paper, no. 99/73.
- Beugelsdijk, S. 2011. Liability of foreignness and location-specific advantages: Time, space, and relative advantage. In C.G. Asmussen, T. Pedersen, T.M. Devinney and L. Tihanyi, (Eds.), *Dynamics of globalization specific advantages or liabilities of foreignness* (p. 181–210). *Advances in International Management*. Bingley, UK: Emerald Press.
- Beugelsdijk, S. and Mudambi, R. 2013. MNEs as border-crossing multi-location enterprises: The role of discontinuities in geographic space. *Journal of International Business Studies*, 44: 413–426.
- Birkinshaw, J. and Hood, N. 1998. Multinational subsidiary evolution: Capability and charter change in foreign owned subsidiary companies. *Academy of Management Review*, 23: 773–795.
- Birkinshaw, J. and Hood, N. 2000. Characteristics of foreign subsidiaries in industry clusters. *Journal of International Business Studies*, 31: 141–154.
- Birkinshaw, J., Hood, N. and Jonsson, S. 1998. Building firm-specific advantages in multinational corporations: The role of subsidiary initiative. *Strategic Management Journal*, 19: 221–241.
- Björkman, A. and Piekkari, R. 2009. Language and foreign subsidiary control: An empirical test. *Journal of International Management*, 15: 105–117.

- Boyacigiller, N. 1990. The role of expatriates in the management of interdependence, complexity and risk in multinational corporation. *Journal of International Business Studies*, 21: 357–381.
- Brewer, P.A. 2007. Operationalizing psychic distance: A revised approach. *Journal of International Marketing*, 15: 44–66.
- Brooke, M.Z. 1984. *Centralization and autonomy: A study in organization behavior*. London and New York: Holt, Rinehart and Winston.
- Cantwell, J. and Mudambi, R. 2005. MNE competence-creating subsidiary mandates. *Strategic Management Journal*, 26: 1109–1128.
- CEPII, 2012. *Centre d'études prospectives et d'informations internationales*. <http://www.cepii.fr/anglaisgraph/bdd/baci.htm>, accessed on November 26<sup>th</sup>, 2012.
- Chang, E. and Taylor, M.S. 1999. Control in multinational corporations (MNCs): The case of Korean manufacturing subsidiaries. *Journal of Management*, 25: 541–565.
- Chiao, Y. and Ying, L. 2013. Network effect and subsidiary autonomy in multinational corporations: An investigation of Taiwanese subsidiaries. *International Business Review*, 22: 652–662.
- Ciabuschi, F., Forsgren, M. and Martín, O.M. 2011a. Rationality vs ignorance: The role of MNE headquarters in subsidiaries' innovation processes. *Journal of International Business Studies*, 42: 1–13.
- Conklin, D.W. 2011. *The global environment of business: New paradigms for international management*. Thousand Oaks, California: Sage.
- Djankov, S. and Murrell, P. 2002. Enterprise restructuring in transition: A quantitative survey. *Journal of Economic Literature*, 40: 739–792.
- Dikova, D. 2009. Performance of foreign subsidiaries: Does psychic distance matter? *International Business Review*, 18: 38–49.
- DiMaggio, P.J. and Powell, W.W. 1983. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48: 147–160.
- Dow, D. and Karunaratha, A. 2006. Developing a multidimensional instrument to measure psychic distance stimuli. *Journal of International Business Studies*, 37: 578–602.
- Dunning, J.H. 1993. *Multinational enterprises and the global economy*. Wokingham, UK: Addison-Westley Publishing Company.
- Dunning, J.H. and Lundan, S.M. 2008. *Multinational enterprises and the global economy*. Cheltenham, UK. Northampton, MA, USA: Edward Elgar.
- Edwards, R., Ahmad, A. and Moss, S. 2002. Subsidiary autonomy: The case of multinational subsidiaries in Malaysia. *Journal of International Business Studies*, 33: 183–191.
- Eisenhardt, K.M. 1989. Agency theory: An assessment and review. *Academy of Management Review*, 14: 57–74.
- Ellis, P.D. 2007. Paths to foreign markets: Does distance to market affect firm internationalization? *International Business Review*, 16: 573–593.
- Ellis, P.D. 2008. Does psychic distance moderate the market size-entry sequence relationship? *Journal of International Business Studies*, 39: 351–369.
- Ertug, G., Cuypers, I.R.P., Noorderhaven, N.G. and Bensaou, B.M. 2013. Trust between international joint venture partners: Effects of home countries. *Journal of International Business Studies*, 44: 263–282.
- Evans, J. and Mavondo, F.T. 2002. Psychic distance and organizational performance: An empirical examination of international retailing operations. *Journal of International Business Studies*, 33: 515–532.

- Evans, J., Mavondo, F.T. and Bridson, K. 2008. Psychic distance: Antecedents, retail strategy implications and performance outcomes. *Journal of Marketing*, 16: 32–63.
- Evans, J., Treadgold, A. and Mavondo, F. 2000. Explaining export development through psychic distance. *International Market Review*, 17: 164–168.
- Fenton-O'Creevy, M., Gooderham, P. and Nordhaug, O. 2008. Human resource management in US subsidiaries in Europe and Australia: Centralisation or autonomy? *Journal of International Business Studies*, 39: 151–166.
- Forsgren, M., Holm, U. and Johanson, J. 2005. *Managing the embedded Multinational*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar.
- Forsgren, M. and Holm, U. 2010. MNC headquarters' role in subsidiaries' value-creating activities: A problem of rationality and radical uncertainty. *Scandinavian Journal of Management*, 26: 421–430.
- Forsgren, M. 2008. *Theories of multinational firm: A multinational creature in the global economy*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar.
- Gabrisch, H. and Hölscher, J. 2006. *The successes and failures of economic transition*. Hundsmill, Basingstoke, New York: Palgrave Macmillan.
- Gammelgaard, J., McDonald, F., Stephan, A., Tüselmann, H. and Dörrenbächer, C. 2012a. The impact of increases in subsidiary autonomy and network relationships on performance. *International Business Review*, 21: 1158–1172.
- Gammelgaard, J., McDonald, F., Stephan, A., Tüselmann, H. and Dörrenbächer, C. 2012b. Characteristics of low-autonomy foreign subsidiaries: Value-chains, staffing, and intra-organizational relationships. *Journal of International Business and Economy*, 13: 65–95.
- Garnier, G.H. 1982. Context and decision making autonomy in the foreign affiliates of US multinational corporations. *Academy of Management Journal*, 25: 893–908.
- Gates, S.R. and Egelhoff, W.G. 1986. Centralization in headquarters-subsidiary relationships. *Journal of International Business Studies*, 17: 71–92.
- Ghoshal, S. and Nohria, N. 1989. Internal differentiation within the multinational corporation. *Strategic Management Journal*, 10: 323–337.
- Giroud, A., Jindra, B. and Marek, P. 2012. Heterogeneous FDI in transition economies – A novel approach to access the development impact of backward linkages. *World Development*, 40: 2206–2220.
- Gomez-Mejia, L.R. and Balkin, D.B. 1992. Determinants of faculty pay: An agency theory perspective. *Academy of Management Journal*, 35: 921–955.
- Gregersen, H.B. and Hite, J.M. 1996. Expatriate performance appraisal in U.S. multinational firms. *Journal of International Business Studies*, 27: 711–738.
- Håkanson, L. and Ambos, B. 2010. The antecedents of psychic distance. *Journal of International Management*, 16: 195–210.
- Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. and Tatham, R.L. 2006. *Multivariate Data Analysis* (6<sup>th</sup> edition). Upper Saddle River, NJ: Pearson Prentice Hall.
- Hedlund, G. 1981. Autonomy of subsidiaries and formalization of headquarters-subsidiary relationships in Swedish MNE's. In L. Otterbeck, (Ed.), *The Management of Headquarters-Subsidiary Relations in Multinational Corporations* (pp. 25–78). Gower: Aldershot.
- Hymer, S. 1976. *The international operations of national firms: A study of foreign direct investment*. Cambridge, MA: MIT Press.
- Hofstede, G.H. 1980. *Culture consequences: International differences in work-related values*, London: Sage Publications.

- House, R.J., Hanges, P.J., Javidan, M., Dorfman, P.W. and Gupta, V. 2004. *Leadership, culture, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage.
- Jensen, M.C. and Meckling, W.H. 1976 . Can the corporation survive? Center for Research in Government Policy and Business Working Paper no. PPS 76-4, University of Rochester, Rochester, New York.
- Jindra, B. 2006. Theories and review of the latest research on the effects of FDI in CEE. In J. Stephan, (Ed.), *Technology transfer via foreign direct investment in Central and Eastern Europe – Theory, method of research – Empirical evidence* (pp. 3–74). Houndsmill Basingstoke Palgrave: MacMillan.
- Jindra, B., Giroud, A. and Scott-Kennel, J. 2009. Subsidiary roles, vertical linkages and economic development: Lessons from transition economies. *Journal of World Business*, 44: 167–179.
- Johanson, J. and Vahlne, J. 1977. The internationalization process of the firm: A model of knowledge development and increasing market commitments. *Journal of International Business Studies*, 8: 23–32.
- Johanson, J. and Wiedersheim-Paul, F. 1975. The internationalization of the firm: Four Swedish cases. *Journal of Management Studies*, 12: 305–322.
- Johnston, S. and Menguc, B. 2007. Subsidiary and the level of subsidiary autonomy in the multinational corporation: A quadratic model investigation of Australian subsidiaries. *Journal of International Business Studies*, 28: 787–801.
- Kalotay, K. and Hunya, G. 2000. Privatization and foreign direct investment in Central and Eastern Europe. *Transnational Corporations*, 9: 39–66.
- Katrin, M., Urmas, V. and Helena, H. 2005. The role of country, industry and firm specific effects on the autonomy of multinational corporation's subsidiary in Central and East European countries. *Journal of Economics and Business*, 8: 101–122.
- Kogut, B. and Singh, H. 1988. The effect of national culture on the choice of entry mode. *Journal of International Business Studies*, 19: 411–432.
- Luo, Y. 2006. Autonomy of foreign R&D units in an emerging market: An information processing perspective. *Management International Review*, 46: 349–378.
- Meyer, K. 1998. *Direct Investment in Economies in Transition: Making Central European Industries Competitive*. Cheltenham: Edward Elgar.
- Meyer, K.E. and Peng, M.W. 2005. Probing theoretically into CEE: transactions, resources, and institutions. *Journal of International Business Studies*, 36: 600–621.
- NACE Rev.2. 2008. *Statistical classification of economic activities in the European Community*. Eurostat European Commission.
- Nachum, L. and Zaheer, S. 2005. The persistence of distance? The impact of technology on MNE motivations for foreign investment. *Strategic Management Journal*, 26: 747–767.
- Nell, P.C., Ambos, B. and Schlegelmilch, B.B. 2011. The MNC as an externally embedded organization: An investigation of embeddedness overlap in local subsidiary networks. *Journal of World Business*, 46: 497–505.
- Neter, J., Wasserman, W. and Kutner, M.H. 1985. *Applied linear statistical models*. Homewood, Illinois, USA: Irwin.
- Nohria, N. and Ghoshal, S. 1994. Differentiated fit and shared values, *Strategic Management Journal*, 15: 491–502.
- Nordstrom, K.A. and Vahlne, J.-E. 1994. Is the globe shrinking? Psychic distance and the establishment of Swedish sales subsidiaries during the last 100 years. In M. Landeck, (Ed.), *International trade: Regional and global issues* (pp.41–56), New York, NY: St Martin's Press.

- O'Donnell, S.W. 2000. Managing foreign subsidiaries: Agents of headquarters, or an interdependent network? *Strategic Management Journal*, 21: 525–548.
- O'Grady, S. and Lane, H.W. 1996. The psychic distance paradox. *Journal of International Business Studies*, 10: 309–330.
- Oliver, C. 1997. Sustainable competitive advantage: Combining institutional and resource-based views. *Strategic Management Journal*, 18, 697–712.
- Phene, A. and Almeida, P. 2008. Innovation in multinational subsidiaries: The role of knowledge assimilation and subsidiary capabilities. *Journal of International Business Studies*, 39: 901–919.
- Prahalad, C.K. and Doz, Y.L. 1987. *The multinational mission: Balancing local demands and global vision*. New York: Free Press.
- Prime, N., Obadia, C. and Vida, I. 2009. Psychic distance in exporter-importer relationships: A grounded theory approach. *International Business Review*, 18: 184–198.
- Rabbiosi, L. 2011. Subsidiary roles and reverse knowledge transfer: An investigation of the effects of coordination mechanisms. *Journal of International Management*, 17: 97–113.
- Resmini, L. 2000. The determinants of foreign direct investment in the CEECs: New evidence from sectoral patterns. *Economics of Transition*, 8: 665–689.
- Rugraff, E. 2006. Export-oriented multinationals and the quality of international specialisation in Central European countries. *The European Journal of Development Research*, 18: 642–660.
- Roth, K. and Morrison, A.J. 1992. Implementing global strategy: Characteristics of global subsidiary mandates. *Journal of International Business Studies*, 23: 715–735.
- Roth, K. and O'Donnell, S. 1996. Foreign subsidiary compensation strategy: An agency theory perspective. *Academy of Management Journal*, 39: 678–703.
- Schadler, S., Ashoka, M., Abiad, A. and Leigh, D. 2006. *Growth in Central and Eastern European countries of the European Union*. Washington, DC: International Monetary Fund.
- Schüler-Zhou, Y. and Schüller, M. 2013. An empirical study of Chinese subsidiaries' decision-making autonomy in Germany. *Asia Business and Management*, 13: 1–30.
- Simões, V.C., Biscaya, R. and Nevado, P. 2002. Subsidiary decision-making autonomy: Competences, integration and local responsiveness. In S.M. Lundan, (Ed.), *Network Knowledge in International Business* (pp. 137–166). Cheltenham (UK): Edward Elgar.
- Slangen, A.H.L. and Beugelsdijk, S. 2010. The impact of institutional hazards on foreign multinational activity: A contingency approach. *Journal of International Business Studies*, 41: 980–995.
- Slangen, A.H.L. and Hennart, J.-F. 2008. Do multinationals really prefer to enter culturally distant countries through green-fields rather than through acquisitions? The role of parent experience and subsidiary autonomy. *Journal of International Business Studies*, 39: 472–490.
- Slangen, A.H.L. 2011. A communication-based theory of the choice between greenfield and acquisition entry. *Journal of Management Studies*, 8: 1699–1726.
- Stenphan, J. and Jindra, B. 2005. Knowledge transfer to MNE subsidiaries based in Central East Europe – Integrating knowledge-based and organizational perspective. *Journal of East-West Economics and Business*, 3: 11–18.
- Stottinger, B. and Schlegelmilch, B.B. 1998. Explaining export development through psychic distance: Enlightening or elusive? *International Marketing Review*, 15: 357–372.
- Taggart, J.H. 1997. Autonomy and procedural justice: A framework for evaluating subsidiary strategy. *Journal of International Business Studies*, 28: 51–76.

- Taggart, J.H. and Hood, N. 1999. Determinants of autonomy in multinational corporation subsidiaries. *European Management Journal*, 17: 226–236.
- Takeuchi, R., Shay, J.P. and Li, J. 2008. When does decision autonomy increase expatriate managers' adjustment? An empirical test. *Academy of Management Journal*, 51: 45–60.
- Un, C.A. 2011. Research notes and commentaries – The advantage of foreignness innovation. *Strategic Management Journal*, 32: 1232–1242.
- UNCTAD. 2002. *World Investment Report 2002: Transnational Corporations and Export Competitiveness*. United Nation's Conference on Trade and Competitiveness, New York and Geneva.
- UNCTAD. 2005. *World Investment Report 2005: Transnational corporations and the internationalization of R&D*. United Nation's Conference on Trade and Competitiveness, New York and Geneva.
- Vachani, S. 1999. Global diversification's effect on multinational subsidiaries' autonomy. *International Business Review*, 8: 535–560.
- Zaheer S. 1995. Overcoming the liability of foreignness. *Academy of Management Journal*, 38: 341–363.
- Whitelock, J. and Jobber, D. 2004. An evaluation of external factors in the decision of UK industrial firms to enter a new non-domestic market: An exploratory study. *European Journal of Marketing*, 38: 1437–1455.
- Williams, S. and van Triest, S. 2009. The impact of corporate and national cultures on decentralization in multinational corporations. *International Business Review*, 18: 156–167.



## APPENDIX

### *A. The correspondent country pairs between home and host countries in the sample*

	Home countries	Host countries	Number of country pairs
1.	Argentina	The Czech Republic	1
2.	Austria	The Czech Republic	4
		Hungary	
		Romania	
		The Slovak Republic	
3.	Belgium	Hungary	3
		Poland	
		Romania	
4.	The Czech Republic	Poland	2
		The Slovak Republic	
5.	Denmark	The Czech Republic	4
		Hungary	
		Poland	
		The Slovak Republic	
6.	Finland	Poland	1
7.	France	Hungary	4
		Poland	
		Romania	
		The Slovak Republic	
8.	Germany	The Czech Republic	5
		Hungary	
		Poland	
		Romania	
		The Slovak Republic	
9.	Greece	Romania	1
10.	Italy	Poland	2
		Romania	
11.	Japan	Poland	1
12.	Luxumburg	Poland	2
		Romania	
13.	Netherlands	The Czech Republic	3
		Poland	
		The Slovak Republic	
14.	Norway	Poland	1
15.	Poland	The Slovak Republic	1
16.	The Slovak Republic	The Czech Republic	1
17.	Spain	The Czech Republic	4
		Hungary	
		Poland	

	Home countries	Host countries	Number of country pairs
		Romania	
18.	Sweden	The Czech Republic	2
		Poland	
19.	Switzerland	The Czech Republic	3
		Poland	
		Romania	
20.	UK	The Czech Republic	5
		Hungary	
		Poland	
		Romania	
		The Slovak Republic	
21.	US	The Czech Republic	5
		Hungary	
		Poland	
		Romania	
		The Slovak Republic	
<b>Total of country pairs</b>			<b>55</b>

*B. Measure of dependent variable: Subsidiary decision-making autonomy (taken from the questionnaire)*

Please indicate to which extent independent decisions in the following business activities are currently taken by your enterprise or your headquarters. Please choose between four-point scales: Decisions are taken 1) only by your headquarters, 2) mainly by your headquarters, 3) mainly by your enterprise or 4) only by your enterprise.

	Only by your headquarters	Mainly by your headquarters	Mainly by your enterprise	Only by your enterprise
Finance and investment				
Strategic management				
Operational management				
Marketing and market research				
Purchases and supplies				
Distribution and sales				
Research and innovation				

*C. Rotated factor loadings of the seven dimensions of Dow and Karunaratna (2006) – Principal component factor method.*

<b>Variable</b>	<b>Factor 1</b>	<b>Factor 2</b>
Political system distance	<b>0.786</b>	0.031
Industrial development distance	<b>0.875</b>	-0.108
Educational distance	<b>0.790</b>	0.041
Religious distance	0.165	<b>0.817</b>
Language distance	-0.413	<b>0.513</b>
Cultural distance	-0.503	<b>0.536</b>
Geographic distance (log)	0.015	<b>0.686</b>

*D. Rotated factor loadings (pattern matrix) of the seven dimensions of psychic distance of Berry, Guillén and Zhou (2010) (extracted from the Stata output) – Principal component factor method.*

<b>Variable</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>
Geographic distance	-0.157	-0.042	<b>0.889</b>
Demographic distance	0.342	0.333	<b>0.623</b>
Administrative distance	0.009	<b>0.703</b>	0.247
Financial distance	0.054	<b>0.934</b>	-0.009
Cultural distance	0.507	<b>-0.600</b>	0.336
Political system distance	<b>0.612</b>	0.366	0.593
Knowledge distance	<b>0.928</b>	-0.158	-0.076
Global distance	<b>0.948</b>	0.055	0.068
Economic distance	<b>0.810</b>	0.218	-0.053

*E. An overview of definitions and measures for decision-making autonomy (DMA)*

	<b>Author(-s)</b>	<b>Word(-s) used</b>	<b>DMA definition</b>	<b>DMA measure</b>
1.	Aylmer (1970)	Decision-making autonomy	Autonomy was defined as the extent of local management's dependence for marketing decisions. Degree of local management autonomy classified according to type of local marketing decision.	The degree of local autonomy in making marketing decisions was described for decisions concerning product design, advertising approach, retail price, and distribution. The field observations were categorized in whether regard to local management (1) retained primary authority; (2) shared this authority with other organizational levels, such as the regional office or headquarters; or (3) primary authority rested elsewhere.
2.	Garnier (1982)	Decision-making autonomy	Autonomy is an element of the structure of an organization. It is related to the division of the decision making authority between a local unit and an outside organization that controls it. However, neither the structure nor, hence, the autonomy is an end in itself.	Autonomy is measured at the level of the individual decision and expressed in the form of a global index of autonomy (GIA). The GIA ranges from 0 to 100.
3.	Gate & Egelhoff (1986)	Centralization versus decentralization	The same definition of Garnier (1982).	The degree of centralization was determined for 22 important decisions. The individual decision scores were averaged together to produce three separate centralization scales: one for marketing decisions, a second for manufacturing decisions, and a third for financial decisions (levels of centralization were ranked: 1= within the subsidiary; 2=within the international division, product division or geographic region headquarters; 3=above the division level and within the corporate headquarters).
4.	Roth & Morrison (1992)	Decision-making autonomy	Subsidiary autonomy was mentioned as a global subsidiary mandate. As the subsidiary takes a dominant role in managing the resource flows associated with a particular component, product, or product line, to pursue a global strategy, the subsidiary remains part of an interdependent network.	A global subsidiary mandate was measured by that executives were asked to indicate how characteristic four statements were in describing the strategy of their strategy. A seven-point scale was used (1=not at all characteristic and 7=extremely characteristic). A global subsidiary mandate index was then created by summing the responses for the four items.
5.	Taggart (1997)	Decision-making autonomy	Autonomy may be regarded as a decision-based process that through bargaining between centre and periphery in an organization.	Six decisions were measured on a four-point scale (1=decided mainly by headquarter without consulting subsidiary; 4=decided mainly by subsidiary without consulting headquarter).

	Author(-s)	Word(-s) used	DMA definition	DMA measure
6.	Vachani (1999)	Autonomy	The level of autonomy enjoyed by the manager of their typical foreign-country unit over the decision-making process and outcome for fifteen managerial decisions. These decisions spanned marketing, human resources, manufacturing and finance.	The level of subsidiary autonomy was measured by using the questionnaire indicating that the manager of foreign subsidiary enjoyed over the decision-making process and outcome for 15 managerial decisions on a seven-point scale.
7.	Taggart & Hood (1999)	Decision-making autonomy	Decisions may be taken by the parent with or without participation by the subsidiary (i.e, parent-oriented), or they may be taken by the subsidiary with or without participation of corporate headquarter (i.e, subsidiary-oriented).	The extent to which the subsidiary can make decisions about the markets it serves and decisions about the product range it supplies. For each of these, four classifications (1=decided mainly by the parent company without consulting with or seeking the advice of the subsidiary; 4=decided mainly by the subsidiary without consulting the parent).
8.	Birkinshaw & Hood (2000)	Decision-making autonomy.	Based on the definition of Roth and Morrison (1992).	Respondents were asked to state the level that had the authority to make the 3 decisions with 3 scales (where 1 = made by corporate headquarter, 3=within subsidiary).
9.	O'Donnell (2000)	Decision-making autonomy	Autonomy is the degree to which the foreign subsidiary of the MNE has strategic and operational decision – making authority. Subsidiary autonomy was defined as the extent to which the foreign subsidiary has operational and strategic decision-making authority across its entire product line.	For the overall business activities of the subsidiary, indicate the extent of headquarters and/or subsidiary influence on the 16 decisions (1=headquarters almost always decides, 4=subsidiary almost always decides).
10.	Edward et al. (2002)	Decision-making autonomy	Autonomy is the degree which decisions pertaining to each activity are undertaken by the subsidiary.  Autonomy is contingent upon whether the MNE operates a centralized or decentralized structure. The three types of organization: decentralized federations, coordinated federations or centralized hubs.	Subsidiary autonomy was measured by interviewing subsidiary managers through response with a list of 17 business activities and asked to rate the degree to which decisions pertaining to each activity are undertaken by the subsidiary or parent company (1=denotes subsidiary only, 5=denotes parent only).
11.	Katrin et al. (2005)	Decision-making	Their study based on the definition of Taggart (1997).	Which business functions are being undertaken: a) on your own only, (b) mainly on your own, (c) mainly by your foreign owner, or (d) by your foreign owner only? Using 13 business functions.
12.	Johnston & Menguc (2007)	Autonomy	Subsidiary autonomy is likely to be primarily associated with the subsidiary's superiority over HQ with regard to knowledge of the host environment, the subsidiary's transformation process and assorted marketing,	How much influence head office would have on the following nine decisions. Individual scale items were summed to create an aggregate measure of the level of subsidiary autonomy. The scale of each question ran from (totally headquarter decision) 1

	Author(-s)	Word(-s) used	DMA definition	DMA measure
			procurement, distribution and other issues.	to 5 (totally subsidiary decision). Thus, the overall score ranges from 9 to 45.
13.	Slangen & Hennart (2008)	Autonomy	The degree of subsidiary autonomy is the extent to which a subsidiary's management team is free to run the venture at its own discretion. They deliberately asked for the planned rather than the realized level of autonomy for each activity because the planned level better reflects parents' strategic intentions.	How much autonomy the respondent's management team planned to give the subsidiary at the time it was established or acquired. The authors asked subsidiaries to do so for 12 different business activities on five-point Likert-type scales.
14.	Takeuchi et al. (2008)	Autonomy	Based on the study of Bartlett and Ghoshal (1989).	The level of decision autonomy that the expatriate managers possess at the local subsidiary was measured by three items (1=headquarters decides alone, 5=subsidiaries decides alone).
15.	Jindra et al. (2009)	Autonomy	This study did not mention the particular definition.	Subsidiaries' autonomy by asking subsidiaries to indicate which of the following business functions are being undertaken: (a) on your own only, (b) mainly on your own, (c) mainly by your foreign owner, or (d) by your foreign owner only.
16.	Ambos et al. (2010)	Autonomy	Using the definition of Roth and Morrison (1992).	How much autonomy does the subsidiary have in terms of making three decisions? Using a five Likert-scale.
17.	Ambos et al. (2011)	Autonomy	Based on the definition of Roth and Morrison (1992).	Autonomy was measured on a nine-item scale with five-point scales (1=your subsidiary decides, 5=the parent decides)
18.	Nell et al. (2011)	Autonomy	This study did not mention the definition, autonomy is included as a control variable in the model.	The scale is built on four items with 5-point scale from 1 (subsidiary decides 100%) to 5 (parent decides 100%).
19.	Rabbiosi (2011)	Autonomy	Based on Ghoshal and Nohria's study (1989).	The four strategic decisions were assessed with five scales. The final measure of subsidiary autonomy is the average of responses to the four items.
20.	Slangen (2011)	Autonomy	The same definition of Slangen and Hennart (2008).	The planned level of subsidiary autonomy by asking parent executives to indicate on 5-point Likert-type scales how much autonomy their management team planned to give the focal subsidiary in 12 functional areas at the time it was established or acquired (1=very little autonomy intended' through 5=very much autonomy intended).

	<b>Author(-s)</b>	<b>Word(-s) used</b>	<b>DMA definition</b>	<b>DMA measure</b>
21.	Gammelgaard et al. (2012a, b)	Decision-making authority	Based on the study of Birkinshaw and Hood (2000) and Taggart and Hood (1999).	For the strategic and operational decision making items, respondents were asked to assess the extent of their decision-making autonomy on a scale from one (exclusively by headquarters) to five (exclusively by the subsidiary).
22.	Chiao & Ying (2013)	Autonomy	Based on the study of Garnier (1982), Gates & Egelhoff (1986), Taggart & Hood (1999), and Vachani (1999).	Subsidiary autonomy is measured by five items, representing decision-making autonomy in five areas: business strategy, pricing strategy, marketing strategy, personal policy, and financial strategy into five.

Table 1. Descriptive statistics and correlations (n = 170)<sup>a</sup>

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Decision-making autonomy	19.2	4.49															
2. R&D intensity (%)	0.10	0.20	-0.06														
3. Size of subsidiary (log)	4.62	1.25	-0.06	-0.30**													
4. Age of subsidiary (log)	2.43	0.58	-0.01	-0.12	0.15*												
5. Parent's entry mode (greenfield)	0.61	0.48	-0.20**	0.06	-0.06	0.20**											
6. Parent's motive to access foreign market	2.78	1.12	0.01	0.08	-0.06	0.01	-0.01										
7. Parent's motive to access operational efficiency	0.18	0.99	-0.26**	-0.02	0.22**	0.11	0.15*	0.08									
8. Parent's motive to access location-bound knowledge and technology	2.30	1.05	-0.01	0.08	0.02	-0.04	-0.03	0.07	0.15*								
9. Parent's motive to access local asset	2.31	1.12	-0.01	0.02	-0.06	0.09	-0.18*	0.33**	0.07	0.25**							
10. Parent's motive to access local natural resource	1.72	1.05	-0.07	-0.00	-0.08	0.06	0.02	0.09	0.05	0.10	0.06						
11. Home country dummy (developed country)	0.92	0.25	0.09	0.01	0.01	-0.06	0.11	-0.09	-0.09	-0.11	-0.04	-0.04					
12. Economic distance (factor scores)	-0.15	0.82	-0.09	-0.11	-0.01	-0.01	-0.02	-0.10	0.07	0.18*	0.11	-0.05	-0.45**				
13. Language distance	-0.02	0.94	0.02	0.02	0.18*	-0.08	-0.05	-0.10	0.03	0.08	0.00	-0.07	0.10	0.13			
14. Religious distance	-0.05	0.76	0.03	-0.08	-0.01	-0.23**	0.04	0.05	-0.10	-0.20**	-0.09	0.01	0.08	-0.03	0.04		
15. Cultural distance	0.01	1.01	-0.11	0.09	0.01	-0.04	0.03	0.11	0.02	-0.01	0.06	0.09	0.18*	-0.37**	0.15*	0.26**	
16. Geographic distance	0.08	0.93	-0.04	0.18	0.06	-0.05	-0.11	0.05	-0.12	-0.14	-0.09	0.01	-0.05	-0.41**	0.18*	0.22**	0.18*

\*p<0.05; \*\*p<0.01. <sup>a</sup>All seven industry dummies are included and their correlation is maximum 0.28.



Table 2. The effect of distance on subsidiary decision-making autonomy (OLS estimates)<sup>a</sup>

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Constant</b>	21.5 (2.83)**	20.6 (2.89)**	20.3 (2.94)**	19.9 (2.95)**	20.8 (2.88)**	20.7 (2.96)**	21.6 (3.07)**
<b>Control variables</b>							
R&D intensity (%)	-2.00 (1.79)	-2.19 (1.79)	-2.06 (1.80)	-1.99 (1.79)	-1.57 (1.85)	-2.22 (1.81)	-1.30 (1.86)
Size of subsidiary (log)	-0.14 (0.30)	-0.22 (0.31)	-2.06 (0.30)	-0.19 (0.30)	-0.14 (0.31)	-0.20 (0.30)	-0.22 (0.31)
Age of subsidiary (log)	0.47 (0.61)	0.54 (0.61)	0.60 (0.64)	0.43 (0.62)	0.53 (0.61)	0.52 (0.61)	0.64 (0.64)
Parent's entry mode (greenfield)	-1.90 (0.75)*	-1.85 (0.75)*	-1.90 (0.76)*	-1.84 (0.75)*	-0.97 (0.39)*	-1.84 (0.75)*	-1.98 (0.76)**
Parent's motive to access foreign market	0.17 (0.33)	0.23 (0.33)	0.20 (0.33)	0.27 (0.33)	0.03 (0.35)	0.25 (0.33)	0.18 (0.34)
Parent's motive to access operational efficiency	-0.99 (0.38)*	-0.91 (0.39)*	-0.89 (0.39)*	-0.92 (0.39)*	-0.27 (0.35)*	-0.97 (0.39)*	-0.92 (0.39)*
Parent's motive to access location-bound knowledge and technology	0.04 (0.34)	0.09 (0.35)	0.11 (0.35)	0.08 (0.35)	0.03 (0.35)	0.12 (0.35)	0.11 (0.35)
Parent's motive to access local asset	-0.26 (0.35)	-0.24 (0.35)	-0.24 (0.35)	-0.18 (0.35)	-0.27 (0.35)	-0.21 (0.35)	-0.09 (0.36)
Parent's motive to access local natural resource	-0.17 (0.34)	-0.15 (0.34)	-0.15 (0.34)	-0.12 (0.34)	-0.13 (0.34)	-0.16 (0.34)	-0.12 (0.34)
Home country dummy (developed country)	0.53 (1.32)	1.23 (1.32)	1.37 (1.33)	1.85 (1.43)	1.04 (1.32)	1.05 (1.46)	0.45 (1.69)
<b>Drivers of distance</b>							
Language distance (standardized)		0.14 (0.37)					0.70 (0.41)
Religious distance (standardized)			0.12 (0.38)				0.74 (0.51)
Cultural distance (standardized)				-0.56 (0.34)			-0.96 (0.39)*
Geographic distance (standardized)					-0.45 (0.39)		-1.01 (0.47)*
Economic distance (factor scores)						-0.19 (0.50)	-1.46 (0.64)*
n	170	170	170	170	170	170	170
The number of country pairs	55	55	55	55	55	55	55
F-values	2.74	2.80	2.80	2.91	2.92	2.91	2.96
Adjusted R-squared	15.04	15.08	15.08	16.58	15.69	15.09	20.51
P_value	0.002	0.001	0.001	0.000	0.000	0.000	0.000

<sup>a</sup> Standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant.

\*p<0.05; \*\*p<0.01.

Table 3. Robustness analysis of decision-making autonomy<sup>a</sup>

	<i>Original results</i>		<i>Additional tests</i>		
	<i>Panel A:</i> Initial results extracted from Table 2 [Model (7)]	<i>Panel B:</i> DMA measured by factor scores	<i>Panel C:</i> Controlling R&D intensity dummy instead of R&D intensity	<i>Panel D:</i> Controlling time zone difference instead of geographic distance	<i>Panel E:</i> Measuring psychic distance by Berry et al. (2010)'s method
<b>Constant</b>	21.6 (3.07)**	0.76 (0.69)**	21.1 (1.92)**	20.4 (3.00)**	17.6 (3.15)**
<b>Control variables</b>					
R&D dummy	–	–	1.92 (0.47)	–	–
R&D intensity (%)	–1.30 (1.86)	–0.28 (0.42)	–	–0.74 (1.91)	0.59 (1.64)
Size of subsidiary (log)	–0.22 (0.31)	–0.04 (0.07)	–0.25 (0.20)	–0.22 (0.31)	0.01 (0.40)
Age of subsidiary (log)	0.64 (0.64)	0.14 (0.14)	0.14 (0.43)	0.81(0.64)	0.72 (0.75)
Parent's entry mode (greenfield)	–1.98 (0.76)**	–0.45 (0.17)**	–1.31 (0.51)*	–2.12 (0.76)**	–2.73 (0.86)**
Parent's motive to access foreign market	0.18 (0.34)	0.04 (0.07)	–0.00 (0.21)	0.14 (0.34)	0.38 (0.42)
Parent's motive to access operational efficiency	–0.92 (0.39)*	–0.20 (0.08)*	–0.48 (0.24)*	–0.87 (0.39)*	–1.65 (0.51)**
Parent's motive to access location-bound knowledge and technology	0.11 (0.35)	0.02 (0.08)	0.04 (0.24)	0.16 (0.35)	0.26 (0.39)
Parent's motive to access local asset	–0.09 (0.36)	–0.02 (0.08)	0.14 (0.21)	–0.10 (0.35)	–0.06 (0.43)
Parent's motive to access local natural resource	–0.12 (0.34)	–0.02 (0.07)	0.11 (0.25)	–0.10 (0.34)	–0.05 (0.33)
Home country dummy (developed country)	0.45 (1.69)	–0.10 (0.38)	–2.20 (1.12)	0.24 (0.57)	–2.58 (2.07)
<b>Drivers of distance</b>					
Language distance (standardized)	0.70 (0.41)	0.15 (0.09)	0.14 (0.26)	0.54 (0.39)	–
Religious distance (standardized)	0.74 (0.51)	0.16 (0.11)	0.16 (0.30)	0.90 (0.53)	–
Cultural distance (standardized)	–0.96 (0.39)*	–0.21(0.08 )*	–0.45 (0.28)*	–0.84 (0.39)*	–0.58 (0.44)
Geographic distance (standardized)	–1.01 (0.47)*	–0.23 (0.10)*	–0.88 (0.32)**	–1.02 (0.43)*	–1.17 (0.52)**
Economic distance (factor scores)	–1.46 (0.64)*	–0.33 (0.14)*	–1.26 (0.46)**	–1.26 (0.59)*	–0.04 (0.14)*
Administrative distance (standardized)	–	–	–	–	0.05 (0.08)
Demographic distance (standardized)	–	–	–	–	0.11 (0.13)
Financial distance (standardized)	–	–	–	–	0.04 (0.11)
n	170	170	371	170	121
The number of country pairs	55	55	74	55	37
F-values	2.96	1.84	2.34	1.88	2.30
Adjusted R-squared	20.51	20.72	12.87	21.07	21.34
P_value	0.000	0.019	0.000	0.018	0.000

<sup>a</sup>Standard errors are listed in parentheses. All seven industry dummies are included, but none of these are significant. \*p<0.05; \*\*p<0.01.