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When do Distance Effects Become Empirically Observable?: An Investigation in the Context of Headquarters Value Creation for Subsidiaries

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ABSTRACT

Integrating distance research with the behavioral strategy literature on MNC headquarters-subsidiary relations, this paper explores how the distance between headquarters and subsidiaries relates to value added by the headquarters. We show for 124 manufacturing subsidiaries in Europe that, on average, distance is unrelated to value added by headquarters but that this effect is contingent upon the extent to which the subsidiary is locally embedded. Only after a certain threshold level of subsidiary embeddedness, distance is negatively related to headquarters value added. This effect is more pronounced for cultural, economic, and administrative distances than for pure geographic distance, highlighting the critical role of contextual variation for MNCs.

Keywords: Multinational corporations, distance, headquarters-subsidiary relationships, headquarters value added, subsidiary embeddedness, behavioral approach

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1. Introduction

Multinational corporations' (MNCs') headquarters are constantly under pressure to add value to the MNC and to create "parenting advantage" (Goold and Campbell, 2002; Nell and Ambos, 2013; Ciabuschi et al., 2011; Dellestrand and Kappen, 2012; Mudambi, 2011). For individual subsidiaries, parenting advantage means that their headquarters' influence on them leads to better performance than that which the subsidiary could have achieved as an independent, standalone entity (Campbell, Goold, and Alexander 1995; Goold et al., 1998). In the spatially dispersed MNC, the quest for such value creation by headquarters is not a trivial undertaking (Dellestrand and Kappen, 2012; Ciabuschi et al., 2011; Nell and Ambos, 2013). The very fact that MNC headquarters must manage affiliates over potentially large geographic distances and across diverse contexts creates unique challenges (Ambos and Ambos, 2009; Kostova and Zaheer, 1999; Ghemawat, 2001, 2011). In such settings, MNCs need to be able to manage distance-induced inefficiencies (Hymer, 1976; Kogut and Zander, 1992; Zaheer, 1995).

To date, we have little knowledge of how different types of distance relate to the value that headquarters create for their subsidiaries, and potential contingencies affecting this relationship (Dellestrand and Kappen, 2012; Hoenen and Kostova, 2015). There are two views on this question. In the classic view of the MNC (Hymer, 1976; Kogut and Zander, 1992), MNCs develop strategies to reduce the costs of managing across larger distances. For example, MNCs can avoid geographic overstretch by focusing on their home regions only (Rugman, 2005) or by internationalizing in a careful, stepwise way to proximate countries (Johanson and Vahlne, 2009). MNCs may establish intermediate headquarters (such as regional headquarters) to effectively reduce the distance between the subsidiary and the next-level de facto headquarters (Wolf and Egelhoff, 2002; Hoenen, Nell and Ambos, 2014). From this perspective, one could expect that, empirically, distance is not related to headquarters value added for a set of randomly chosen headquarters-subsidiary dyads because MNCs can assess the costs of distance properly and can, therefore, avoid them (e.g., limit the degree of internationalization) or implement effective countermeasures (e.g., implement regional headquarters that "reduce" the distance to the subsidiary). In

fact, there is some empirical support for this claim. For example, Dellestrand and Kappen (2012) find that various distance measures between headquarters and a subsidiary do not significantly affect headquarters' resource allocation to specific subsidiaries.

On the other hand, behavioral strategy research (Foss and Lindenberg, 2013; Powell, Lovallo, and Fox, 2011; Maitland and Sammartino, 2015) emphasizes how decision making under uncertainty – such as internationalizing to distant countries – leads to various biases resulting in an underestimation of the costs of managing across larger distances. Managing across large distances is associated with additional costs related to increased travel time, and communication and coordination challenges (Ghemawat, 2001; Slangen, 2011, 2016; Zaheer et al., 2012). There is indirect empirical support for the claim that distance reduces headquarters value creation. For example, Monteiro et al. (2008) find a negative effect of geographic distance on knowledge flowing from headquarters to subsidiaries. Parmigiani and Holloway (2011) report a negative relationship between distance from the headquarters and subsidiary capability development very similar to Giroud's (2012) findings that increased travel time between headquarters and manufacturing plants is negatively related to plant-level investments and productivity developments. As predicted by the behavioral view of the MNC, firms tend to underestimate the costs associated with internationalizing to distant countries (Dibbern et al., 2008; Larsen, Manning, and Pedersen, 2013)

Combining insights from the international management literature on headquarters' roles (Bartlett and Ghoshal, 1989; Dellestrand and Kappen, 2012; Nell and Ambos, 2013) with that of distance research (Ghemawat, 2001; Berry et al. 2010; Beugelsdijk et al., 2010; Beugelsdijk and Mudambi, 2013), we investigate headquarters-subsidiary distance and how it relates to the value that the headquarters adds to the subsidiary. Specifically, we investigate the relationship between headquarters value added and different types of distance, as specified in the CAGE framework—cultural, administrative, geographic, and economic distance (Ghemawat, 2001), and the contingencies that influence the effects of distance because they make biased decision-making more likely or inhibit the implementation of effective remedies of distance-induced inefficiencies. We advance distance research by bringing in a behavioral perspective,

which allows us to theorize under what conditions distance may complicate decision-making and reduce headquarters value added (Larsen et al., 2013; Maitland and Sammartino, 2015, 2015a). Specifically, we focus on a key aspect of the headquarters-subsidiary relationship, namely subsidiaries' local embeddedness (Andersson et al., 2002; Kramer and Diez, 2012) as a contingency. We theorize that high levels of subsidiaries' local embeddedness create additional complexities and uncertainties that make negative distance effects empirically observable. The central hypothesis tested in this study is whether local embeddedness moderates the relationship between distance and headquarters value added.

We test our hypothesis with an original dataset of 124 headquarters-subsidiary dyads. Our subsidiaries are manufacturing subsidiaries located in Europe whose headquarters are defined as the units to which the subsidiaries have their most important reporting line. That is, we integrate corporate, divisional, and regional headquarters in our study and, thus, consider that for many subsidiaries the most important "parent" is the more immediate headquarters—such as a regional headquarters—instead of the corporate headquarters (Goold and Campbell, 2002). Using an elaborate operationalization of the different distance dimensions in the CAGE framework and applying the latest standards to measuring distance (Mahalanobis distance), we show that we must make a critical distinction between geographic and contextual distance, with the latter consisting of cultural, administrative, and economic distance. We find that, on average, neither geographic distance nor contextual distance matters for headquarters value added but that subsidiary embeddedness moderates this relationship. Distance effects on headquarters value added are observable only when the subsidiaries are strongly locally embedded. We find that these negative distance effects are more relevant for contextual distance than for geographic distance.

Our contribution to international management research is twofold. First, we extend the literature on the roles and functions of headquarters in the MNC. The contemporary view is that MNC headquarters are challenged in highly complex and externally embedded organizations (Andersson et al., 2007). We extend this view to show that the value-adding function of headquarters is relatively immune to distance. MNCs are generally able to overcome distance, a finding in line with the classic view of the MNC

suggesting that MNCs exist exactly because of their superior ability to manage distances (Kogut and Zander, 1991). What is new is our finding that value added by headquarters is challenged by distance when the subsidiary is strongly locally embedded. This effect is particularly relevant for contextual distance. We interpret the extent of subsidiary local embeddedness as an issue that creates additional complexities and uncertainties which, in turn, make it less likely that headquarters clearly identify distance-induced inefficiencies and their remedies. Therefore, headquarters are likely to refrain from taking action against distance-induced inefficiencies. This way we contribute to the growing literature on the behavioral aspects of global strategy (Maitland and Sammartino, 2015, 2015a; Larsen et. al., 2013; Kostova, Nell, and Hoenen, 2016).

Second, with our fine-grained treatment and analysis of different distance dimensions, we contribute to distance research, specifically the CAGE framework (Ghemawat, 2001). Our contributions are both theoretical and empirical. By highlighting the contingencies of distance effects, we improve our understanding of the mechanisms and effects of different types of distance (Ghemawat, 2001; Berry et al., 2010; Ceci and Prencipe, 2013; Hutzschenreuter et al., 2014; Zaheer et al., 2012). Empirically, we show for all country pairs in the world that the CAGE framework collapses to a two-factor structure that separates geographic differences (the "G") from contextual variation (the "C," "A," and "E"). This novel, stylized fact contributes to distance research by demonstrating that there are essentially just two distance dimensions (geographic and contextual), a distinction that is also grounded in the critical conceptual difference between geographic distance and border effects.

2. Theory and hypothesis

2.1 Management of distance

Scholars have described international management as management of distance (Zaheer et al., 2012). Traditionally posited in terms of geographic distance only, contemporary research conceptualizes distance as a multidimensional construct (Berry et al., 2010; Ghemawat, 2001; Dow and Karunaratna, 2006). When coordination and communication take place across cultural, administrative, geographic, and

economic distances (CAGE; Ghemawat 2011, 2001), inefficiencies occur. For example, increased geographic distance is associated with higher communication and coordination costs because of a lack of overlap in office hours (because of time zone differences) and increased travel time (McCann, 2011; Slangen, 2016). Geographic distance between headquarters and subsidiaries also makes coordination more difficult because it reduces face-to-face interaction and it is likely to increase uncertainty and decrease trust in the dyadic relationship (Etzioni and Etzioni, 1999). Both relational uncertainty and trust are variables that are conducive to coordination and cooperation and, thus, to headquarters' value-adding processes.

Whereas geographic distance effects also occur in the domestic setting when headquarters of large multi-unit firms interact with their units in different locations, MNCs – in addition - deal with cultural, administrative, and economic differences (Ghemawat, 2001). These contextual changes are caused by border effects and are also associated with higher communication and coordination costs. These costs stem primarily from cross-border differences in (the quality of) rules and regulations, cultural differences, or differences in the level of welfare and associated consumer preferences. Different rules and regulations increase the likelihood that headquarters managers fail to adapt their value-creating initiatives to the subsidiary context. Similarly, cultural differences are based on differences in norms, values, and beliefs across different countries (Hofstede, 2001; Smith, 1992). Such differences not only influence the behavior of individual managers but also influence the perceptions that these managers have of others (Kostova, Nell, and Hoenen, 2016). The correct interpretation of information is thus more arduous and it is, therefore, likely that distance leads to communication issues or mutual misperceptions which hinder fine-grained communication regarding subsidiaries' parenting needs and headquarters' parenting capabilities (Slangen, 2011). Therefore, just like geographic distance, a larger contextual distance is generally associated with more complex headquarter-subsidiary relationships (Bhagat et al., 2002).

Despite the costs associated with the management of distance, the answer to the question of how distance empirically relates to the value added by headquarters is not as straightforward. Classic MNC

theory, for example, claims that MNCs exist precisely because they are particularly good at overcoming distance (Hymer, 1976; Kogut and Zander, 1992). That is, the well-functioning MNC possesses tools that enable it to share knowledge, to coordinate across national borders, and to link related but dispersed activities to profit from arbitrage and aggregation benefits (Ghemawat, 2001). Furthermore, firms are aware of geographic overstretch since they often focus on their home region only (Rugman, 2005) or they internationalize in a careful, stepwise way to proximate countries (Johanson and Vahlne, 2009). In addition, there are organizational solutions available to limit the possibly negative effects associated with large geographic and contextual distances. For example, many MNCs use intermediate headquarters to manage distance. They create regional headquarters, for example, that are more proximate to a geographic subset of operations and that take over parenting activities from the corporate headquarters to become the de facto parent for a subsidiary in the region (Wolf and Egelhoff, 2002; Hoenen, Nell and Ambos, 2014). These mechanisms effectively limit the distance between a subsidiary and its de facto next-level headquarters that tries to add value to its' subset of subsidiaries. Thus, one could expect that, empirically, distance is not related to headquarters value added for a set of randomly chosen headquarters-subsidiary dyads because MNCs can a) assess the costs of distance properly and can, therefore, b) avoid them (e.g., limit the degree of internationalization) or c) implement effective countermeasures (e.g., implement regional headquarters that "reduce" distance to the subsidiary or divest). This reasoning is clearly based on the assumption of a well-functioning MNC with rather rational and fully informed decision-makers that identify frictions, avoid them ex-ante, or get rid of them ex-post.

2.2 A behavioral approach towards distance

Behavioral strategy research emphasizes the psychological micro-foundations of strategic decision-making (Foss and Lindenberg, 2013; Powell, Lovallo, and Fox, 2011). A critical assumption in this line of research is that managers' decision-making is subject to biases (Kahneman and Tversky, 1979), including decisions regarding the management of distance and headquarters-subsidiary relations (Larsen et al., 2013; Maitland and Sammartino, 2015; Kostova et al., 2016). This behavioral approach

provides additional arguments putting the prediction of how distance relates to headquarter-subsidiary relationships into a novel context. In fact, we will argue that there are contingencies that challenge the assumption that MNCs can easily assess the costs of distance, avoid distance, or overcome distance. In this paper, we focus on subsidiary embeddedness as a contingency. We argue that under conditions of strong local (i.e. external) embeddedness of the subsidiary, a larger distance reduces value added by headquarters. There are several reasons for this claim.

Our starting point is that distance itself makes the assessment of the challenges and costs of managing dispersed operations biased, mostly because of over-optimism. This over-optimism is rooted in overplacement (the "better than the average effect") where managers think they make superior decisions compared to others and have optimistic self-views (Bénabou and Tirole, 2002). Another reason for over-optimism is the planning fallacy, where managers underestimate task-completion times, a phenomenon especially relevant for complex and long tasks (Kahneman and Tversky, 1979; Buehler, Griffin, and Ross, 1994, 2002), such as international expansions. Moreover, as "people often make attributions that diminish the relevance of past experiences to their current task" (Buehler et al., 1994, p. 368), previous negative experiences with management of distance are denied because in the face of possibly negative implications (e.g., that there are hidden costs of managing subsidiaries in distant locations), their optimistic plans are challenged. Even experienced individuals are inclined to explain away the negative personal outcomes, either because they "fence off" the past, or because they are overly optimistic, or because they tend to remember events as having been more predictable than they were (Fischoff and Beyth, 1975). In many cases, people do not learn from the past (Gentner, Loewenstein, Thompson, and Forbus, 2009). The final result is an underestimation of the true costs associated with expanding abroad. Larsen, Manning, and Pedersen (2013) report that geographic and cultural distance are positively related to "hidden costs" when firms make offshoring decisions; that is, the errors of estimating how costly the offshoring decision will be increased with the distance to the offshoring location. They find that distance matters because it biases the MNC's perceptions and estimations of the costs of managing across borders (see also Dibbern et al.,

2008). Thus, we would expect that many international expansion decisions are costlier than originally anticipated.

Yet, while original expansion decisions might suffer from these biases, we are investigating established subsidiaries and not new ventures. As we argued before, the MNC has time and potential solutions to correct their decisions (e.g., to divest) or to lower distance-induced inefficiencies. However, the likelihood of MNCs implementing such countermeasures effectively depends on the extent to which the subsidiary is locally embedded. Subsidiary embeddedness is generally considered a key organizational characteristic of the headquarter-subsidiary relationship (Andersson et al., 2002; 2007; Chen et al., 2004; Kim, 2014). Scholars commonly define subsidiary external or local embeddedness in terms of the extent to which a subsidiary has developed strong local ties (Andersson and Forsgren, 1996). Subsidiaries that are strongly locally embedded, with close ties to local suppliers, customers, governments, and so on have been found to enhance the knowledge and capability-base of the MNC, to increase local responsiveness as well as strengthen legitimacy (Andersson et al., 2002; Frost et al., 2002; Mu et al., 2007).

The local embeddedness of subsidiaries changes the headquarters-subsidiary relationship, because strong local embeddedness makes the subsidiary more independent from and alien to the rest of the MNC (and thus the headquarters) and more self-sustaining (Nell and Ambos, 2013). As a result, headquarters are more likely to be uninformed about locally embedded subsidiaries (Holm et al., 1995), and miscommunication and misunderstanding between headquarters and subsidiaries are aggravated (Haq, Drogendijk and Blankenburg Holm, 2016). Headquarters are challenged when the organization to be coordinated becomes more dispersed and complex because they increasingly lack knowledge and understanding of the individual businesses and their linkages (Andersson et al., 2007; Ciabuschi et al., 2011; Goold and Campbell, 2002). Subsidiary embeddedness is a source of additional complexities (Meyer, Mudambi and Narula, 2011), because of the dissimilarity in knowledge base between MNC and subsidiary manager. This in turn makes it more difficult for the MNC manager to define clear remedies that have a positive net effect on the MNC (Tippmann, Scott and Mangematin, 2012). In conjunction with

the already-described issues of managers' ex post justification of their original expansion decisions and cognitive dissonance, MNC managers may not be able to remedy distance-induced inefficiencies when local embeddedness is high.

Second, the embedding process has been described as a development which moves the attention of the embedding organization or person (in this case the subsidiary) towards the external network (Granovetter, 1992; Gulati and Sytch 2007). Embedded relationships develop slowly over time and they are based on and nurtured by social relationships between individuals (Andersson et al., 2002). In cases of strong embeddedness, such relationships are reciprocal and thus quite stable and difficult to break (Uzzi, 1996, 1997; Krackhardt et al., 2003). The increased orientation towards the external network heightens the subsidiary's evaluation of smooth relationships and solidarity with its external partners (Heide and Miner 1992; Gulati and Gargiulo 1999) which might come at the detriment of those with internal partners such as headquarters. In situations of high external embeddedness, subsidiaries perceive the network benefits of the external network as more attractive because of their higher importance for subsidiary success (Newburry, 2001; Newburry and Yakova 2006). Strongly embedded subsidiaries are more likely to emphasize the benefits of their local network connections and the need to be independent as the local network seems to be the more immediate and relevant network they rely on (Becker-Ritterspach, 2006). The shift in attention also applies to headquarters managers. When there is a high degree of embeddedness, headquarters managers receive less information about the subsidiary, and their attention is likely to focus on other, more readily available information of closer, less externally embedded subsidiaries (Ambos, Andersson and Birkinshaw, 2010; Dörrenbacher and Gammelgard, 2016).

There is a third reason why we expect local embeddedness to moderate the relation between distance and headquarters value added. Strong local embeddedness not only increases the likelihood that subsidiary managers give preference to nurturing their external network thereby strengthening their relative independence from the rest of the organization (Gulati and Sytch, 2007). The degree of embeddedness influences the way the subsidiary communicates with the headquarters and the rest of the

MNC (Haq et al., 2016). Knowledge and communication flows between headquarter and subsidiary depend on subsidiary role (Gupta and Govindarajan, 1991) and a high interdependency generally facilitates mutual understanding and knowledge flows (Noorderhaven and Harzing, 2002). As higher external embeddedness coincides with higher levels of autonomy, and 'a very autonomous subsidiary will likely be less motivated to either send or receive knowledge' (Noorderhaven and Harzing, 2009: p. 727), we can expect that in case of externally embedded subsidiaries, the headquarters might be left in the dark about the true costs of distance. Strongly embedded subsidiaries may not be interested in communicating distance-induced problems to their headquarters because the headquarters might try to involve itself more in subsidiary issues, and effectively reduce the subsidiary's autonomy and independence (Becker-Ritterspach, Blazejewski, Dörrenbacher, and Geppert, 2016). Strongly embedded subsidiaries might be resistant to potential remedies by headquarters as they might fear that some remedies, such as the introduction of a regional headquarters which is much closer and thus much more involved in their matters, are disadvantageous for the subsidiary's status and power (Andersson et al. 2007). Relatively independent and locally embedded subsidiary managers may have a political interest in maintaining their status. Thus, they are likely to make a case to headquarters that potential dysfunctionalities due to distance are more than balanced by the benefits of being strongly embedded. This, in turn, is likely to bias headquarters managers' perceptions of the need to find a remedy for distance-induced dysfunctionalities.

In sum, subsidiary external embeddedness makes it more difficult for headquarters to perceive and assess distance-induced inefficiencies and to implement possible remedies. Extant studies have provided evidence for a direct relation between subsidiary embeddedness and headquarters value added or headquarters knowledge of the subsidiary context (Nell and Ambos, 2013; Andersson et al., 2007). Here we argue that external embeddedness moderates the relation between distance and headquarters value added. Under conditions of high local embeddedness, distance-related inefficiencies are likely to be persistent and empirically observable; under conditions of low local embeddedness, distance-induced dysfunctionalities are more likely to be identified and remedied. Therefore, we hypothesize the following:

H1: The relationship between distance and headquarters value added will be negative if the level of subsidiary external embeddedness lies above a certain tipping point.

3. Methods and Data

3.1 Sampling approach

We randomly selected European manufacturing subsidiaries of MNCs. We defined subsidiaries as firms that have manufacturing activities, organizational (i.e., non-financial) shareholders located in a different country with at least 51% of ownership, and more than 50 employees. We focus on manufacturing subsidiaries because manufacturing is one of the most important functions of an MNC and constructs can be measured in a more precise way (Nell and Ambos, 2013). Specifically, we are not interested in sampling subsidiaries whose mandate is characterized strongly by innovative and explorative tasks such as R&D units. This is because there is evidence that isolation or only very selective input from the headquarters is beneficial for such units (Asakawa, 2001).

We used the Amadeus database to draw a random sample and identify subsidiaries. We collected data in two rounds in 2008, sending questionnaires to 1,329 manufacturing subsidiaries in hardcopy and electronic form. We then conducted follow-up calls after sending the questionnaire to maximize response rates. One hundred twenty-four questionnaires were used for the main analysis (with a response rate of 9.3%).

An analysis of non-responses found no substantial differences between the tested sample and the target population in terms of the age and size of subsidiaries. Our tests show a single, marginally significant difference between the final sample and the target population in terms of age (mean of 25.5 years and 24.6 years respectively). There is no evidence of late response or data collection bias (hardcopy questionnaires vs. electronic form).

The subsidiaries of our final sample are in more than 20 countries, with those in Germany, Spain, the United Kingdom, Poland and France making up 44% of the sample. Their parents are mainly located

in Europe; 13% have parents located outside of Europe (US and Japan). To have data directly from those knowledgeable of the subsidiary as a whole, we aimed to obtain responses from each subsidiary's general manager. In sum, 85% of the sample is made up of responses from senior executives, such as CEOs and general managers. Roughly 38% of the subsidiaries were between 1 and 10 years old at the time of the survey, while another 30% were between 11 and 20 years old. The number of employees varied notably across the sample, with 33% of all subsidiaries having between 201 and 500 employees and 25% with 101 to 200 employees. Their average sales were roughly EUR 170 million in 2007. Most subsidiaries reported directly to corporate headquarters (*N*=59), followed by regional headquarters (*N*=40) and divisional headquarters (*N*=25).

3.2 Measures

3.2.1 Headquarters value added. We used the scale by Nell and Ambos (2013) to measure headquarters value added, as it captures some important elements of parent value creation. The scale is based on subsidiary managers' perceptions of the value created by headquarters. This subjective approach is deemed appropriate because of the major difficulties of finding and reliably measuring objective data on headquarters value creation (Collis et al., 2007; Goold and Campbell, 2002). Furthermore, top managers are likely the best informants for our measure. Such respondents are knowledgeable and all have skill, judgment, and talent by virtue of the fact that they have risen to the level of top management within subsidiaries of multinational companies. By consequence, their perceptions of important issues related to the performance of their subsidiary must, on average, at least correspond closely with objective reality (cf. McGrath, 2001). Furthermore, Collis et al. (2007) argue that such measures have the merit of "explicitly" evaluating headquarters and are thus preferred despite some level of error due to self-report. The development of the scale was a multi-stage process. Based on brainstorming activities, the involved researchers first created a list of 15 items that they thought were linked to the idea of headquarters value added. We then sought feedback from experienced researchers from several universities and from managers of MNCs. Based on this feedback, we created a concise scale with high face validity.

We asked subsidiary managers to indicate their level of agreement with four items on a scale from 1 to 5 (Cronbach $\alpha = 0.70$): (1) "Your parent's way of challenging your subsidiary's strategies and tactics has improved your local performance;" (2) "Activities managed by your parent have relieved your local management from administrative work;" (3) "Your parent's activities have led to substantial cost savings at your subsidiary;" and (4) "Without your parent, your subsidiary would receive less information that is important to your business."

The "parent" was clearly defined in our survey instrument as the headquarters unit with which subsidiaries maintain their main reporting relationship. This means that we accept that in large and complex organizations, the immediate parenting activities relevant to a subsidiary might be taken over by intermediate headquarters (such as divisional or regional headquarters) rather than by corporate headquarters (Goold and Campbell, 2002). We averaged the scores across the four items. Higher values of this average indicate that the headquarters has added high levels of value to the subsidiary and, thus, contributed positively to its performance. We also validated the scores for a subsection of the subsidiaries for which we had data: our scale of headquarters value added was positively and significantly correlated with performance.

3.2.2 Distance. We measured headquarters-subsidiary distance following the well-known CAGE framework (Ghemawat, 2001) which conceptualizes distance in a multidimensional way by distinguishing between cultural, administrative, geographic, and economic distance. The distance literature has progressed in the last decade, and we apply the latest insights to operationalize the CAGE framework. Specifically, we apply the Mahalanobis technique (Mahalanobis, 1936; Berry et al., 2010; Beugelsdijk et al., 2017). Unlike the standard Euclidean distance measure as commonly applied (e.g. Kogut and Singh's cultural distance index) the Mahalanobis technique corrects for the correlation between the dimensions on which distance is calculated. By using the principal components of the dimensions included, it is unitless, scale invariant and corrects for the co-variance between dimensions. This is an improvement compared to

the standard measures used especially when there is a moderate to high degree of correlation between the dimensions on which distance is calculated.

In addition, we collect distance data on these four dimensions for *all* country pairs in the world irrespective of whether these country pairs are represented in our final sample or not. Not restricting our construction of the distance measures to our sample of countries for which we have data on subsidiaries is important because we do not want the distance effects we obtained to be driven by the random sample of countries in our final regression analysis on headquarters value added. We contend it is better to start from the "population" of country pairs. The proxies for cultural, administrative, geographic, and economic distance, as described below, are commonly used in international management literature and in distance literature specifically. The novelty of our application here is how we consistently control for the correlated nature of these dimensions and use the full set of country pairs for which data on these CAGE dimensions is available.

We measured geographic distance as the distance between the most populated cities per the CEPII database (Mayer and Zignago, 2011). Cultural distance is based on the four original Hofstede dimensions, plus the two dimensions recently added by Hofstede and coauthors (Hofstede et al., 2010). To control for correlations between the different Hofstede dimensions, we apply the Mahalanobis technique. Economic distance is calculated as the absolute difference in 2008 GDP per capita (PPP corrected in 2010 international dollars). We sourced GDP per capita data from the World Development Indicators. Finally, we measured administrative distance as the absolute distance on the average of the six World Governance Indicators (2008) as developed by the World Bank (Kaufmann et al., 2008). The Kaufman indexes of administrative distance have commonly been used in our field (Hutzschenreuter et al 2014; Abdi and Aulakh, 2012; Campbell et al, 2012). The six items (Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption) included in the WGI of the World Bank are highly correlated. A factor analysis confirms that they form one factor with a Cronbach's alpha of 0.96 with the first and only factor explaining 97% of the variation in these six items.

This very high shared variance among these governance dimensions also implies that there is no added value in looking at the dimensions of administrative distance separately, nor in calculating a Mahalanobis-corrected administrative distance measure just for administrative distance (Mahalanobis, 1936). Thus, we aggregate the six governance scores into one overall measure and take the absolute difference between those mean scores to calculate the administrative distance for each country pair.

For the population of country pairs for which we have data on geographic, cultural, economic, and administrative distance (N = 3721; 61 countries), we perform a factor analysis. Our results show that geographic distance is different from the other three distance constructs while cultural, economic, and administrative distance load on one single factor (Cronbach's $\alpha = 0.73$). This confirms that a distinction should be made between distance in a geographic sense and distance as a proxy for contextual changes once crossing borders (Beugelsdijk and Mudambi, 2013).

Thus, we operationalize the CAGE framework by distinguishing between geographic distance and what we call "contextual distance" (cf. Doz et al., 2001). Contextual distance relates to differences in culture, economic development, and quality of governance. We calculate it using the Mahalanobis technique to control for the correlation between countries' cultural characteristics, their level of economic development, and the quality of their governance. Geographic and contextual distance are positively correlated with each other only to a small extent ($r = 0.14$).

3.2.3 Subsidiary embeddedness. We measure subsidiary local embeddedness on a formative six-point scale. Our survey instrument showed graphically several local partners in the external network of the subsidiary—the subsidiary being placed in the middle of this illustration. The local network actors given were "domestic suppliers," "domestic customers," "local governments," and "local industry associations." Furthermore, the list included "local units of multinational suppliers" and "local units of multinational customers." We asked the respondents to rate the strength of the relationships between these different actor categories (see Luo, 2001 for a similar approach) and the final measure of average subsidiary embeddedness is the average across these six dimensions.

3.2.4 Control variables. We control for many potentially influential factors. First, for every subsidiary industry in each country, we compiled both the Level of International Trade index as well as the Intra-Industry Trade index from several secondary sources (see Nell and Ambos, 2013). We used a median split for both variables and constructed four industry types (see Kim et al., 2003 and Makhija et al., 1997, for a similar approach). We only use the "multidomestic industry" dummy in our model to control for the type of industry in which the local subsidiary is operating. We only use the multidomestic industry dummy instead of three of the four resulting industry types because adding additional dummy variables to the estimation did not increase R^2 while reducing model fit. Thus, we opted for the more parsimonious model. We argue that the dummy variable indicating a multidomestic industry setting also reflects the international strategic approach of the MNC. In fact, Ghoshal and Nohria (1993) showed that MNC performance suffers when their international strategies do not match their industries' characteristics. Thus, based on this reasoning, our multidomestic industry variable also proxies the overall international strategy of the MNCs in our sample (see Nell and Ambos, 2013). We also control for the type of headquarters (with dummies for regional and divisional headquarters, excluding corporate headquarters from the regression) and the overall MNC setup with a dummy for a matrix structure. These variables characterize the parenting setup in this way: When multiple levels and different types of headquarters units are the de facto parent, they might influence parent value creation (Goold and Campbell, 2002).

Second, we control for a range of subsidiary characteristics. We include subsidiary age, as older subsidiaries are generally believed to be more mature and less dependent on headquarters. Similarly, the size of the subsidiary can indicate accumulated knowledge or independence from headquarters. Subsidiary size is measured as the number of employees of the subsidiary. We use the logarithm of both age and size.

Finally, we control for four activities of the headquarters and control for the creation a common corporate culture (called "socialization"). We asked respondents to what extent they agree with the following four statements: (1) "There is a strong commitment to training and developing skilled managers;" (2) "Your parent puts a lot of effort into establishing a common corporate culture;" (3) "Your

subsidiary executives participate in extensive international training initiated by your parent;" and (4) "Subsidiary managers share the values of your parent" ($\alpha = 0.82$).

Furthermore, we use a measure of the headquarters' own relationships to the subsidiary context (called Headquarters Embeddedness) to control for headquarters knowledge and understanding of the subsidiary context which is conducive to the headquarters' ability to create value (Nell and Ambos, 2013). We measured the variable in the same way as the subsidiary embeddedness measure.

In Table 1, we present correlations between our variables as well as the means and standard deviations. Table 2 summarizes our estimation results. All hypothesized variables (distance and embeddedness) are standardized.

- Table 1 and 2 about here -

4. Results

To test our hypothesis, we estimate censored Tobit regressions with robust standard errors. We also run standard OLS to estimate our effects (see Table 2). We consider the risk of common-method biased results very low as our distance variables are based on objective secondary data and we run a complex model with interaction effects (Chang et al., 2010; Siemsen et al., 2010). In Model 1, we include all control variables. We find that the headquarters' own relationships to the subsidiary network and its socialization efforts are positively related to headquarters value added. Furthermore, subsidiary local embeddedness, subsidiary age, and the multidomestic dummy are negatively related to headquarters value added. These effects remain stable in all subsequent models. The negative relation between local embeddedness and headquarters value added corroborates results obtained in previous studies (Nell and Ambos, 2013; Andersson et al., 2002, 2007). Model 2 includes the two direct effects of distance. Neither is significantly different from null effects. In Models 3–6, these effects remain stable. Yet, the interaction effect between geographic distance and subsidiary embeddedness is significant at $p < .01$ with a negative coefficient (Model 3). In Model 4, the findings are similar with regard to the interaction effect between contextual distance and subsidiary embeddedness. Thus, Models 3 and 4 lend support to our hypothesis.

The results are also stable when both interaction terms are added simultaneously (Model 5) and when OLS regression is used (Model 6).

Our results indicate that distance (whether contextual or geographic) is, on average, unrelated to headquarters value added. Yet, when subsidiaries become more strongly locally embedded, there is a threshold value above which distance does have a significantly negative relationship with headquarters value added. To further analyze the interaction effect, we plotted the estimation results in Figure 1 based on Model 6.

Figure 1 shows the estimated marginal effect of increasing levels of distance on headquarters value added while controlling for the interaction between external embeddedness and distance. In addition to more common illustrations of interaction effects which typically show the effect of the independent variable for two ex-ante selected levels of the moderator (often one standard deviation above and below the mean), Figure 1 shows the impact of distance on headquarters value added for *all* levels of external embeddedness (Kingsley, Noordewier, and VandenBergh, 2017; Meyer, van Witteloostuijn, and Beugelsdijk, 2017). Moreover, we include the 95% confidence interval. This has two advantages over what is commonly done. First, we do not arbitrarily pick two levels of the moderating variable. Second, by including the confidence interval, we show the zone in which the interaction effect is significant.

Figure 1 confirms graphically that for averagely embedded manufacturing subsidiaries, both distance variables are insignificant. The 95% confidence interval contains the coefficient of zero. The threshold value for geographic distance to become significant is at subsidiary embeddedness values of 1.2 standard deviations above the mean. For contextual distance, the threshold level is 0.5. That is, contextual distance enfolds its negative effect on headquarters value added at much lower levels of subsidiary embeddedness. Thus, detrimental contextual distance effects apply to a much larger number of subsidiaries than detrimental geographic distance effects. That is, approximately 13% of the subsidiaries in our sample have embeddedness scores larger than 1.2 (as the variable is standardized, this is 1.2 standard deviations above the mean). Approximately 34% of all subsidiaries have an external

embeddedness score larger than 0.5 (standard deviations above the mean). The graphs and underlying regression results show that contextual distance is more relevant than geographic distance.

We ran several robustness tests that all produced qualitatively the same results. First, we assessed the robustness of the two-factor distance structure. Our distinction between geographic and contextual distance is robust to different operationalizations of cultural and administrative distance. In addition to Hofstede's culture framework, Schwartz (1994) and GLOBE (House et al. 2004) have developed similar culture frameworks that measure different cultural dimensions. When we use a composite measure of cultural distance based on a Mahalanobis-corrected integration of these three commonly used national culture frameworks (Hofstede, Schwartz, and GLOBE) instead of only Hofstede's six dimensions, we obtain a similar two-factor structure (see Beugelsdijk et al. 2017 for the composite cultural distance measure). Unfortunately, culture data (Hofstede, but also Schwartz and GLOBE) are typically only available for a relatively small number of countries. A recent replication of the Hofstede dimensions using World and European Values Survey data yields data for close to 100 countries (Beugelsdijk et al., 2015). Measuring cultural distance using these replicated Hofstede scores also yields a similar two-factor structure for a substantially larger sample (7225 country pairs versus 3721). Regarding the measurement of administrative distance, substituting the Kaufman World Bank indicators of administrative distance measure by the alternative indicator of the 2008 Economic Freedom index (He et al., 2013; Meyer et al., 2009) does not alter the result of the two-factor structure either.

Many of these measures change slowly, but the two-factor structure is robust to yearly changes. For example, economic distance in 2006 correlates strongly with economic distance in 2015 ($r = 0.99$). A similar observation holds for administrative and cultural distance. Individual countries may be going through relatively radical administrative reform or economic development, but the two-factor structure for all country pairs is relatively stable over time. Although cultures do change in the direction of more postmodernist values associated with higher levels of individualism and lower levels of power distance, many countries change in the same direction (Inglehart and Baker, 2000), which does not significantly

affect the relative cultural scores of countries, and thus their cultural distances (Beugelsdijk et al. 2015). Finally, we would also note that a similar two-factor structure is obtained when considering only our sample of countries for which we have data on headquarters added value (instead of all 3,721 country pairs).

In addition to the robustness of our operationalization of CAGE, we tested whether our results hold when we add the logged number of subsidiaries that the headquarters must deal with in total. We only had data for a limited number of subsidiaries. Yet, our results based on this reduced dataset largely reproduced our main model—the only change was that the interaction effect between geographic distance and subsidiary embeddedness became insignificant, indicating that there is no (moderated) empirically observable association between geographic distance and headquarters value added.

5. Discussion

In this paper, we explore the question of whether and how different types of distance between headquarters and subsidiaries relate to the value headquarters add to the subsidiary. This is an important and relevant question, as in the face of continuing globalization, MNCs worldwide struggle with (re-) positioning their headquarters in the overall MNC network and with fine-tuning their parenting activities.

Our finding on the role of distance is novel. We find no general direct effect of distance, but instead that the impact of distance only affects the headquarters-subsidiary relationship when the subsidiary is embedded in its local host country context. When subsidiaries are strongly locally embedded in the host country, a greater distance between the subsidiary and the headquarters is associated with lower value provided by headquarters. Furthermore, the threshold level when distance becomes significant is lower for contextual (i.e., cultural, administrative, and economic) distance than for geographic distance. This suggests that contextual distance (border effects associated with changes in context) is a more relevant challenge for headquarters value creation than pure geographic distance (miles and time zones). Compared to geographic distance, changes in context are particularly relevant for decision-making

complexity and the use of decision heuristics (Haq et al., 2016; Maitland and Sammartino, 2015a). Therefore, MNC managers may have more difficulties estimating the true costs of expanding to one subsidiary context compared to the costs of expanding to another one. Future research on the nature of distance and the type of decision-making is required to unravel further this possibly differential effect of contextual and geographic distance on decision making in the MNE. We think the behavioral approach is very promising to do so.

Our contribution to the literature is twofold. First, we add to the literature on headquarters' roles in the management of global operations. MNC headquarters are challenged and headquarters' roles diminished especially in highly complex and externally embedded organizations. We show that adding value to subsidiaries is more difficult when those subsidiaries are externally embedded, a result in line with the literature on the federative MNC (e.g., Andersson et al., 2007; Nell and Ambos, 2013), according to which the headquarters is just one unit among many which has substantial difficulties influencing its subsidiaries. We show that the value-adding function of headquarters can indeed be challenged. However, this only holds when distance and embeddedness occur jointly. Thus, for most subsidiaries in our sample, the value-adding role of headquarters is not diminished even when faced with substantial geographic or contextual distance. The picture of the ignorant and severely challenged MNC headquarters MNC (Ciabuschi, Forsgren, and Martin, 2011) seems exaggerated given our evidence. Furthermore, geographic distance seems to be less of an issue for the headquarters' value-creating role than is often assumed – MNCs have found ways to minimize these issues for well-established subsidiaries. In this context, it is also worth noting that the type of headquarters that represents the most important de facto parent for a given subsidiary does not matter for the value that this headquarters adds to the subsidiary. This is in line with our reasoning that MNCs may introduce headquarters units below the corporate level to maintain a high level of value added by headquarters value added. Lower-level headquarters are not per se contributing less to subsidiaries than corporate headquarters.

Second, we contribute to distance research in international management (Ghemawat, 2001; Beugelsdijk and Mudambi 2013; Zaheer et al., 2012). Using a carefully specified (Mahalanobis-based) empirical operationalization of distance for all country pairs in the world, our findings support the idea that distance effects vary strongly across different levels of embeddedness of the subsidiary. On average, headquarters do not add substantially more or less value to more distant subsidiaries than to closer ones. That is, on average, MNCs seem to be relatively good at overcoming or avoiding distance by, for example, locating headquarters activities in such a way that distance does not negatively influence the value that the headquarters can create, a finding in line with the classic view of the MNC (Hymer, 1976). Distance enfolds its negative effects only when the subsidiary is also strongly locally embedded in a particular local context. Thereby, the lower threshold level for contextual distance indicates that contextual differences are the more critical dimension. The problems associated with a larger cultural, administrative, and economic distance (e.g., communication difficulties with locals because of cultural differences, lack of understanding of local rules and regulations because of institutional differences) are especially relevant when subsidiaries are locally embedded, and more so than the problems arising from a larger geographic distance (e.g., lack of face-to-face contact, lack of office hours overlap, increased travel time). This finding is important because it highlights the mechanisms through which distance affects headquarter-subsidiary relationships. Specifically, this result underscores the critical role of MNCs' ability to deal with contextual changes.

Because of our theoretical argument, we focused on absolute distance effects. With the exception of geographic distance, the other distance dimensions included in the contextual distance measure could potentially have asymmetric effects. That is, the effect of the distance depends on the directionality (Ambos and Håkanson, 2014). Although the absolute distance is the same between countries A and B, going from A to B or vice versa could have a different impact. The impact of contextual changes is potentially most disturbing when going from a home country with well-functioning institutions to a host with poorly functioning institutions. Acknowledging that such asymmetric distance effects may occur, our

main theoretical argument is derived from absolute distance effects and we have no reason to think such asymmetry effects are at play in our empirical test. In fact, we computed directional administrative and economic distances. Neither the variables nor their interactions with subsidiary embeddedness were significant. A qualitatively identical result was found when using directional Hofstede differences.

In our analysis, we control for subsidiary-level influencing variables on headquarters value added through a number of control variables such as subsidiary age, size, and subsidiary embeddedness. We have also restricted the variance of subsidiary types and roles by means of our empirical focus on manufacturing units only (as opposed to integrating also mere marketing/sales subsidiaries). Future research could nevertheless build on our research and investigate how different types of subsidiaries (e.g. the types defined by Gupta and Govindarajan, 1991) influence headquarters value added and – perhaps – the relationship between distance and headquarters value added.

We have operationalized and defined the "parent" as the immediate headquarters that is responsible for the subsidiary. We believe this is a very good approach because very often, the most important and relevant headquarters for a particular subsidiary is the next-level headquarters (e.g. the regional or divisional headquarters) and not the corporate headquarters. Furthermore, our survey approach limited researcher bias as it allowed the survey informant to choose which type of headquarters he or she would consider the parent. Therefore, we are confident that our approach is appropriate. Future research, however, could investigate more in detail how the parenting role of regional vs. divisional vs. corporate headquarters for individual subsidiaries may differ.

To conclude, we believe that our findings, along with the above-mentioned extensions, provide ample ground for further investigations on this topic. This paper suggests that while, on average, MNCs are relatively good at managing distance, the negative effects of distance unfold under certain circumstances.

Note: The distance data can be found on the website of the Journal.

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Table 1: Means, standard deviations, and correlations.

		1	2	3	4	5	6	7	8	9	10	11	12
1	Headquarters value added	1.000											
2	Headquarters embeddedness	0.352	1.000										
3	Multidomestic industry	-0.239	0.032	1.000									
4	Matrix reporting dummy	-0.007	-0.009	-0.093	1.000								
5	Regional headquarters dummy	0.006	0.096	-0.032	-0.132	1.000							
6	Divisional headquarters dummy	0.013	-0.099	0.059	0.048	-0.347	1.000						
7	Subsidiary age	-0.214	-0.166	-0.002	-0.101	0.126	-0.048	1.000					
8	Subsidiary size	-0.127	0.055	0.078	0.085	-0.016	-0.069	0.128	1.000				
9	Socialization	0.336	0.259	-0.052	0.076	0.057	-0.068	-0.047	0.095	1.000			
10	Subsidiary local embeddedness	-0.211	-0.031	0.129	0.212	-0.017	-0.034	0.035	0.239	0.092	1.000		
11	Geographic distance	-0.126	-0.225	-0.100	0.119	-0.114	0.004	-0.026	-0.008	-0.178	0.134	1.000	
12	Contextual distance	-0.033	-0.028	0.050	-0.029	0.034	0.048	-0.236	-0.002	0.113	-0.002	0.073	1.000
	Mean	2.881	-0.009	0.194	0.202	0.323	0.202	2.730	5.544	3.104	0.000	0.000	0.000
	Std. Dev.	0.764	1.079	0.397	0.403	0.469	0.403	0.971	1.200	0.924	1.000	1.000	1.000

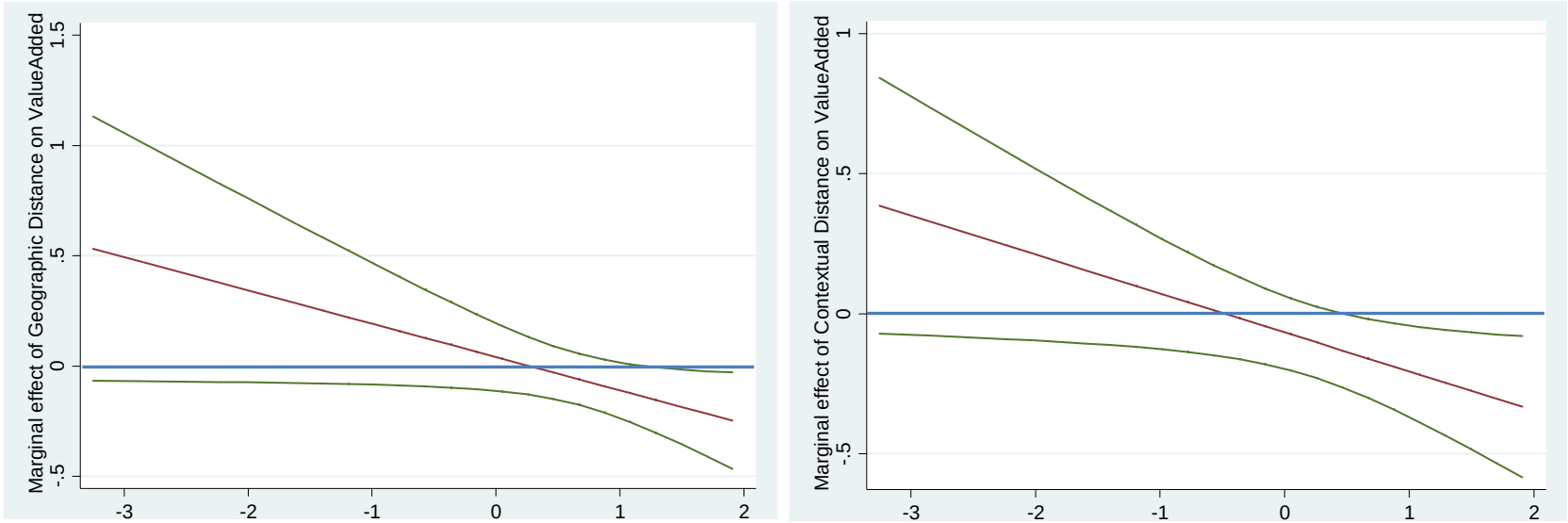
Notes: n = 124.

Table 2: Regression results. Dependent variable: Headquarters value added.

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	2.862***	2.870***	2.944***	2.839***	2.906***	2.901***
	(0.349)	(0.336)	(0.332)	(0.329)	(0.328)	(0.346)
Headquarters embeddedness	0.193***	0.185***	0.189***	0.220***	0.220***	0.217***
	(0.060)	(0.060)	(0.061)	(0.061)	(0.062)	(0.065)
Multidomestic industry dummy	-0.401***	-0.394***	-0.433***	-0.393***	-0.427***	-0.430***
	(0.146)	(0.145)	(0.149)	(0.142)	(0.146)	(0.153)
Matrix organization	-0.0372	-0.0451	-0.0737	-0.0934	-0.113	-0.115
	(0.157)	(0.162)	(0.162)	(0.150)	(0.148)	(0.157)
Regional headquarters	-0.0210	-0.00975	-0.0203	0.0545	0.0392	0.0339
	(0.129)	(0.128)	(0.131)	(0.132)	(0.136)	(0.142)
Divisional headquarters	0.0944	0.104	0.0948	0.109	0.0998	0.0955
	(0.156)	(0.156)	(0.152)	(0.152)	(0.149)	(0.157)
Subsidiary age	-0.111*	-0.130**	-0.157***	-0.128**	-0.152***	-0.149**
	(0.0585)	(0.0595)	(0.0582)	(0.0560)	(0.0561)	(0.0582)
Subsidiary size	-0.0584	-0.0565	-0.0423	-0.0332	-0.0231	-0.0218
	(0.0478)	(0.0493)	(0.0516)	(0.0459)	(0.0470)	(0.0494)
Socialization	0.232***	0.240***	0.228***	0.203***	0.196***	0.195***
	(0.0648)	(0.0632)	(0.0644)	(0.0631)	(0.0637)	(0.0669)
Subsidiary local embeddedness (standardized)	-0.128**	-0.128**	-0.162***	-0.137**	-0.165***	-0.166***
	(0.0588)	(0.0599)	(0.0553)	(0.0548)	(0.0527)	(0.0557)
Geographic distance (standardized)		-0.00648	0.0446	-0.000708	0.0428	0.0407
		(0.0684)	(0.0745)	(0.0672)	(0.0745)	(0.0782)
Contextual distance (standardized)		-0.067	-0.078	-0.056	-0.066	-0.0669
		(0.062)	(0.062)	(0.063)	(0.063)	(0.066)
Geographic distance x Subsidiary embeddedness			-0.175**		-0.152**	-0.151*
			(0.0698)		(0.0725)	(0.0765)
Contextual distance x Subsidiary embeddedness				-0.155***	-0.140**	-0.139**
				(0.058)	(0.061)	(0.065)
Model	Tobit	Tobit	Tobit	Tobit	Tobit	OLS
Sigma	0.634***	0.631***	0.620***	0.616***	0.608***	
	(0.0397)	(0.0408)	(0.0420)	(0.0391)	(0.0397)	
(Pseudo) R-squared	0.164	0.169	0.184	0.189	0.200	0.371
F	7.49***	7.08***	9.41***	7.35***	9.45***	8.64***

Notes: Robust standard errors in parentheses. n = 124. *** p<0.01, ** p<0.05, * p<0.1

Figure 1. Marginal effects of distance on headquarters value added based on Model 6.



Note: x-Axes represent the standardized variable of subsidiary embeddedness