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Phillip C. Nell and Björn Ambos and Bodo B. Schlegelmilch

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**The MNC as an externally embedded organization: An investigation of embeddedness overlap in local subsidiary networks**

**Phillip C. Nell<sup>a1</sup>**  
**Björn Ambos<sup>b</sup>**  
**Bodo B. Schlegelmilch<sup>c</sup>**

<sup>a)</sup> Copenhagen Business School; Center for Strategic Management and Globalization; Porcelænshaven 24B; DK-2000 Frederiksberg, Denmark  
Tel: +45-3815-5622; Fax: +45 - 3815 – 3035; eMail: pcn.smg@cbs.dk

<sup>b)</sup> WU, Vienna University of Economics and Business; Institute for International Business; Augasse 2-6; A-1090 Wien, Austria; Tel: +43 -1-31336-5121; Fax: +43-1-31336-776; eMail: bjoern.ambos@wu.ac.at

<sup>c)</sup> WU, Vienna University of Economics and Business; Institute for International Marketing Management; Augasse 2-6, A-1090 Wien, Austria; Tel.: +43-1-31336-5099; Fax: ++43-1-31336-793; eMail: bodo.schlegelmilch@wu.ac.at,  
and,  
University of Leeds.

1) Corresponding author.

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## **The MNC as an externally embedded organization: An investigation of embeddedness overlap in local subsidiary networks**

### **Abstract:**

MNCs have been conceptualized as differentiated networks that, in turn, are embedded in external networks. Previous research has predominantly focused on the embeddedness of established subsidiaries into their local environment, omitting to shed light on the phenomenon of headquarters linkages to the local context which creates embeddedness overlap. We develop a model of why MNCs develop overlapping linkages to local subsidiary networks even if the subsidiaries have grown out of the initial start-up phase. Using detailed information on 168 European subsidiaries, we find that MNCs build and maintain more overlapping network ties when subsidiaries are high performers, hold important resources, operate in turbulent environments, and are closely connected to multinational actors as opposed to purely domestic firms.

**Key Words:** External relationships, multinationals, embeddedness

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# 1 Introduction

In recent years scholars have developed an increasing interest in the role of subsidiaries' local networks (Ghoshal & Bartlett, 1990; Andersson, Holm & Forsgren, 2002). Local network relationships have been found to foster subsidiary innovation, e.g. by enabling the firm to appropriate valuable knowledge from the external environment (Hakanson & Nobel, 2001; Lehrer & Asakawa, 2002; Almeida & Phene, 2004; Jindra, Giroud & Scott-Kennel 2009), to drive subsidiary performance (Luo, 2001; Andersson et al., 2002), and to influence headquarters' (HQs) ability to control (Andersson & Forsgren, 1996; Asakawa, 1996). While research has primarily advanced by focusing on the subsidiary as the unit of analysis, there is little disagreement that headquarters maintain relationships to external actors as well. While many of these relationships constitute non-redundant ties (i.e. headquarters linkages to investment houses and shareholders, or a subsidiary linking up with a local supplier), evidence shows that headquarters and subsidiaries quite often share relationships with the same local actors (Forsgren, Holm & Johanson, 2005; Birkinshaw, Toulan & Arnold, 2001).

We define the simultaneous existence of linkages by parent and subsidiary to the same local actors as *embeddedness overlap*. Maintaining overlapping networks or relationships is potentially costly, triggering the immanent question why firms nevertheless opt for maintaining such relations. In this paper we examine this question and suggest that external and internal contingencies help to explain why firms rationally decide to maintain these overlapping networks. Our

general proposition is that embeddedness overlap is influenced by conditions in the subsidiary's local environment, as well as the subsidiary's position within the MNC. We present these ideas in a conceptual framework that allows us to provide an explanation of why HQs develop relationships to some local subsidiary networks while ignoring others. The framework is in line with previous work which investigates firm-internal as well as external factors and their relationship to structural phenomena of the MNC (e.g. Frost, Birkinshaw & Ensign, 2002; Bouquet & Birkinshaw, 2008; Gulati & Gargiulo, 1999).

We empirically test our framework and propositions on data of 168 European subsidiaries. Our results confirm that embeddedness overlap occurs in situations in which the uncertainty in the local environment creates beneficial effects for HQ involvement and multinational business partners require MNCs to build overlapping relationships. Our results also suggest that embeddedness overlap is common to balance the power of resource rich subsidiaries. These findings open up a series of interesting research avenues as well as more novel managerial options for HQs struggling to control their overseas subunits.

The paper proceeds as follows. In the second section, we provide a review of the literature on subsidiary embeddedness and propose a conceptual framework to study embeddedness overlap. This discussion leads into the development of our research hypotheses on the drivers of HQ linkages to the local context. In the fourth section we outline our methodology. The fifth section describes the findings, and the sixth presents a discussion of the implications of our study.

## 2 Conceptual Background and Hypotheses

### External network embeddedness

Based on the idea that firms are embedded in social networks (Granovetter, 1985; Burt, 1992; Uzzi, 1996; Dyer & Singh, 1998) modern conceptualizations see the MNC as an organization connected to external networks in multiple ways and on multiple levels (Ghoshal & Bartlett, 1990; Dacin, Ventresca & Beal, 1999). Despite the multi-level character of embeddedness, research in international business has mostly used the concept of subsidiary relational embeddedness. It is assumed that each subsidiary develops direct relationships of varying strength and intensity to actors in its local environment (Andersson et al., 1996, 2002). Subsidiary relational embeddedness to external actors has been shown to drive knowledge creation and performance (Hakanson & Nobel, 2001; Schmid & Schurig, 2003; Almeida & Phene, 2004; Holm, Holmström & Sharma, 2005; Boehe, 2007; Mu, Gnyawali & Hatfield, 2007; Luo, 2001; Andersson et al., 2002). This is based on the reasoning that knowledge and capability development is facilitated through strong, trustful ties of mutual commitment that are able to transfer more fine-grained knowledge and information (Uzzi, 1996; Gulati, 1998).

Obviously, HQs also do maintain networks themselves. First, previous literature has coined the term “disembedding” for the process in which HQs take over networks from the local subsidiary level (Dacin et al., 1999). To exemplar this, consider the following vignette:

*Puma AG, the renowned sports goods firm, has reorganized its external relationships to Footlocker – a world-wide operating distributor. Since Footlocker has centralized strongly its purchasing activities, Puma has*

*relocated the responsibility and management of this relationship from the subsidiary to the regional HQ level.*

Second, previous literature also mentions that HQs maintain relationships to the subsidiary network without disembedding the subsidiaries – creating a situation of embeddedness overlap. Of course, it is usually HQ managers who establish linkages to local markets in the start-up phase of subsidiaries. However, it is also important for HQs to be alert to established subsidiaries (e.g. Bartlett & Ghoshal, 1986). This stands against the argument that developing and maintaining relationships to the environment is costly and consumes managerial resources (Mizruchi & Galaskiewicz, 1994; Luo, 2003), especially in foreign locations (Chen, Chen & Ku, 2004). HQ linkages to actors to which their own subsidiaries are already connected seem to run counter the logic of efficiency (Williamson, 1991; Burt, 1992) and the question arises under which circumstances this costly endeavor is worthwhile. Consider the following examples:

*At Boehringer Ingelheim, a German pharmaceutical company, the marketing staff of the Eastern European regional HQ maintains direct linkages to important customers and health care organizations in the Eastern European countries in order to understand developments in the highly turbulent pharmaceutical markets. These linkages help the regional HQ staff to exercise control over the 28 country operations, to defend strategies of standardization and harmonization of marketing approaches, and to perceive business opportunities which are often not perceived by the subsidiaries themselves.*

*At Dental<sup>1</sup>, a Swiss medical technology firm with 25 subsidiaries worldwide, the headquarters maintains relatively strong linkages to the local subsidiaries' key network partners such as universities, industry associations*

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<sup>1</sup> Firm name anonymized.

*and research institutes, in order to complement knowledge acquisition and processing capacity of the subsidiaries.*

The examples provide some insight into the circumstances under which HQs develop relationships to external network partners in their subsidiaries' networks – despite the costs involved. In the case of Boehringer Ingelheim, HQs' desire to be able to control and influence their dispersed subsidiaries led the HQs to establish and maintain local relationships. This is also mirrored in recent literature (cf. Andersson, Forsgren & Holm 2007; Yamin & Forsgren, 2006). In the case of Dental, HQ staff helps the subsidiary to interpret the environment which has a positive effect on knowledge acquisition.

While no single theory exists that predicts the factors that lead HQs and subsidiaries to maintain relationships to the same local actors, research provides initial clues that helped us to develop a theoretical framework linking the most prominent determinants of such embeddedness overlap. In line with broader network research, we suggest that relationship building is endogenous and dependent upon firm internal and external factors (environmental opportunities and threats) (Gulati & Gargiulo, 1999; Luo, 2003). This approach is similar to studies linking characteristics of the firm and the environment to structural phenomena of the MNC (e.g. Frost et al., 2002; Bouquet & Birkinshaw, 2008). Figure 1 presents our framework.

----- **Figure 1 about here** -----



## **2.1 External Determinants of Embeddedness Overlap**

Environmental pressures have for long been within the center of research on firm strategies and structures (e.g. Siggelkow & Rivkin, 2005). Recently, a series of studies have suggested that overall characteristics of the environment influence the extent to which firms build external linkages (Beckman, Haunschild & Phillips, 2004; Koka, Madhavan & Prescott, 2006). While none of these authors has made a statement concerning embeddedness overlap, it is likely to assume that at least some of the environmental pressures will affect both headquarters and subsidiaries in the same way. This could lead to a potential overlap in their network ties. One factor that may potentially spur organizations to build relationships is environmental uncertainty (Beckman et al., 2004, Granovetter, 1985; Koka et al., 2006; Holm et al., 2005). The second factor we are investigating is the extent to which the subsidiary's external network is dominated by multinational firms as opposed to purely domestic firms. Compared to local actors, multinational network partners are likely to maintain linkages to the same firm in multiple locations, thus increasing the likelihood for embeddedness overlap. In the following we will look at each of them in turn.

### **Environmental uncertainty**

Environmental uncertainty can be defined as a situation in which the amount of information required to perform a task is inferior to the amount of information possessed by the organization (Galbraith, 1973). Uncertainty also derives from intense competition that creates a high level of market instability (Porter, 1980). It

implies that many market opportunities and challenges emerge simultaneously. In such environments, the need for increased information gathering is higher (Luo, 2003; Gupta, 1986) and a single dominant logic of interpretation should be avoided (Prahalad & Bettis, 1995; Birkinshaw & Lingblad, 2005). Consequently, researchers have claimed that firms need to involve several hierarchical levels to respond to turbulent environments (Hedlund, 1980), and that HQ's own relationships to the local subsidiary networks help improve the information processing capacity of the MNC in the local environment (Birkinshaw et al., 2001). In essence, HQs provide a different perspective and have diverse knowledge and competencies which help the firm in the turbulent local context.

The dynamic nature of a particular market provides also strong opportunities to learn from that market (Frost, 2001; Holm et al., 2005). For example, uncertainty deriving from intense competition increases the likelihood that process and product innovations are developed (Porter, 1980). Thus, HQs might be interested in getting first-hand knowledge on the local developments and the nature of competitive rivalry (Holm, Johanson & Thilenius, 1995; Yamin & Forsgren, 2006).

*Hypothesis 1: Local environmental uncertainty is positively associated with embeddedness overlap in the subsidiary's local network.*

### **Subsidiary Partner Multinationality**

As pointed out in our introduction, the changing business nature of key customers (and suppliers), may force firms to forgo efficiencies and deal with the same actor

at both a local and a global level. When the external partners of the MNC become more global, interdependencies between markets are created. Some customers or suppliers might be connected to the focal MNC in several markets (Dacin et al., 1999; Birkinshaw et al., 2001; Newburry, 2001). Interestingly, research on subsidiary embeddedness ignores to a large extent differences between diverse kinds of network partners<sup>2</sup>. We argue that embeddedness overlap is more likely to occur the higher the number of multinational partners in the subsidiaries' networks as opposed to purely domestic firms. First, compared to purely domestic firms, multinational actors can have an impact on the MNC beyond the scope of the local market. Actions taken by an affiliate of a large MNC can be guided by the partner MNC and hence reflect strategic and tactical moves of the whole partner MNC. Furthermore, through subsidiary strategic initiatives, local units of multinationals are able to contribute to the strategic and tactical behavior of the partner MNC (Birkinshaw, 1996). Understanding such affiliates of multinationals might be worthwhile for HQs as well, as they reflect current or future strategies of the overall partner MNC. Second, Dunning (1998) argues that the presence of MNCs in a market is a sign that critical location-specific advantages are present. Since they could be a basis for the competitiveness of the MNC, foreign firms should trigger HQ attention to such actors (Bouquet & Birkinshaw, 2008b). In

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<sup>2</sup> To be precise, many studies do measure the level of embeddedness of subsidiaries with regard to different categories of external network partners. The categories distinguish between external and internal network partners and different kinds of organizations such as customers and suppliers, distributors, competitors, R&D institutions and government institutions. Yet, these partial embeddedness measures are mostly aggregated in order to derive an overall average measure for subsidiary embeddedness (e.g. Andersson et al., 2002).

sum, we hypothesize that the more a MNC's subsidiary is connected to multinational actors, as opposed to purely domestic actors, the higher the incentive for the HQ to invest into own relationships to these actors which creates embeddedness overlap

*Hypothesis 2: The degree of multinationality of the subsidiary's local network is positively associated with embeddedness overlap in the subsidiary's local network.*

## **2.2 Internal Determinants of Embeddedness Overlap**

While external factors drive the likelihood of embeddedness overlap, we suggest that internal factors also have an effect. One prominent explanation of embeddedness overlap can be found in social exchange theory, or more specifically the literature on relational power within the MNC (Mudambi & Navarra, 2004; Ambos & Schlegelmilch, 2007; Bouquet & Birkinshaw, 2008a). Theories of intraorganizational power suggest that the configuration of the MNC network, e.g. the position of a focal subsidiary, influences HQ's attention and HQ's attempt to increase its knowledge about the subsidiary and the context in which the subsidiary is embedded (Ghoshal & Bartlett, 1990; Nohria & Ghoshal, 1997; Bouquet & Birkinshaw, 2008b). We consider the subsidiary's resource importance as well as its relative performance in our framework which has been used as key dimensions of a subsidiary's position and strategic significance (Bartlett & Ghoshal, 1986; Jarillo & Martinez, 1990; Bouquet & Birkinshaw,

2008b)<sup>3</sup>. This is in line with Cyert and March (1963) who argued that decision-making heuristics are often simple-minded focusing on easy indicators of a subsidiary's weight within the MNC.

### **Subsidiary resource importance**

Subsidiary resource importance signifies the extent to which a subsidiary possesses resources upon which other units within the MNC depend. For example, they might undertake manufacturing on behalf of the entire MNC (Nohria & Ghoshal, 1997; Frost et al., 2002). Such strategically significant subsidiaries are powerful and trigger the attention of HQs (Bouquet & Birkinshaw, 2008b) and their interest in understanding the subsidiary's local context. In fact, it is argued that HQ knowledge of the local context of such subsidiaries is crucial for effective management and the retention of power (Holm et al., 1995; Yamin & Forsgren, 2006; Andersson et al., 2007). The reason is that knowing and understanding a political network is in itself a source of power (Krackhardt, 1990). Furthermore, the subsidiary's embeddedness is often considered to be the basis for the position of the subsidiary in the MNC in the first place (Yamin & Forsgren, 2006; Andersson et al., 2007; Ghoshal & Bartlett, 1990; Garcia-Pont, Ignacio Canales & Noboa, 2009). It is logical, therefore, that the HQ moves its attention to these external actors. Therefore we hypothesize the following:

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<sup>3</sup> Other variables which are also sometimes used to define subsidiary significance within the MNC network such as its autonomy or size are controlled for in the analysis.

*Hypothesis 3: The importance of subsidiary resources to others units within the MNC is positively associated with embeddedness overlap in the subsidiary's local network.*

### **Subsidiary Past Performance**

The second indicator of subsidiary strategic significance is its past performance. The MNC depends more on subsidiaries that are high performers in terms of profitability than on low performers. Strong financial performance of a subsidiary means that the subsidiary contributes strongly to the performance of the whole MNC. This in turn increases the freedom for HQs to allocate financial resources to projects or units where it thinks it is most applicable. High levels of relative performance might also indicate that the subsidiary has a strong capability base. This is an indicator of potential know-how transfer from this subsidiary to other subsidiaries. To this end, past performance is an easy, relative objective way for the HQ to assess the local market and high levels of performance trigger their attention and interest in understanding more in detail of what is going on.

*Hypothesis 4: The past performance of the subsidiary is positively associated with embeddedness overlap in the subsidiary's local network.*

### **3 Methodology**

#### **3.1 Sample and Data Collection**

The study involves 168 European subsidiaries of MNCs. The population list of more than 45000 subsidiaries was drawn from the AMADEUS database which contains data on European firms. Subsidiaries were defined as legal entities (firms) whose shareholders are other firms owning at least 51% of the subsidiary and residing abroad. A random sample of 1507 subsidiary companies was successfully contacted and received questionnaires. A number of efforts were taken to enhance response rates from the targeted senior subsidiary managers<sup>4</sup>. We conducted two follow-up calls after the initial mailing of the questionnaire. When requested, a hardcopy and/or pdf questionnaire was resent to the respondent. The assurance of confidentiality further aimed to reduce respondents' incentive to artificially inflate or disguise their responses. A total return of 193 questionnaires represented a response rate of 12.8%. However, due to missing values the present analysis was conducted with a sample of 168 subsidiaries (11.1% of the target sample).

The large majority of the subsidiaries belong to two manufacturing industries namely "Machinery" and "Chemicals, Petroleum, and Coal". The subsidiaries are located in more than 26 countries with the largest countries, i.e. Germany, Spain, the United Kingdom, Poland and France, making up 40% of the sample. On

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<sup>4</sup> We chose subsidiary heads / CEOs as our main informants.

average, the responding subsidiaries are 22.3 years old, achieve total sales of approximately 30 Mio. Euro, and operate with 131 employees. Regarding the location of the HQs, approximately one third of the firms are coming from Germany (18%) and Austria (13%). HQs located outside Europe (US, Japan) represent 11% of the sample.

We analyzed non-response bias and late-response bias and found no significant differences<sup>5</sup>. To counter common method bias, we protected respondent anonymity to avoid consistency motif and social desirability, we used improved scale items after extensive pre-testing, and most of the constructs are based on well-established scales in the literature (Podsakoff, MacKenzie, Lee & Podsakoff, 2003). The dependent variable (HQ local relationships) had a special question initiation to avoid social desirability (cf. Martinez & Jarillo, 1991; Harzing, 1999)<sup>6</sup>. In addition, a Harman's one-factor test did not produce a single emerging factor (Podsakoff & Organ, 1986). To validate the dependent variable, we also collected additional data via telephone from some of the subsidiaries' headquarters and calculated an intra-class correlation coefficient. Resulting data of 120 external relationships showed a high consistency between subsidiary and

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<sup>5</sup> To test for non-response bias we tested for equality of means and distribution similarity regarding the variables sales, age, and number of employees. This suggests that the sample is representative of the population of European foreign-owned subsidiaries as represented through the AMADEUS database.

<sup>6</sup> For example, we initiated the question asking for HQ local relationships with a statement indicating that some firms use networks extensively while others do not to indicate that both answers are fine.



corresponding HQ responses (Intra Class Coefficient ICC = .72<sup>7</sup>). Consequently, we assume that common method bias is not a serious problem in this study.

### **3.2 Measures**

Measures of all constructs were developed based on an in-depth review of the literature and the questionnaire was pretested by the research team and ten individuals.

#### **Embeddedness overlap**

We used two different measures to capture embeddedness overlap in the local network. First, we built a composite of the strength of the relationships that HQs maintain to several types of external partners to which also subsidiaries have built linkages. Instead of using a standard Likert scale, we used a graphical scale adapted from Ambos and Schlegelmilch (2007) and measured subsidiary and HQ external relationships with the same question. This approach proved useful in the pretests. It emphasizes that the HQ relationship strength needs to be indicated in relation to the subsidiary's network partners and not to others. This is necessary as to capture overlap and not non-redundant ties. Respondents were asked to estimate on a 6 point scale the strength of the relationships between their subsidiary and the network actors, and their HQ and the same actors. The following local actors were given: domestic suppliers; domestic customers, local units of multinational suppliers, local units of multinational customers, local

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<sup>7</sup> Two-way random effects model.

governments, and local industry associations. Based on this question, we computed a variable named “HQ local linkages”, which represents the composite strength of the HQ’s relationships to the six local actor categories. In an exploratory factor analysis we derived one single factor which explains 55.2 % of the variance. All loadings are significant with the smallest loading being .673 (Construct reliability (CR) = .880<sup>8</sup>).

Second, in order to be able to conduct a robustness test with a related but different dependent variable. We computed a second variable which combines HQ and subsidiary external relationships. We named this construct “Shared relationships”. It measures the percentage of shared relationships to the local network between the HQ and the respective subsidiary. Again, we took the subsidiary network as a baseline for the measure. If a subsidiary had indicated that it maintains relationships to three local actors and that its corresponding HQ is linked to one of those actors as well, the variable takes the value of .33. If a subsidiary had indicated that it maintains relationships to 5 actors and that its corresponding HQ is linked to all five of them, then “shared relationships” would be 1.

## **Environmental Uncertainty**

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<sup>8</sup> Construct reliability (CR) was calculated as an alternative to Cronbach’s alpha due to the dependency of alpha on the number of items. We used the approach according to Hair et al. (2006) taking into account the square of the summed loadings and the sum of the error variance terms for the construct.

Uncertainty has been operationalized as a multidimensional construct consisting of technological turbulence, intensity of competition and market turbulence in the subsidiary market (Jaworski & Kohli 1993). We abridged the previously used scales and respondents were asked to indicate their agreement with the following conditions of the subsidiary market: “In your business, customers’ preferences change substantially over time”. “There is demand from customers who never bought your products before” (Market turbulence). “It is very difficult to forecast the technological development in the next three years”. “A large number of new product ideas have been made possible through technological breakthroughs in your industry” (Technological turbulence). “Competition in your market is very fierce”. “Heavy price competition is a characteristic of your industry” (Intensity of competition). Three two-item factors emerged for the three dimensions of uncertainty. However, the factor for technological turbulence turned out to be unreliable. We deleted these two items. Then, factor analysis produced two factors explaining 74.4 % of the variance. The first factor covers the first two items and was named “turbulence”. (CR =.82). The second construct was named “competition” and was built on the last two items. (CR = .85)

### **Subsidiary Partner Multinationality**

We developed a new scale to measure the extent to which the subsidiary partners are rather multinational organizations as opposed to domestic actors. We used the subsidiary’s average strength of relationships to local units of multinational partners and regional industry associations and regional governments divided by

the subsidiary's average strength of relationships to purely domestic partners (domestic suppliers, domestic customers, local industry associations and local governments). The higher this ratio, the more the subsidiary is connected to multinational partners as opposed to purely domestic partners.

### **Subsidiary Resource Importance**

Subsidiary resource importance is defined as the extent to which resources of the subsidiary are important to other units within the MNC. We measured this construct with three Likert-type items. Respondents were asked to indicate the extent of resource outflows from the focal subsidiary to other subsidiaries of the MNC on a 6-point scale with regard to “technology know-how”, “manufacturing know-how”, and “product flows” (e.g. parts and finished products). The one emerging factor explained 77% of total variance (CR = .94).<sup>9</sup>

### **Subsidiary Past Performance**

Subsidiary past performance was measured relative to other subsidiaries of the corporation on a scale between 1 (worse) to 5 (better). Respondents were asked to rate six performance indicators over the last three years: sales growth; market share; return on investment; profit; productivity; cash flow from operations. Through principal component analysis, we derived two factors explaining 72% of

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<sup>9</sup> In order to check if the resource outflows are indeed important to the rest of the MNC we validated the scale with responses to another question which directly asked for the importance of the subsidiaries' resources for other units. Correlations were highly significant and above .76. We did not use this importance scale because of a substantially higher number of missing values.

total variance. The factor “Sub Past Financial Performance” was developed from four indicators: return on investment, profit, productivity, and cash flow from operations. This factor represents the past financial performance of the subsidiary (CR = .88). The factor “Sub Past Market Performance” was constructed using sales growth and market share (CR = .85).

### **Control variables**

In order to control for other effects than hypothesized, we used several control variables which we drew from previous literature. Subsidiary **age** was measured as the number of years between the subsidiary’s date of establishment and the year 2007. Subsidiary **size** was measured as the number of employees of the subsidiary<sup>10</sup>. We used two dummy variables as controls for **formation** of the subsidiary (greenfield investments and joint-ventures; baseline is acquired subsidiaries). We also controlled for the **geographic distance** between the HQ and the subsidiary. We created a dummy variable called “hostregiondummy” which indicated “1” for the long distance cases, i.e. when the HQ of the European subsidiary was from the U.S. and Japan, and “0” for the case that the HQ was located within Europe. On the firm-level, we are controlling for the organizational setup and strategy of the MNC by integrating the dummy variable “**matrix organizational structure**” into the analysis. The variable reflects if the MNC’s structure is based on more than one organizational dimension (regional, product,

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<sup>10</sup> We used the natural logarithm of size and age.

or functional divisions). Furthermore, we include **subsidiary autonomy** since this variable is often assumed to shape the subsidiary's mandate and role within the MNC (Paterson & Brock, 2002). The scale is built on four items: "Hiring and/or promoting top management in your subsidiary, formulating and approving your subsidiary's annual budget, changing your subsidiary's organization, increasing expenditures beyond budget" (five-point scale from 1: subsidiary decides 100% to 5: parent decides 100%). Finally, we controlled for the overall level of economic development of the subsidiary location by measuring **the gross domestic product** per capita in purchasing power parity (data for 2007 from Eurostat).

## 4 Analysis and Results

To test our hypotheses, we used ordinary least squares (OLS) with robust standard errors as implemented in STATA 10.0, to counter effects of heteroscedasticity with the dependent variable HQ local relationships<sup>11</sup>. We checked for the assumptions of linearity, normality of errors, absence of multicollinearity, independence of errors, and no undue outliers or influential cases. Table 1 contains an overview of means, standard deviations and correlations of the variables used in the model. The results of the regression analysis are depicted in Table 2.

----- **Table 1 about here** -----

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<sup>11</sup> Results were stable as compared to the calculation without robust standard errors.

Table 2 contains the results of the regression analysis. Model 1 presents all control variables which account for roughly 15% of the variance. Of these variables, subsidiary autonomy, subsidiary size, and entry mode “joint venture” are positively and significantly related to HQ local relationships. Subsidiary age and geographic distance (host region dummy) are negatively related to the dependent variable. In Model 2, we present the results pertaining to H1 to 4 in addition to the control variables. The prediction that uncertainty leads to the formation of HQ local relationships gained support only for the variable “turbulence” but not for “competition”. Results also show that the more the subsidiary is connected to multinational affiliates the more the HQ builds local relationships to these units. These data confirm H2. H3 and 4 suggested that headquarters will maintain linkages to actors in the subsidiaries local environment to limit the power of resource rich and well performing subsidiaries. An examination of the corresponding coefficients (subsidiary resource importance, subsidiary past market and financial performance) confirm such a relationship, thus supporting our two final hypotheses.

---- Table 2 about here ----

### **Robustness Checks**

To validate our results, we estimated a fractional response model and exchanged “HQ local relationships” with the alternative dependent variable “Shared Relationships” which represents the percentage of shared relationships to the local

environment of the subsidiary<sup>12</sup>. The results are displayed in Table 3. Our findings are to a large extent validated with the alternative dependent variable. H1 receives support only for turbulence and not for the intensity of competition. H2 is supported with subsidiary partner multinationality being positively associated to the extent of shared relationships. H3 receives only limited support regarding the variable subsidiary resource importance with  $p=0.137$ . Subsidiary past performance (H4) shows mixed results. While financial performance is positively and significantly related to the extent of shared relationships at the 10% level ( $p=0.076$ ), subsidiary market performance is not significant. Of the control variables, subsidiary autonomy, subsidiary age, size, and geographic distance confirm the results of the OLS regression with the original dependent variable. The overall model is highly significant and the ML Cox Snell R Square at 34%.

---- Table 3 about here ----

## 5 Discussion

The basic assumption of this study is that MNCs, such as any other kind of firm, are embedded in their external network and that this is one important characteristic of the organizational setup which drives organizational performance, survival and behavior. This study investigates the particular

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<sup>12</sup> We follow Papke and Wooldridge (1996) and apply a fractional logit regression with robust standard errors. In this approach,  $E(y | x)$  is modeled as a logistic function, where  $y$  is the dependent variable and  $x$  is a set of regressors:  $E(y | x) = \exp(x\beta) / [1 + \exp(x\beta)]$ . This model ensures that the predicted values of  $y$  are in  $(0, 1)$ . This fits our dependent variable since it is the percentage of shared relationship which varies hence between 0 and 1. The method is non-linear and can be estimated using quasi-maximum likelihood.



phenomenon of HQ local linkages and embeddedness overlap and extends the previous subsidiary-focused body of literature. We treat HQ local linkages as a form of attention from the HQ to the subsidiary context and hence as an investment by the HQ made only under certain circumstances. To our knowledge, this is one of the first attempts to measure this phenomenon and to investigate its antecedents. We develop a model that explains the phenomenon based on environmental and firm-internal factors.

The level of environmental uncertainty in the local market is a driver of embeddedness overlap. However, there is only support for the hypothesis that uncertainty emanating from market turbulence is positively related to HQ local linkages and the extent of shared relationships. One reason for the insignificance of the competition variable might be the price pressure in competitive industries. In contrast to the level of overall environmental uncertainty as captured by the turbulence measure, the level of competition is also a sign of a mature industry in which there is substantial cost pressure (Birkinshaw & Lingblad, 2005). Prices tend to decrease when competition is very intense and firms might therefore eliminate redundant activities where possible and strive for efficiency in their operations. Hence, while HQ local linkages might be a countermeasure against increased competition, firms will still try to streamline their organizations and avoid the duplication of relationships to the external networks.

Furthermore, we found that multinational network partners are more interesting to HQs than purely domestic actors. HQ attention to local networks is less driven by the existence of purely domestic actors since their behavior does

not reflect or impact several markets of the MNC, and they probably offer limited learning potentials to the HQ. Newburry and colleagues (Newburry, 2001; Newburry & Yakova, 2006) have used the construct “extent of shared clients” as an indicator for the level of subsidiary embeddedness. Shared clients indicate that the MNC is embedded to multinational organizations. Along the lines of institutional research (e.g. Roth & Kostova, 2003) Newburry and colleagues assume that subsidiaries with an independent client base (purely domestic firms) are in general more strongly locally embedded than subsidiaries sharing their clients with many other units. Post hoc analysis of our data regarding the average relationship strength of the subsidiary to the local network confirms the assumption of Newburry and colleagues (2001; 2006). Our data gives a two-fold picture: Subsidiaries connect to a stronger extent to domestic partners than to local units of multinational partners while the inverse is true for the HQs. This is in line with the suggestions by Dacin et al. (1999) who postulate that HQs external linkages substitute subsidiary embeddedness under increasing globalization. Only then can HQs coordinate multi-market customers and suppliers effectively (Birkinshaw et al., 2001). In contrast to Dacin et al. (1999), we show that intermediate situations exist in-between pure subsidiary embeddedness and a complete crowding out effect. This is an important novel finding since it calls for re-focusing research into the characteristics of the external partners (the portfolio or composition of the subsidiary network), and the effect of globalization on the creation and management of interorganizational relationships (Birkinshaw et al., 2001).

The data also shows support for the prediction that HQ attention to subsidiary networks and hence embeddedness overlap is triggered by the subsidiary's positioning within the MNC as well as the apparent strategic significance as indicated by the subsidiary's past performance relative to its peers. The importance of subsidiary resources to the rest of the MNC is clearly related to the extent of HQ local relationships and shared relationships. With regard to performance, financial performance seems to trigger HQ local relationship building rather than market performance which is not significant in our robustness test.

### **5.1 Implications and future research**

Our findings have important implications. First, we contribute to the idea of a selection process HQ units apply when choosing on which subsidiaries and which subsidiary networks to focus on (Andersson et al., 2007). We extend the notion of attention (Bouquet & Birkinshaw, 2008) in the sense that HQ attention to subsidiary matters also includes attention to the subsidiaries' local networks. Second, selecting the appropriate subsidiaries and selecting where to build embeddedness overlap might help the HQ in balancing costs with respective benefits of their networking activities. Future research could build on our findings and investigate the outcome of HQ local relationships and embeddedness overlap, as well as the effectiveness of the balancing selection process.

Moreover, our study also has important implications for the conception of the differentiated network MNC and its management. The findings support the idea that HQs use external relationships to gather knowledge and to build understanding of the local context which can be useful to counter subsidiary influence (Andersson et al., 2007; Yamin & Forsgren, 2006). This view is further supported by our control variables. There is support for a positive relationship between the subsidiary's size and HQ local relationships as well as the percentage of shared relationships. It is reasonable to assume that large subsidiaries are more likely to be powerful and resource-strong.

Some authors also argue that subsidiary autonomy is an indicator of subsidiary power (Mudambi & Navarra, 2004). Since subsidiary autonomy is positively related to HQ local relationships as well as the extent of shared relationships, the results are consistent. The finding contradicts classic contingency theory which postulates high levels of subsidiary autonomy in case the HQ lacks knowledge and understanding of the local context (Nohria & Ghoshal, 1997). This is an important finding which confirms initial evidence by Forsgren et al. (2005). MNC HQs seem to leave decision-making autonomy to local subsidiaries despite having access to information about the local subsidiary network through their own relationships. In fact, subsidiaries might have no interest in relinquishing their autonomy even in situations the HQ knows what is going on. This is mirrored in MNC research showing that subsidiary autonomy might often rather been "taken" than "given" from the HQs, and that powerful subsidiaries can "avoid" control by the HQ (Bartlett & Ghoshal, 1989; Mudambi

& Navarra, 2004). Arguably, the MNC with its very dispersed and differentiated network might represent a context which is likely to produce such behavior: dependencies and control problems within the MNC continue to exist to a strong extent despite the internalization of the foreign activities. Interestingly, based on this finding, the notion of the externally embedded network MNC becomes different. In order to control and manage internalized foreign activities, HQ units relate selectively to local external networks. Hence, in addition to Ghoshal and Bartlett (1990), who claim that the HQ can assume the role of the powerful designer of the MNC organization due to its centrality in the intra-organizational network, we extend this perspective and suggest that the HQ's role depends on its relationships to internal but also to *external* organizations. This is an interesting avenue for future research. It reveals a much more complex picture of how MNCs interact with environments on multiple levels and how this in turn shapes or is shaped by intra-organizational circumstances. In general, our findings call for more research using more complex concepts of MNC-environment interaction. Future research might also use theories of intraorganizational power within the MNC context (Bouquet & Birkinshaw, 2008a). However, it seems necessary that this research takes the external network into account which might often serve as the origin of powerful positions of subsidiaries (Andersson et al., 2007).

## **5.2 Managerial relevance**

Our findings hold important information for managers at both HQ as well as subsidiary level. First, it is important to note that HQ managers might value direct

relationships to the local context instead of or in addition to the natural linkages they maintain to their subsidiaries – via traditional coordination and control mechanisms. They seem to give an unbiased picture of what is happening locally. Second, managers have to understand that the HQ decision to involve in local networks is a rational selection process guided by relevant issues on the agenda of the HQ: maintaining control, achieving coordination across the locations, increasing knowledge of the local context. Increased HQ involvement in general across all subsidiaries, however, is likely to be counterproductive since large costs are involved.

### **5.3 Limitations**

This study is a first attempt to explain the phenomenon of embeddedness overlap and HQ relationships to local contexts of established subsidiaries. Notwithstanding the robustness of the results across the two alternative dependent variables and the lack of obvious bias, there are some limitations of this study.

First, testing hypotheses in a cross-sectional research design primarily indicates association, not causality. Hence, it is necessary to interpret the results with caution. It is desirable to investigate longitudinally the relationships between the variables of this study. This might also help to investigate to what extent HQ

linkages established in the start-up phase of the subsidiary maintain important during the course of subsidiary development<sup>13</sup>.

Second, we conducted our analysis on the nodal level (unit level) treating groups of external actors (such as suppliers and customers) as relevant partner categories. This was useful to get comparable data across different MNCs and is based on common approaches in the field (e.g. Luo, 2001). However, it creates a problem of aggregation. Future research could build on this and develop a more fine-grained measure of external relationships.

Third, it could be argued that the purpose of HQ relationships to local partners is not only information-seeking and that the activity structure of the HQ might have an important impact. However, we assume that different types of HQs are randomly distributed in our sample. Furthermore, we have retested the results with a much smaller subsample and controlled for the size of the HQ unit (number of employees) and the number of subsidiaries reporting to the HQ. Both variables are not significant and the other hypothesized relationships remained stable with the exception of subsidiary market performance which became insignificant when predicting HQ local relationships. Finally, network theory postulates that there is no information diversity between partners when there is no structural hole between them (Burt, 1992; Zaheer & Soda, 2009). In other words, the collection of information and the built up of knowledge about the local context and the

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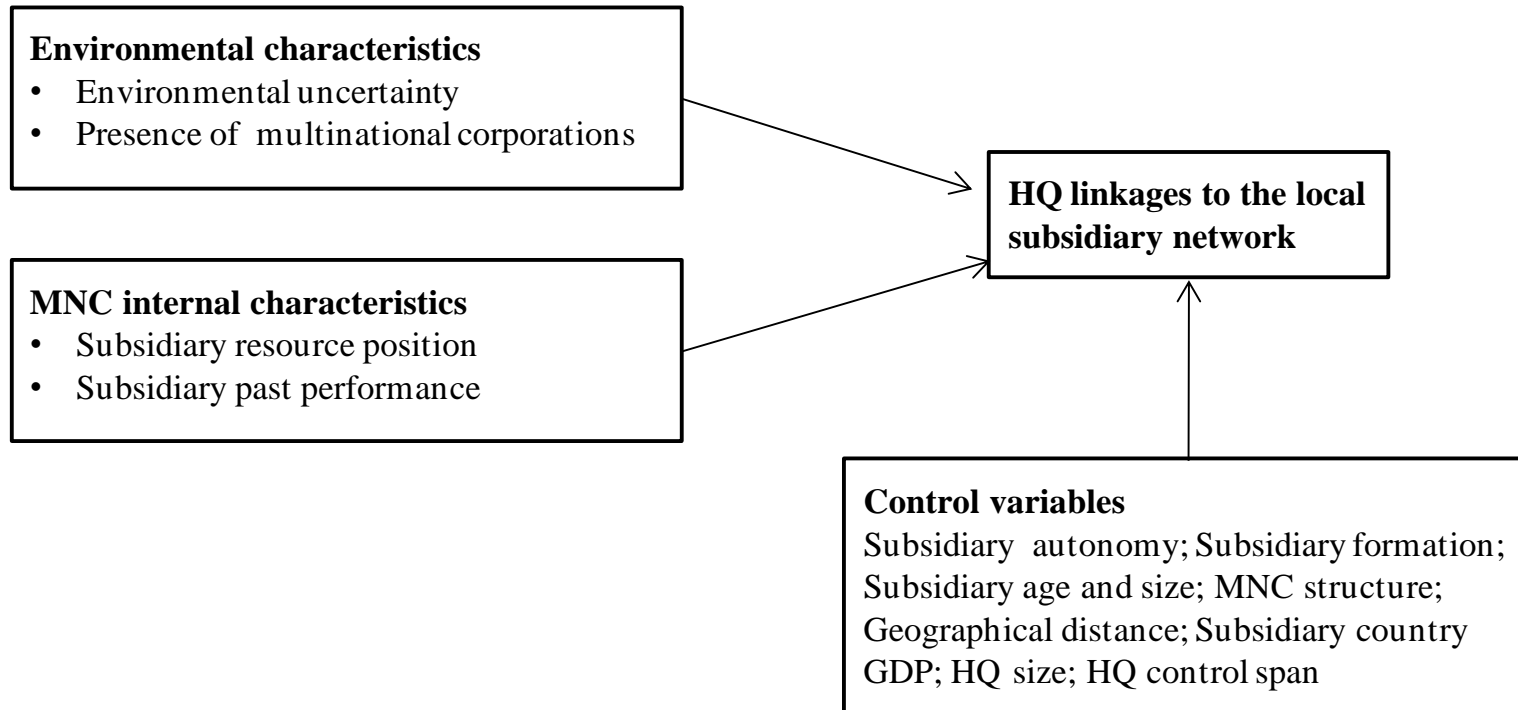
<sup>13</sup> We thank an anonymous reviewer for this comment.

subsidiary's external relationships is a result of HQ's own relationships to the local context no matter what their purpose is.

Fourth, future research could validate our findings by investigating comparative measures of environmental and firm-internal characteristics. While we have used relative subsidiary performance compared to the subsidiary's peers, other variables were measured on absolute scales. HQ investment into local linkages might rather be guided by relative uncertainty of a subsidiary market compared to other subsidiaries. While we claim that the subsidiary perceptions are still relevant because they get transferred to the HQ through issue-selling and profile-building activities, future research could use HQ-informed relative variables.



**Figure 1: Conceptual framework**



**Table 1: Means, standard deviations and correlations**

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1 HQ local relationships	1.000															
2 Shared relationships	0.798	1.000														
3 Sub Autonomy	0.130	0.090	1.000													
4 Dummy Greenfield	-0.171	-0.143	0.012	1.000												
5 Dummy Joint Venture	0.158	0.128	-0.021	-0.297	1.000											
6 Sub Age	-0.172	-0.219	0.019	0.119	-0.036	1.000										
7 Sub Size	0.182	0.195	0.032	-0.185	0.085	0.113	1.000									
8 Dummy Matrix Structure	0.044	0.080	-0.009	-0.002	0.142	-0.092	0.063	1.000								
9 Dummy Host Region	-0.152	-0.165	0.068	-0.140	0.067	0.056	0.066	0.012	1.000							
10 GDP per Capita	-0.105	-0.147	-0.112	-0.081	-0.124	0.282	-0.025	0.029	0.162	1.000						
11 Competition	0.013	-0.049	-0.076	0.018	0.164	0.013	0.051	0.071	0.028	-0.014	1.000					
12 Turbulence	0.157	0.166	-0.052	-0.085	-0.097	-0.029	0.075	-0.071	-0.039	0.071	-0.036	1.000				
13 Sub Resource Imp.	0.283	0.269	0.042	-0.311	0.263	-0.161	0.227	0.050	0.233	0.006	0.036	-0.004	1.000			
14 Sub Past Market Perf.	0.126	0.051	-0.110	0.116	-0.151	-0.008	-0.030	-0.051	-0.033	0.100	0.007	0.028	0.064	1.000		
15 Sub Past Financial Perf.	0.191	0.193	-0.102	0.033	0.055	-0.047	-0.105	-0.032	-0.073	-0.103	-0.068	0.068	0.100	0.003	1.000	
16 Sub Partner Multination.	0.210	0.214	0.063	-0.104	-0.004	0.090	0.045	0.032	0.101	0.095	-0.177	-0.079	0.113	0.028	0.055	1.000
Mean	0.046	0.679	-0.034	0.369	0.131	1.145	2.258	0.179	0.125	96.913	-0.007	0.006	0.082	0.028	0.023	0.743
Std. Dev.	0.997	0.306	1.014	0.484	0.338	0.421	0.567	0.384	0.332	29.035	0.990	0.997	0.993	0.982	1.008	0.467

Sub = Subsidiary

Perf. = Performance

Multination. = Multinationality

**Table 2: Results of OLS regression analysis with robust standard errors. Dependent variable “HQ local relationships”.**

Variables	Expected relationship	Model 1	Model 2
Constant		<b>-0.090</b> (0.374)	<b>-0.311</b> (0.373)
Sub Autonomy		<b>0.141**</b> (0.071)	<b>0.164**</b> (0.069)
Dummy Sub is Greenfield		<b>-0.230</b> (0.170)	<b>-0.136</b> (0.161)
Dummy Sub is Joint Venture		<b>0.349*</b> (0.204)	<b>0.320</b> (0.218)
Sub Age (log)		<b>-0.394*</b> (0.201)	<b>-0.322*</b> (0.186)
Sub Size (log)		<b>0.312**</b> (0.123)	<b>0.247**</b> (0.116)
Dummy Matrix structure		<b>0.009</b> (0.203)	<b>0.041</b> (0.192)
Dummy host region		<b>-0.562***</b> (0.195)	<b>-0.652***</b> (0.180)
GDP per capita		<b>-0.000</b> (0.003)	<b>-0.001</b> (0.002)
<b>H1</b>			
<b>Competition</b>	<b>H1a: +</b>		<b>0.055</b> (0.068)
<b>Turbulence</b>	<b>H1b: +</b>		<b>0.156**</b> (0.069)
<b>H2</b>			
<b>Sub Partner Multinationality</b>	<b>H2: +</b>		<b>0.453***</b> (0.155)
<b>H3</b>			
<b>Sub Resource Importance</b>	<b>H3: +</b>		<b>0.173**</b> (0.084)
<b>H4</b>			
<b>Sub Past Market Performance</b>	<b>H4a: +</b>		<b>0.149**</b> (0.068)
<b>Sub Past Financial Performance</b>	<b>H4b: +</b>		<b>0.156**</b> (0.070)
Observations		168	168
F		6.10***	6.19***
R-squared		0.146	0.303

Robust standard errors in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Sub = Subsidiary

**Table 3: Results of fractional response model (maximum likelihood) with robust standard errors. Dependent variable “Shared Relationships”.**

Variables	Model 1
Constant	-0.512 (0.684)
Sub Autonomy	0.205 *
Dummy Sub is Greenfield	(0.106) -0.107 (0.244)
Dummy Sub is Joint Venture	0.371 (0.368)
Sub Age (log)	-0.706 ** (0.342)
Sub Size (log)	0.434 ** (0.173)
Dummy Matrix structure	0.097 (0.295)
Dummy host region	-1.243 *** (0.312)
GDP per capita	-0.002 (0.004)
Competition	-0.001 (0.125)
Turbulence	0.243 ** (0.108)
Sub Partner Multinationality	2.178 *** (0.485)
Sub Resource Importance	0.214 <sup>1)</sup> (0.144)
Sub Past Market Performance	0.086 (0.098)
Sub Past Financial Performance	0.209 * (0.118)
Observations	168
Log pseudolikelihood	-72.085
Model Chi Square	56.600 ***
ML Cox Snell R2	0.339

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

1) significance: 0.137

Sub = Subsidiary.

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