Cities and the autonomy and network relationships of foreign subsidiaries:
the case of Greater Copenhagen
Abstract

This study considers the autonomy and network relationships in the subsidiaries of multinational corporations located in a competitive city region (Greater Copenhagen), compared to location elsewhere in Denmark. The study by focusing on city location expands and develops the literature that considers the importance of sub-national location. The paper enhances understanding on some of the major characteristics of the management systems of subsidiaries in different types of sub-national location. This increases knowledge on the complex ways by which spatial factors influences the strategies of firms, and thereby contributes to the growing literature on how not only national frontiers, but also sub-national frontiers, influence the strategies of multinational corporations. Using a combination of economic geography theories on competitive city locations and the resource based and network theories of the firm the paper examines the relationship between performance, and autonomy and network relationships of subsidiaries located in a competitive city region, compared to other locations in the same country. The theoretical underpinnings of the study lead to propositions that the autonomy and network relationship configuration in competitive city region differ from those of locations in other locations. The paper centres on the influence in a competitive city region location of characteristics in the autonomy and network relationship configuration compared to other locations in the same country. The propositions are tested by considering the effects on performance of autonomy and of inter and intra-organizational network relationships of subsidiaries in Greater Copenhagen compared to those located elsewhere in Denmark. The results reveal that subsidiaries located in Greater Copenhagen have a different autonomy and network configuration that relate positively to performance. The paper considers the implications of these differences for research on competitive cities and sub-national location.

Keywords

Autonomy, networks, competitive cities, sub-national location, subsidiaries
Introduction

Research on the topic of the location strategies of multinational corporations (MNCs) is increasingly considering the issue of sub-national location (Dimitratos et al, 2009; Meyer et al, 2005; Nguyen et al, 2013; Santangelo, 2009). The motivations to move beyond only considering national frontiers arises from a renewed focus on the location component of the OLI paradigm (Cantwell, & Mudambi, 2011; Dunning, 2009; McCann, 2011), and the rise of resource and institutional based theories that highlights the complex interplay between spatial factors and the strategies of MNCs (Andersson et al, 2001; Peng et al, 2008 & 2009; Meyer, et al 2011). Research on supply and value chains and in the network relationships of firms (Dicken et al, 2001; Dicken and Malmberg, 2001; Hendersen et al, 2002; Yeung, 2005) influences the work of international business scholars seeking to extend location studies beyond only considering national frontiers. The work of economic geographers therefore exerts significant influence on the research approaches used by international business scholars interested in the impact of spatial factors on MNC strategies (Beugelsdijk, et al, 2010).

The impact of cities on the strategy of firms is a strong feature in research by economic geographers (Pain, 2012; Sassen, 2013). The importance of cities for economic and business developments is also prominent in government circles (OECD, 2006) and among commercial organizations (Economic Intelligence Unit, 2012). The development of digital and other radical technologies, combined with new economic, institutional and political environments have created a new global order in which certain types of cities provide wide ranging benefits not available in other areas (Storper, 2013). The benefits of locating in such cities arise from proximity to scarce and valuable resource leading to significant agglomeration benefits that
combine with network relationships competencies enabling firms and markets to link effectively across national and sub-national frontiers (Taylor, 2004). The concentration of agglomeration benefits and effective networking relationships in certain types of cities make them focal points in the global economy thereby exercising powerful influence on the location activities and strategies of firms (Beaverstock et al, 2000).

Economic geographers classify cities into different tiers that connect to the global operations of firms in a variety of ways thereby influencing the strategies of MNCs (Beaverstock et al, 1999; Taylor, 1997). Cities provide a wide and diverse range of resources and competencies that are necessary, and in some cases essential, for the ability of firms to fulfil their strategic objectives. The relationship between MNCs and cities is therefore a major driver of many of the most significant developments in the global economy (Sassen, 2013; Scott, 2012). There is however very little research by international business researchers on the role of cities in MNC strategies. The very limited research on location in cities by MNCs tends to centre on the attractiveness of ‘global cities’ as means to lessen the liability of foreignness that firms encounter when they cross national frontiers (Goerzen et al, 2013). The management systems used by MNCs to acquire and exploit the agglomeration and networking benefits available in ‘global cities’ to enable them to attain their objectives is considered, but is less central than the examination of city location to mitigate liability of foreignness.

The means by which the subsidiaries of MNCs embed in host locations and link with the other parts of their MNC to achieve their strategic objectives from their diverse geographical locations centres on the use by subsidiaries of inter and intra-organizational network relationships (Birkinshaw et al., 2005; Frost et al., 2002) and autonomy (Young and Tavares,
Using the resource-based view (RBV) and network theory, studies find that complex interactions between autonomy and intra and inter-network relationships are necessary to extract the benefits that stem from the resource bundles and competencies available in host locations (Andersson et al, 2005; Gamelgaard et al, 2012). These studies however only consider autonomy and embeddedness at national level. There is a need therefore to more fully understand how MNCs organise their autonomy and network relationship configurations in the different geographical locations of their operations to achieve their strategic goals. This is part of a research agenda to discover how the complex global, national and sub-national locations of MNCs are woven together to achieve the strategic objectives of MNCs (Beugelsdijk and Mudambi, 2013). Given the growing importance of cities in the global economy it is clear that it is necessary to have an increased understanding of how MNCs organize their strategies with regard to autonomy and network relationship configurations to effectively utilise the benefits available in such cities.

This paper increases our understanding on these matters by investigating autonomy and network relationships systems and performance in a competitive city region (Greater Copenhagen) compared to subsidiaries located elsewhere in Denmark.

**MNCs and location**

Economic geographers often regard MNCs as being primarily a type of multi-establishment firm that has establishments in different countries. The cross frontier aspect of MNCs is normally not central to analysis of location strategies as compared the drivers that lead to firms becoming geographically dispersed normally across a number of countries and regions in the global economy (Scott, 1986). Economic geographers often focus on relational
configurations between firms and territory (sub-national locations) and cities are normally a prominent feature in this type of analysis (Dicken and Malmberg, 2001; Taylor, 2004). These relational approaches focus on the local business environments in which firms are embedded and the linkages of these local environments to other locations in the global economy (Yeung, 2005). International business scholars tend to take a somewhat different view of MNCs. They regard national frontiers has being of profound importance and they have developed a host of theories to examine the implications for location of national frontiers (Dunning, 2009). The focus in international business research is normally on the drivers of the internationalization process of firms that leads them to engage in extensive cross frontier operations. At the core of much of contemporary international business research is the examination of the major challenges of managing effectively across national frontiers. This often resolves around problems associated with the liability of foreignness that MNCs face in their foreign operations (Zaheer, 1995). These liabilities are considered to be rooted in differences in national institutional systems between home and host locations (Peng et al, 2008 & 2009).

The growing importance of geographical factors in international business research focuses attention on the importance of spatial factors connected to agglomeration benefits and networking relationship advantages available to firms in various volumes and qualities in different host locations, including sub-national locations (Beugelsdijk et al, 2010). This has led to calls to consider national frontiers as a type of ‘spatial discontinuity’ (Beugelsdijk and Mudambi, 2013: 411). In this context, MNCs face sharp and discontinuous national frontiers, but are then faced with more smooth and continuous internal frontiers within national frontiers that delineate sub-national areas in which firms seek the locations that best facilitate the achieving of the strategic objectives of firms (Beugelsdijk, 2007). The management
systems associated with the various and diverse locations of MNCs must be developed and sustained in a complex spatial environment in which both national and sub-national frontiers are crossed. As many economic geographers regard certain types of cities as being at the core of proximity benefits and networking competencies (Beaverstock et al, 2000; Pain 2012; Taylor, 2004) examination of MNC strategies at city level provides a more nuanced view of the affects of spatial factors on the strategies of MNCs. This type of analysis of the effects of location on the strategies of MNCs is called for by international business researchers (Beugelsdijk and Mudambi, 2013).

The arguments forwarded for why certain cities have competitive advantages over other areas centre on wide, deep, and scare resources and competencies leading to agglomeration benefits, and networking relationships characterised by ‘buzz’ and other proximity related benefits (Scott, 2012; Stroper, 2013). These characteristics suggests the firms located in cities need to embed effectively in host locations and to relate effectively to other parts of the MNC to take full advantage of the range of competitive advantages available in such locations. A key question is whether MNC’s located in competitive city locations have different characteristics in their use of autonomy and network relationship configurations from those situated in other types of locations. In other words, does the configuration of autonomy and network relationships of subsidiaries differ in competitive city locations compared to other areas?

There is extensive research by economic geographers on MNC location strategies in competitive regions, including competitive city regions (Diez and Bergerô, 2005; Musil, 2009; Yeung, 2000; Zhao and Zhang, 2007). Much of this literature centres on the ability of
firms to exploit proximity effects by using effectively their network relationship systems (Eraydin and Fingleton, 2006; Jones, 2007; Wu and Radbone, 2005). These studies focus on inter-organizational network relationships, but place less emphasis on intra-organizational relationships with other parts of the MNC, and rarely consider the affect of the autonomy of subsidiaries. The work considers comparative regional differences (Burger et al, 2013) but not in terms of autonomy and network relationship systems. There is therefore no evidence from this literature on whether autonomy and network relationship configurations in subsidiaries vary in different types of sub-national location, or if different configurations of autonomy and network relationships in competitive city regions are associated with performance.

International business research on subsidiary location factors often centres on the Ownership-Location-Internalization (OLI) paradigm (Dunning, 2009; McCann and Mudambi, 2004). The work of Hymer (1971) explicitly or implicitly also underpins many of the studies on MNC location. In Hymer’s model MNCs concentrate key activities in locations with large pools of skilled labour and good international communications, with more routine operations based in locations with less deep and rich pools of skilled labour and less extensive communications. These locations are identified by Hymer as major global cities for the former, and lesser cities in the latter case (Driffield and Love, 2005). The cities aspects of Hymer’s approach to MNC location has however faded from most studies. The most extensively studied aspect of sub-national location using the OLI type approach is the influence on foreign direct investment (FDI) of industrial clusters (Birkinshaw and Hood, 2000; Chang and Park, 2005; Driffield, 2006; McCann and Mudambi, 2005; Shaver and Flyer, 2000). This literature focuses on institutional distance and liability of foreignness, the spillovers of knowledge to domestic
firms, and the affects of firm heterogeneity issues such as the strategic orientation of MNCs, technological transfers and R&D intensity. These studies do not explicitly focus on management structures such as autonomy and network systems that are required to mobilise and effectively utilise resources in different locations. Literature based on the RBV and network theory does highlight the role of autonomy and networks relationship configurations for the performance of subsidiaries (Andersson et al., 2001 & 2007; Gammelgaard et al, 2013; Schmid and Schurig, 2003) but does not consider the influence of sub-national location.

An international business literature on location is emerging that relates to economic geography research on competitive cities. This literature centres on examination of key factors influencing FDI to locate in competitive city regions. The key reason for the attractiveness of competitive city regions is seen as the ability to limit problems of liability of foreignness (Zaheer, 1995) by networking with the concentrations of other prominent MNCs and the sophisticated institutional systems in such cities. These network relationships help MNCs to adjust to additional costs of foreign locations (Nachum and Wymbs, 2007). The network relationships with other MNCs and also with institutional systems result in the development of interconnectiveness that stimulates diverse and high quality provision of services to MNCs in these regions. The provision of high quality services for MNCs in competitive city regions consequently lowers the liabilities of foreignness and permits MNCs to exploit effectively the unique or rare resource bundles found in such city regions (Goerzen, et al., 2013). There is evidence that this type of behaviour by MNCs has become more important in the latter half of the twentieth century and has continued into the twenty first century (McCann and Acs, 2011). This literature has however not considered the association
between autonomy and network relationship configurations and performance in competitive city regions compared to other locations.

**Competitive City Regions**

The topic of regional competitiveness stimulates much debate about how certain regions acquire distinctive competitive advantages and about the characteristics of such advantages (Boschma, 2004; Kitson et al., 2004; Harrison, 2007; Parr, 2008; Ward and Jonas, 2004). Competitive city regions may contain several clusters in different industries in the same city region making them in effect a cluster of industrial clusters (OECD, 2006). Evidence suggests that competitive city regions are more likely to have large pools of highly skilled labour (Eriksson and Lindgren, 2009; Hospers, 2003) and substantial pools of labour with creative skills and competencies (Florida, 2005; Sassen, 2013; Scott, 2006). Concentrations of high knowledge-based assets combined with effective networking and close proximity to commercial organizations, governmental and non-governmental agencies facilitate help to harness the potential to benefit from potential competitive advantages available in these cities (Glaser et al., 2001; Jones, 2007; Storper and Venables, 2004; Stroper, 2013).

Economic geographers identify competitive city regions in terms of a hierarchy in which differing volumes and qualities of resources and competencies are evident (Beverstock et al, 1999 & 2000; Taylor, 1997). There are three main views on the relationships between MNCs and competitive cities. The Global Commodity Chains (GCC) position centres on global supply chain system approaches (Gereffi and Korzeniewicz, 1994). In this view, certain cities have well developed and highly valued clusters of industries that grant firms located in such
cities high valued operations not easily available in other regions. The advantages arising from these clusters of industries allow MNCs located in these cities to play dominant HUB role in global supply chains. Locating in these types of cities is considered essential for the effective operation of global supply chains. The World City Network (WCN) view focuses on the centrality of key ‘world cities’ for development of the global economy. These ‘world cities’ provided specialised and effective economic and business infrastructures that enable MNCs to direct and control international flows of goods, services, labour and especially knowledge from these locations. Location in these ‘world cities’ enables MNCs to acquire and develop competitive advantages (mostly centred on knowledge-based assets) that enable them to be major and innovative operators in the global economy (Sassen, 2002 & 2013). The major difference between WCN and GCC is that the former highlights the importance of effective networks in certain cities that can utilise the high volume and quality of knowledge-based assets that are available in major world cities, and also transmit these knowledge-based assets across the global economy. The GCC view is more focus on agglomeration benefits arising from clusters of industries that make such cities HUBS for directing and controlling global supply chains. The Global Production Network (GPN) stance focuses on embeddeness in city locations founded on the relationships that firms have with their territorial location (Dicken et al, 2001; Henderson et al, 2002; Hess and Yeung, 2006). The embeddeness of firms in their territory (often cities) is founded on the network relationships of firms with other firms, governmental and other organizations in cities. The GPN view does not require a city to be a ‘world city’ or to have substantial concentrations of MNCs that are headquarters, or that have a dominant HUB role in global supply chains. In the Global Production Network approach, a city need not be a world city (or hub city) neither must it have a wide ranging stock of knowledge-based assets. Competitive city regions in the GPN view have network
relationships and stocks of scare and desirable assets that can make them useful as major HUBS in global supply chains, or centres for R&D and innovation for wide ranging operations in the global economy. Alternatively, some competitive cities in the GPN view provide important contributions (but not necessarily core contributions) for global operations, or they are good locations to direct and control regional (e.g., European), or national strategic objectives. In this view, competitive cities regions may host MNC subsidiaries whose primary role is not as headquarters, or to play a prominent part in global supply chains, or to be global centres of R&D and innovation. Subsidiaries may be located in competitive cities to take advantage of unique or rare resource bundles that enable subsidiaries to gain competitive advantages in what may be important but specialised and limited strategic objectives. The GPN approach therefore, permits examination of relative competitiveness in cities, as it does not depend on cities having a dominant global position, as either a headquarters or a pivotal part of a global supply chain (Mans, 2013).

The benefits of location in competitive city regions largely connect to proximity to assets that have high knowledge content, especially in the approaches of WCN and GPN. Such knowledge-based assets often require sophisticated and close contact between agents to acquire the benefits of such assets (Teece, 1986 and 1998). In other words, the comparative advantage of competitive city regions largely stems from relatively large stocks of high quality knowledge-based assets and the ability to use network relationships to effectively use these assets to generate and sustain dynamic capabilities (Teece et al., 1997). This suggests that to use scare and desirable resources and networking competencies effectively in competitive city regions is likely to require subsidiary organization systems that have different characteristics from those in other regions in the same national location. The
configuration of autonomy and network relationships systems are at the heart of the management systems that enable firms to attain and exploit knowledge-based assets (Andersson et al., 2007; Gammelgaard et al, 2013; Teece, 2000; Venaik, et al., 2005). In competitive city locations therefore it is likely that subsidiaries have different configurations of autonomy and network relationships than those that prevail in other host locations.

**Copenhagen**

Greater Copenhagen (the City of Copenhagen and the North Eastern part of Zealand) is a city region with a large pool of high knowledge-intensity firms (Winther and Hansen, 2006). Greater Copenhagen was a centre of manufacturing activities in the early post-war years, but it evolved into a services and knowledge-based region (Maskell, 1986). The evolution of Copenhagen as a knowledge-based city region followed from such developments as the emergence of the electro-medical instruments cluster arose from cooperation between businesses and the State University Hospital in Copenhagen (Lotz, 1993). The knowledge base of the city grew with the integration of research skills in Danish universities leading to the creation of the Medicon Valley cluster, which is the third most successful biotechnology cluster in Europe (Drejer et al., 1999; Steinfield and Scupola, 2008). Services and knowledge-based industries cluster more strongly in Copenhagen compared to the rest of Denmark as is reflected in employment patterns, which is also evident in foreign owned companies located in Denmark (Nielson et al., 2009). Although there are pockets of knowledge-based industries and firms outside of Copenhagen, the largest concentration of knowledge-based industries is in Copenhagen (Drejer el al., 1999). Labour productivity is considerably higher in the Copenhagen labour market areas compared to the rest of Denmark (Timmermans and Boschma, 2013).
Greater Copenhagen has approximately 20% of the population of Denmark, but has clearly larger concentrations of knowledge-based industries than is suggested by the proportion of population and higher productivity. The picture of Copenhagen indicates that it is, on average, a competitive city region compared to the rest of Denmark. The high density of population in Greater Copenhagen relative to the rest of Denmark and the concentration of firms, governmental and non-governmental agencies appear to give this region a resource bundle that confers the status of a competitive city region as compared with the rest of Denmark.

Copenhagen is not classified by the many indices of world cities as being a top ranked city. It is usually located in the middle of the ranking of world cities (for example AT Kearney, 2014). However, Copenhagen has a leading role in knowledge based industries that give it a competitive edge in Denmark and possibly, together with Stockholm, in the Nordic countries. In terms of the GPN approach, Copenhagen is likely to confer competitive advantages in Denmark and possible the Nordic countries, and may possess niche advantages in knowledge based industries in the global economy. Given the position of Copenhagen it is likely that MNCs will use different organizational systems in that city compared to the rest of Denmark in order to exploit the competitive advantages of the city. This suggests that subsidiaries located there will have different configurations of autonomy and network relationships than in subsidiaries located elsewhere in Denmark.

**Network and Autonomy Relationships**

Most of the views on the nature of the competitive advantages of cities have at their core wide and rich pools of scarce and valuable resources and good networking competencies
This implies that MNCs located in such cities will require management systems that will enable them to embed into host locations, this requires extensive and effective inter-organizational networks. To make best use of these resource and networking competencies in host locations also requires embedding into the rest of the MNC to enable access to the firm’s resources to make best use of assets available in host locations, and also to supply the products and knowledge to global markets from host locations (Birkinshaw et al 2005; Frost, et al, 2002). This requires subsidiaries located in competitive cites to have good intra-organizational networks. Granting subsidiaries autonomy to enable local decision-making to make best use of inter and intra-organizational networks is also often required to obtain the competitive benefits from host locations (Andersson et al, 2005; Young and Tavares, 2004). A complex configuration of autonomy and inter and intra-organizational networks is therefore seen as being important to leverage the competitive advantages of host locations (Gamelgaard et al, 2012). Given the competitive benefits to MNCs of concentrating location of higher valued activities in competitive cities that provide deep and rich pools of resources and effective means communication channels (Hymer, 1971) it is likely that subsidiaries in such cities will have a configuration of autonomy and inter and intra-organizational networks that differs from the configurations in subsidiaries not located in such cities.

Linking to inter-organizational networks, such as customers, suppliers, competitors, and supporting government and non-government agencies provides improved access to the scarce resource bundles available in host locations thereby enhancing the development of the firm specific advantages of subsidiaries. Subsidiaries also need to connect via intra-organizational relationships to other parts of their MNCs to facilitate the transfer of assets and competencies
to enable effective exploitation of the desirable assets and network relationships in host locations (Andersson et al., 2005; Frost et al., 2002; Holm, et al., 2003). Competitive city regions tend to have a richer menu of knowledge-based assets than other regions (Martin et al., 2011). Extracting and utilizing such knowledge is likely to require subsidiaries to develop extensive inter and intra-organizational network relationships systems (Andersson et al., 2007). It is therefore likely that a more pronounced relationship exists between network relationships and performance in competitive city locations compared to other regions. This leads to the first general proposition -

P1 Network relationships display a more pronounced relationship to performance in competitive city locations compared to other locations.

Autonomy helps subsidiaries utilize effectively the competitive advantages in host locations by reducing the time and costs expended in negotiating with headquarters for permissions (Andersson et al., 2005; Birkinshaw et al. 2005; Taggart, 1998, Young and Tavares, 2004). The reduction in time negotiating to get permissions from headquarters and the ability to alter quickly strategies and operations that can follow from autonomy can enhance performance. Studies find that marketing innovations and subsidiary growth connect to granting autonomy (Fenton-OCreevy et al, 2008; Johnson and Medcof, 2007; Vernaik et al., 2005). The concentration of knowledge-based assets and dense network connections in competitive city regions suggest that subsidiaries in these locations will benefit from autonomy to permit them to take quickly and at low cost take advantage of the ‘buzz’ in such cities (Storper and Venables, 2004). There is therefore a likelihood of a more pronounced relationship between
autonomy and performance in competitive city regions compared to those not located in such regions. The second general proposition is therefore -

P2 Autonomy has a more pronounced relationship to performance in competitive city locations compared to other locations.

The ability to exploit effectively competitive advantages in host locations depends on the configuration of autonomy and both intra- and inter-organizational network relationships. The interaction between autonomy and network relationships is likely to exercise a positive influence on performance as it enables subsidiaries to develop appropriate management systems to make best use of resources and competencies available in host location and in the other locations of the MNC (Birkinshaw et al., 2005). The ability to have effective interaction between autonomy and network relationships systems in competitive city regions appears to influence MNCs to locate in such regions (Goerzen et al., 2013). Evidence exists, at a national level, that interaction between autonomy and networks positively affects performance. Indeed these interactions seem to have a more powerful effect than the direct effects of these factors on performance (Gammelgaard et al., 2013). It seems that subsidiaries need to combine autonomy and inter- and intra-network relationships to create managements system that can embed into host locations and link effectively to the rest of their MNCs to enable them to fulfil their strategic objectives. One of the main means therefore by which MNCs exploit effectively the competitive advantages available in host locations is to create appropriate configurations of autonomy and networks. In competitive city locations the concentration of large volumes and high quality of knowledge-based assets, combined with good networking relationships, lead to attractive stocks of possible competitive advantages.
For subsidiaries to gain and exploit these potential competitive advantages requires not only location in such competitive cities, but the development of an appropriate configuration of autonomy and network relationships. In other locations with lower stocks of potential competitive advantages, the rewards (and therefore motivation) to develop sophisticated configurations will be lower especially as the transaction and coordination costs of these complex management systems are likely to be large. The final general proposition is therefore -

P3 Interactions between autonomy and networks in competitive city locations affect performance in a more pronounced way compared to other locations, and are likely to have a more significant effect on performance than the individual parts of the autonomy and network configuration.

The pathways in the configuration of autonomy and networking relationships linking to performance is shown in Figure 1.

Data Gathering and Analysis

To test the propositions that subsidiaries in Copenhagen have different configurations of autonomy and network relationships, a survey of foreign-owned subsidiaries located in the Denmark was undertaken provided the data. The design, administration, and procedures of the mail survey followed the main techniques recommended by Dillman (1991). These were
supplemented with specific steps informed by Harzing (2000) and Harzing and Noorderhaven (2006), which were designed to increase response rates.

The target audience for the survey was the managing directors of the subsidiaries. The sampling frame was constructed from information provided by the Experian database and yielded 2,996 firms covering all foreign owned subsidiaries in Denmark. The survey achieved a response rate of 15%. Tests for representativeness on industry characteristics indicated no significant differences; therefore it is unlikely that the survey has a problem of non-coverage error (Dillman, 1991). Non-response bias was tested using wave analysis, based on the observation that late respondents to mail surveys tend to be more similar to non-respondents (Fowler, 1993). The comparison of early and late respondents on the variables of broad industry, age, entry mode, and nationality of managing director, did not reveal any significant differences in response.

The questionnaire collected data on the salient characteristics of the foreign-owned subsidiaries. Over half of all of the subsidiaries were German, Dutch or Swedish owned. The majority of subsidiaries employed less than 100 employees, and most managers were host-country nationals. Most subsidiaries had been under foreign ownership for more than 10 years. The majority of subsidiaries operate in high/medium-high and knowledge-intensive industries.

A partial least square (PLS) approach to structural equation modeling was used to test the proposition. A PLS modeling approach to subsidiary research has been adopted, among others, by Vernaik et al. (2005) and Fey, Morgulis-Yakushev, Park, and Björkman (2009).
This technique is preferable to the Lisrel and AMOS techniques when given a smaller sample. The PLS model operates with two sets of linear equations: an inner model that specifies relationships between latent variables, and an outer model analyzing relationships between the latent variables and associated manifest variables. This permits the simultaneous analysis of the path coefficients between latent variables, and the path coefficients between these variables and their constructs (Fey et al., 2009). This allows for an assessment of the reliability and validity of the measurement model, as well as an assessment of the structural model (Hulland, 1999). Furthermore, as Vernaik et al. (2005) argue because models and measures in international business are still in the initial stages of development, the regression-based approach is more appropriate than covariance-based methods like LISREL. Finally, the PLS method is effective in guarding against inadequacies, such as skewed distributions of manifest variables, multi-collinearity within blocks of manifest variables and between latent variables, and omissions of data (Cassel, Hackl, & Westlund, 1999). Through the use of Smart PLS 2.0, $t$-statistics emerge through bootstrapping procedures. This technique makes the results more reliable, as it uses repeated random samples (Vernaik et al., 2005). Furthermore, total effects are calculated. This is advantageous, as it includes both direct and indirect effects (Sönke, 2010).

The model has four main constructs: ‘subsidiary autonomy’, ‘inter-organizational network relationships’, intra-organizational network relationships’, and ‘subsidiary performance’. Data for these constructs were gathered in relation to both the current period and five years ago. Previous work has shown that a five-year time span provides more accurate information than longer periods (Peng & York, 2001). A five-year period establishes a mathematically
explicit relationship between observed scores (or manifest variables) and latent variables (the change variable) (Borsboom, Mellenbergh, & van Heerden, 2003).

To capture rich data, the constructs used multiple questionnaire items that used five-point Likert scales. Respondents were asked to report the number and frequency of network relationships for a variety of their inter-organizational relations for the situation five years ago and for the present time. The latent variable then becomes an amalgamation of the changes in the number and frequency of the various inter-organizational network relationships. In PLS, each variable is assigned a weight – a coefficient – that reflects the importance of the manifest variable for the latent variable. The $t$-tests for the outer relations (manifest variables) indicate whether those coefficients (weights) are significant. The coefficients for the manifest variables are determined and the $R^2$-square for the inner relation maximizes the structural model.

All constructs are based on self-reported information and therefore subsidiary performance uses subjective measures. This method is widely used in the literature and, in general, there is evidence of general reliability (Venkatraman & Ramanujam, 1986). There are however problems of measuring the performance of MNC operations related to the multi-faceted nature of performance (Miller, Lee, Chang, & Le Betron-Miller, 2009). There are also problems of collecting accurate, valid performance measures using questionnaires (Luo, 2007). Management decisions however are not guided solely by objective performance indicators, but are likely to depend to a large extent on the perceptions of managers, which although influenced by objectives measures, also contains elements of believe and opinions (Thompson, 2003). In addition, many objective indicators at the subsidiary level, especially
financial indicators, are suspect because of the reporting arrangements of MNCs (Guest, Michie, Conway, & Sheehan, 2003). The use of internal transfer prices and related tax issues also affects the validity of subsidiary turnover as a good measure of size (Demirbag et al., 2007). Given these reservations and following similar studies objective measures of performance were not used. Various studies employing subjective measures of performance ask respondents to assess performance in relation to their competitors (Ellis, 2007). This facilitates the comparison of establishments across size categories and industries.

Subsidiary performance uses a five-item measurement encompassing items frequently and reliably used in other studies (Birkinshaw et al., 2005):

- ‘Sales growth by volume’,
- ‘Sales growth by value’,
- ‘Productivity’,
- ‘Customer satisfaction’, and
- ‘Market share’.

Respondents assessed each of these performance items relative to their market competitors on a scale of one (a lot better) to five (a lot worse).

The constructs intra- and inter-organizational networks followed Holm and Pedersen (2000). These items measure the number and frequency of a subsidiary’s relationships with a range of partners.

Intra-organizational partners included:

- ‘Buyers’,

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• ‘Suppliers’,
• ‘R&D and innovation centers’, and
• ‘Other units within the MNC organization’.

Inter-organizational partners included:

• ‘Customers’,
• ‘Suppliers’, and
• ‘Competitors’.
• Governmental institutions
• Universities, Science centers

Both inter- and intra-organizational relationships were measured as the number of relationships on a scale ranging from one (none) to five (many), and as the frequency of contact with networks on a scale of one (low) to five (high).

Measurement of autonomy followed Young and Tavares’s (2004) using strategic decision making (policy decisions) and operational decision making (tactical decisions). The measurement of strategic and operational decision-making authority uses approaches and measurement scales adapted from Birkinshaw and Hood (2000), and Taggart and Hood (1999).

The items related to strategic decision making authority were:

• ‘Market areas supplied’,
• ‘Product range’,
• ‘R&D and new product development’,
• ‘Production of goods or services’,

• ‘Financial control’, and
• ‘Human resource management’.

Areas of operational decision making were:

• ‘Marketing activities’,
• ‘R&D and new product-development activities’,
• ‘Activities related to producing goods or services’,
• ‘Financial management practices’, and
• ‘Human resource management practices’.

For the strategic and operational decision making items, respondents were asked to assess the extent of their decision-making autonomy on a scale from one (exclusively by headquarters) to five (exclusively by the subsidiary).

The control variables included in the model were: (a) home country, (b) size, (c) type of industry, and (d) entry mode (greenfield, acquisition). These types of control variables have been used in other PLS tests (Fey et al., 2009). Turnover is not used as a control for size because the sample includes service industries (including financial services firms) where size is measured by the value of assets. The study therefore used number of employees as the best control for size.

Results

Table 1 provides the composite variables reliabilities, Cronbach’s alpha values, and the $R^2$. These values indicate that the composite variables are robust. The results of the PLS test shown that there is only significant direct effects (path coefficients) on performance in Copenhagen from intra-organizational networks. There are no significant direct effects on
performance outside of Copenhagen (see Table2). This provides support, P1 but only for intra-organizational networks. There is no support for P2 as autonomy has no direct effect on performance either within or outside of Copenhagen.

Consideration of total effects (indirect effects to performance) however reveals that the configuration of autonomy and networks within Copenhagen displays strong connections between the different components of the configuration. Outside of Copenhagen these connections are considerably looser. All combinations of the variables are significant within Copenhagen, but only three total effects are significant outside of Copenhagen (see Table 2). Autonomy in combination with inter-organizational networks significantly affects performance in Copenhagen, and there are strong links between autonomy and both inter- and intra-organizational networks. Outside of Copenhagen fewer of the total effects are significant and in all cases the means of the total effect are smaller than those for within Copenhagen. The picture that emerges for Copenhagen is that the interactions within the configurations of autonomy and networks are more important for performance than is the case for other locations in Denmark. This provides support for P3.

Discussion

These findings add a sub-national (in particular a city) dimension to the relationships between performance and autonomy and network configurations found at national level (Andersson et al., 2005; Gammelgarrd et al., 2013; Lou, 2003). The results also add to the literature on MNC strategy in competitive city regions (Goerzen et al., 2013; McCann and Acs, 2011;
Zhao and Zhang, 2007) by providing evidence on the importance of autonomy and network relationships configurations and the link to performance in such locations. The findings provide evidence that the strategy of MNCs, in terms of autonomy and inter and intra-organizational configurations, is affected by location in a competitive city compared to other locations within the same host country. This contributes to the development of theory of MNCs occupying a complex spatial environment that involves consideration of both national and sub-national locations (Beugelsdijk and Mudambi, 2013).

The evidence about sub-national location in this study is not on the decision on where to locate within a particular country, or on how decisions are made between different possible sub-national locations with countries. The focus of these results is on the effects on management systems connected to the autonomy and network configuration of subsidiaries. The results highlight that interaction between these factors helps subsidiaries to benefit from the large reservoirs of high quality knowledge-based assets and effective networking infrastructures available in competitive city regions. This contributes to a better understanding of how MNCs take advantage of the greater ‘face to face’ and ‘economic buzz’ potential and agglomeration benefits available in competitive city regions (Asheim et al, 2007; Stroper, 2013; Storper and Venables, 2004;). These results therefore develop the literature that regards the proximity benefits available in competitive city regions as involving complex interactions and relationships between agents (Boschma, 2004 and 2005, Dicken and Malmberg, 2001; Eraydin and Fingleton, 2006; Yeung, 2005). The development to these theories is to focus attention on the importance of the autonomy and inter-and intra-organizational networks configurations of the subsidiaries of MNCs located in competitive cities. It seems that management systems in subsidiaries in competitive cities are more
complex than those not in such locations, involving embedding in both host locations and with the wider MNC that are woven together (involving autonomy at subsidiary level) to take advantage of the competitive benefits available in some cities. This adds a further dimension to Hymer’s view of the unequal development affect of the strategy of MNCs.

The finding of differences in subsidiaries in Copenhagen compared to locations elsewhere in Denmark highlights the importance of considering the importance of the hierarchies of cities for MNC strategies (Beaverstock et al, 2000; Taylor, 1997 & 2004). Copenhagen is not a significant ‘world city’ and therefore not the focus of the WCN view (Sassen, 2013). It is also not an important HUB in global supply chains in a variety of industries as in the GCC view (Gereffi and Korzeniewicz, 1994). It does however appear to fit with the GPN approach (Henderson et al, 2002) in that it provides competitive advantages, many not of major global significance, but more likely of national, and regional importance, and possibly in niche areas of innovation and R&D that are important in the global economy. Taking a WCN or GCC approach may well shut out a host of competitive city locations that has important implications for subsidiary strategies of MNCs. It seems that, at least in terms of the complexity of management systems, a process of unequal development is evident in Denmark, although Copenhagen is not a WCC or a significant GCC city. It is possible that MNC strategy has important implications for unequal development arising from the characteristics of cities that may stretch beyond a few major world cities.

This connects to the importance of examining the strategies and operations of MNCs as occupying a complex set of spatial environments that is likely to have important implications for how they locate their activities (Beugelsdijk and Mudambi, 2013). Te results of this study
indicate that the examination of these activities should include consideration of the autonomy and inter- and intra-organizational configuration. Most of the existing research by international business scholars currently centres on location decisions and neglects management systems implications. Economic geography scholars focus on networks relationships, but mainly on inter-organizational networks, with little attention to intra-organizational networks and autonomy, and with no clear emphasis on the interaction between these major components of the management systems of MNCs. The results of this study suggest that the configuration of autonomy and networks in the management systems of MNCs is an important factor in how location in competitive cities affects the strategies and activities of MNCs, and thereby makes an important contribution to the evolution of the global economy.

**Conclusion**

Location in competitive cities by MNCs is clearly an important factor in the evolution of the global economy. The increased focus by international business scholars on sub-national location, including location in cities, is a welcome development to enable a better understanding of the influence of the complex spatial environment that MNC occupy for their strategies and management systems. The bulk of the research thus far has centred on strategy for location issues with the major management focus being on sub-national location to reduce liability of foreignness. The work of economic geographers on competitive cities has begun to influence the research agenda of international business scholars leading to more attention being paid to the importance of competitive cities in international business research. The influence of the autonomy and network configuration in the management systems of subsidiaries has however not played a major role in research on competitive cities, either by
economic geographers or international business scholars. The findings of this study suggest that this issue should be an important part of research on MNC location by both groups of scholars.

The differences in these configurations in Copenhagen compared to other locations in Denmark, suggest that management systems have subtle but important differences in competitive city regions from location elsewhere in the same country. The scare and desirable resource bundles and networking relationship benefits available in competitive cities leads to a more complex and interacting autonomy and network configuration than in other locations, leading to more sophisticated management systems in competitive cities. Subsidiaries located in such cities seem to be able to use interactions between autonomy and networks, including networks in the host location and with other parts of the MNC, to achieve performance benefits not available in other locations. Subsidiaries in competitive cities appear to have management systems that lead to more effective autonomy and network configurations that those located in other areas. This implies that not only are more high valued added and knowledge intensive activities centred in subsidiaries located in competitive cities, but they also have more complex autonomy and network configurations requiring higher quality resources to manage effectively these subsidiaries. It seems that competitive cities are on a win- in position whereby success in creating and sustaining attractive resource bundles and networking competencies motivates not only MNC location but also the development of sophisticated management systems that are likely to further the add to the resource bundles and networking competencies in such cities. In this type of a global economy the prospects for cities that have low global competitiveness and in areas of low urbanisation may face a bleak future.
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**Figure 1: Conceptual Model**

- **Increases in number of relationships within corporation**
- **Increases in frequency of relationships within corporation**
- **Increases in strategic decision-making rights**
- **Increases in operational decision-making rights**
- **Increases in number of relationships outside corporation**
- **Increases in frequency of relationships outside corporation**
- **Improves in performance (compared to market competitors)**
Table 1: Composite Reliabilities, Cronbach’s Alphas, and R-squareds

**Within Copenhagen/outside Copenhagen***

<table>
<thead>
<tr>
<th>Construct</th>
<th>Composite Reliability</th>
<th>Cronbach’s Alphas</th>
<th>R-squareds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autonomy</td>
<td>0.94/0.94*</td>
<td>0.93/0.93*</td>
<td>-</td>
</tr>
<tr>
<td>Inter-organizational networks</td>
<td>0.89/0.84*</td>
<td>0.85/0.80*</td>
<td>0.18/0.00*</td>
</tr>
<tr>
<td>Intra-organizational networks</td>
<td>0.88/0.84*</td>
<td>0.85/0.81*</td>
<td>0.56/0.41*</td>
</tr>
<tr>
<td>Performance</td>
<td>0.86/0.89*</td>
<td>0.79/0.84*</td>
<td>0.37/0.20*</td>
</tr>
</tbody>
</table>

Note: Composite should be above 0.70 for each construct (Fornell & Larcker, 1981). Cronbach’s alpha values should be above 0.70 (Hulland, 1989). When using the PLS technique, one variable is ‘locked’ and $R^2$ are reported in relation to this variable.
### Table 2: PLS Test Within Copenhagen vs. Outside Copenhagen

<table>
<thead>
<tr>
<th>Path Coefficient Mean</th>
<th>Total Effect Mean</th>
<th>t-statistics Total Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inter-organizational network relationships AND performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-0.00/0.13</td>
<td>0.29/0.25</td>
<td><strong>2.40</strong>/**</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1.26</strong></td>
</tr>
<tr>
<td><strong>Intra-organizational network relationships AND performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.52/0.24</td>
<td>0.52/0.24</td>
<td><strong>3.39</strong>/**</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1.13</strong></td>
</tr>
<tr>
<td><strong>Inter-organizational network relationships AND intra-organizational network relationships</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.56/0.51</td>
<td>0.56/0.51</td>
<td><strong>6.16</strong>/**</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>3.16</strong>*</td>
</tr>
<tr>
<td><strong>Autonomy AND performance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.15/0.23</td>
<td>0.44/0.33</td>
<td><strong>3.25</strong>/**</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1.89</strong>*</td>
</tr>
<tr>
<td><strong>Autonomy AND inter-organizational network relationships</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.42/0.08</td>
<td>0.42/0.08</td>
<td><strong>2.85</strong>/**</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>0.12</strong></td>
</tr>
<tr>
<td><strong>Autonomy AND intra-organizational network relationships</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.30/0.41</td>
<td>0.54/0.44</td>
<td><strong>3.61</strong>/**</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>2.39</strong>*</td>
</tr>
</tbody>
</table>

* t-values in parentheses are without controls.

*p<0.10, **p<0.05, ***p<0.01

Means are computed via a bootstrapping procedure. i.e. 1,000 samples are constructed and the model is estimated 1,000 times.

The mean is the mean of the 1,000 coefficients that have been obtained in the 1,000 estimations. Standard error (deviation) is also derived from these 1,000 coefficients. Standard deviations are between 0.06 and 0.08 in all cases.