Multinational companies and knowledge transfer between clusters

One dimension of the present globalization process is the internationalization of clusters (Bertolini and Givannetti 2006; deMartino, Reid, and Zygliodopoulos 2006; Hervás-Oliver and Albors-Garrigós 2008; Lorenzen and Mahnke 2002; Rugman and Verbeke 2003). Traditionally, regional clusters have developed over time as networks for sharing knowledge within the borders of a geographical region. Within the present period of globalization, however, the borders are blurred, and firms within clusters become strongly involved in the global economy. Clusters that have emerged over time as relatively closed networks of actors within a geographical region, experience the creation of new external knowledge networks both through inward internationalization, like foreign multinational companies (MNC) acquiring local firms, and outward internationalization by local firms becoming MNCs by investing abroad.

This reconfiguration of clusters creates new channels for knowledge transfers. While a traditional cluster that has developed over time within the border of a region is characterized by knowledge transfer between local actors, the internationalized cluster adds channels for knowledge transfer across national borders to the existing regional knowledge transfer channels. Consequently cross-national intra-firm knowledge transfer channels within the MNC emerge as a new channel for knowledge transfer in addition to traditional regional inter-firm knowledge flow channels.

This paper focuses on cross-national knowledge transfer between clusters. While we see an increasing number of publications on knowledge transfer linked to inward and outward internationalization of clusters, there are surprisingly few studies of transfer of knowledge between clusters (Hervás-Oliver and Albors-Garrigós 2008). We argue that there are three main types of networks that matter for knowledge transfer (including reverse knowledge transfer) between clusters: 1) Regional inter-firm networks that express the degree of local embeddeness in the home country, 2) intra-firm networks between the units in the home country and the subsidiaries of an MNC, and 3) regional inter-firm networks that express the degree of local embeddeness of the subsidiary in the host country. In this paper we limit the scope and focus primarily on the subsidiary level, and the aim of the paper is to identify some variables that influence the transfer of knowledge from the headquarter via the subsidiary to the cluster in the host country.

The paper argues for a dynamic approach concerning the study of knowledge transfer between clusters. We also argue that most of the relevant research literature focus on structural phenomena and underestimate the importance of human and organizational behaviour. The paper discusses some key preconditions for learning, both structural ones related to the structural character of the clusters, the character of the linkages between clusters, and the degree of local embeddedness. In addition we introduce perspectives from international strategy as an academic field that brings in organizational behaviour. Our main argument is that both structural and behavioural factors matter when it comes to understand knowledge transfer between clusters. In the last part of the paper we will discuss the theoretical

arguments presented in the first part related to a concrete case on knowledge transfer between the furniture cluster in Norway and a furniture cluster in Lithuania.

The effect of inward FDI on clusters

Seen from the perspective of the subsidiary that is located in a regional cluster in the question of knowledge transfer can be regarded as a question of the effect of inward FDI on clusters. The literature on the effect of FDI as well as the literature on regional clusters is rich, but surprisingly few have studied the effect of inward FDI on regional clusters (Crone and Roper 2001; Meyer 2004). Broadly speaking we can talk about three different approaches, 1) the sceptics who argue for a negative effect, 2) the positivists who focus on the positive effects, and 3) the dynamics who accept that inward FDIs may have both negative and positive effect and try to understand what causes these effects.

As argued by (Birkinshaw 2000) the idea that inward FDI has negative impact on regional clusters has little empirical support. The argument is partly rooted in a stream of thoughts discussing the effect of inward FDI on a national level, claiming that FDIs generate enclaves of economic activities (Kindleberger 1969). Another argument is that the subsidiaries are not embedded in the local clusters, and this may particularly be the case for subsidiaries created through greenfield investments rather than acquisition. They are less committed to the local economy, and their position within the cluster are inferior to local firms according to dimensions like relationship to local customers and suppliers and likelihood of spin-offs firms (Birkinshaw 2000). Within the framework of (Porter 1990) we could say that they are weakly embedded in the interlinkage among the different actors within the cluster.

The positivists argue that clusters are attractive for investments. Leading edge clusters, like London financial centre or Silicon Valley, attract FDI due to their competence, specialized suppliers or simply because just being there give some credibility (Birkinshaw 2000). The foreign investors want to “tap into” the local knowledge base, and in order to do that they will adjust to practices within the regional cluster over time. These investments are positive for the cluster since local firms will get access to global resources and knowledge networks through the MNCs, and the presence of the MNC stimulate the development of dynamic clusters through transfer of technology (Crone and Roper 2001).

Our position is the dynamic one which accepts that the effect may be both positive and negative, and that the focus should be on the identification of the preconditions for positive and negative effects (Birkinshaw 2000; Birkinshaw and Hood 2000). In the following part we will discuss this position related to four dimensions, 1) the characters of the clusters, 2) external ties for transferring knowledge from one cluster to another, 3) local embeddedness, and 4) the international strategy of the MNC.

The character of the cluster

The character of the clusters may differ according to different criteria like life-cycle (Birkinshaw 2000), the degree of dynamism (Birkinshaw 2000), economic development (Gupta and Govindarajan 2000; Kim and Zhang 2008; Meyer 2004), and the age of the clusters (De Propris and Driffield 2006). According to (Birkinshaw 2000) the life-cycle stage of the industry expresses the maturity of the industry. One extreme is high-growth industries which are characterized by a significant net level of investment being made worldwide, like information technology and telecom. Clusters of such industries are new, but attractive.

Another extreme is the mature industries which are those which rate of top-line growth is no more than the rate of productivity growth on a worldwide basis. They may see new investments but they are typically offset by rationalization and consolidation, like automobiles and chemicals. Since we are dealing with knowledge transfer between two clusters of the same industry, the degree of maturity of the industry will be the same for the two clusters. We assume that knowledge transfer between clusters will be easier the more mature the relevant industry is.

Another dimension is the strength and the age of a cluster. According to (De Propris and Driffield 2006) studies of UK data, well established and strong clusters that have emerged over time absorb transferred knowledge better than new ones, and especially better than new FDI generated clusters. The last group lacks the necessary absorptive capacity. This view is supported by (Gugler and Brunner 2007) that argue that the impact of MNC on the creation of new clusters is weak, and also by a study by (Enright 2000) on how MNCs promote learning in strong financial clusters. This argument assumes that the main reason for MNCs to invest in leading industrialised clusters is to tap into opportunities and ideas where they first emerge and leverage them on a worldwide basis (Birkinshaw and Sölvell 2000). On the other hand, studies on emerging economies like China show that FDI has a positive effect on the development of new clusters (Kim and Zhang 2008). According to (Gupta and Govindarajan 2000) inflows of knowledge are significantly higher when the host country has a lower relative economic level compared to the MNC home country. (Meyer 2004) reviews extant literature on knowledge spillover effects of FDI in emerging economies. These findings are relevant for knowledge transfer effects in clusters, where the recipient cluster has a lower level of economic development that the source. A higher level of economic development of the MNC home country suggests that the MNC brings more advanced technologies and managerial expertise when investing in an emerging economy with a lower level of economic development. This means that the stage of the economy and the speed of the transformation of the economy may have a moderating effect on importance of the age of a cluster.

A third factor is dynamism (Birkinshaw 2000). The level of dynamism reflects the scope of activities and quality of the interlinkages among activities in the cluster. When we bring the dynamic factor together with the question of the life-cycle we get four generic types of clusters with different effect of inward FDIs on the cluster (see *figure 1).* Inward FDIs are mostly positive in clusters of mature industries, especially the most dynamic ones. Their local networks are very strong and counterbalance the power of MNEs. In less dynamic clusters inward FDIs may have a negative effect if the new foreign owners decide to close down activities after having acquired activities. Also among high-growth industry clusters the effect of inward FDIs is basically positive, especially in dynamic areas like Silicon Valley. Less dynamic clusters are, however, more fragile, and social networks are weak, and they may break up if new actors from outside enter with strong power.

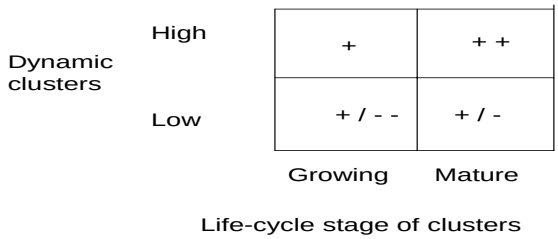

Figure 1. Effect of inward FDI on different types of clusters defined by dynamism and industry life-cycle stage (Based on (Birkinshaw 2000)

To summarize: Most of the mentioned contributions are concerned with the transfer of knowledge trough MNCs *to* a cluster, or the effect of FDI on clusters. Our purpose is to discuss the transfer of knowledge within the same industry *between* clusters with MNC networks as the main channels between clusters. Applied to this purpose we argue that there are some phenomena concerning the character of the clusters that influence knowledge transfer. We argue that high degree of maturity of the relevant industry that is represented in the clusters is positive for knowledge transfer between clusters, especially if the clusters also are dynamic. Further, we argue that age and strength of the clusters are positive for knowledge transfer between clusters, but this variable may be moderated by different degree of economic development between the clusters.

External linkages - pipelines

When a MNC that is strongly embedded in a cluster in the home country establishes in another cluster abroad, the MNC act as an external tie for knowledge transfer from one cluster to another (Hervás-Oliver and Albors-Garrigós 2008). The MNC is regarded as the main sources for transfer of technology to clusters (Zhou and Xin 2003), but the function may differ according to the structure of the external tie. In a development structure linkage the MNC subsidiary share information and technology with local firms, and that strengthens a sustainable partnership. In a dependency structure linkage the main purpose of the FDI is to minimize the production cost by exploiting resources, including labour. In this case knowledge sharing is limited (Kim and Zhang 2008; Turok 1993).

The MNC represents the main linkage between the local cluster and the cluster in the MNC home country (Cooke 2005). These linkages for transferring knowledge from local clusters to the outside world, including other clusters, have been given different names like *non-local knowledge flows* (Gertler and Levitte 2005), *external linkages* (Giuliani, Pietrobelli, and Rabelloti 2005), *external ties* (Giuliani, Pietrobelli, and Rabelloti 2005), or *global pipelines* (Bathelt, Malmberg, and Maskell 2004). Here we will use the concept global pipelines.

The concept pipelines is referred to as a channel of communication used in distant interaction between firms in clusters and knowledge-producing centres located at a distance. The effectiveness of these pipelines depends on the strength of pre-established social relationships and the quality of trust that exists between the firms in the different nodes involved (Bathelt, Malmberg, and Maskell 2004). There is increasing evidence to suggest that even in the most

advanced clusters a growing part of the knowledge base is not exclusively local. The emphasis in the Porter model on local demand from sophisticated and demanding customers is also contradicted by a growing body of empirical and analytical research. The weight on local demand conditions holds even less when it is transferred to the regional level where the definition of the clusters' boundaries is problematic (Gertler and Wolfe 2006). Furthermore, many MNCs are embedded in a variety of specialized clusters in many locations, often around the globe (Wolfe and Gertler 2003).

The pipeline concept is, however, so far hardly elaborated in cluster analysis to a level where it can function well theoretically or analytically. No clear definition can be found. We propose to define pipelines not only as global connections, but moreover as channels operating inside clusters, that to a varying extent experience a tension between open and more closed forms of memberships in knowledge flow. Some pipelines may possibly be closing dissemination processes at the expense of the open membership characterising knowledge flow in cluster dynamics. We propose that the main function of pipelines in cluster dynamics is to open up channels for transferring knowledge between different institutional settings, from a global setting – often represented by MNCs in clusters – to a local cluster-based setting, and vice versa. The degree of openness of a pipeline reflects the degree of embeddeness, in this case both at the home and the host level. The potential of the pipeline hinges on how well the respective MNC units are embedded in the MNC home country context and the local host country context respectively. Reiterating Kindlebergers argument, in cases where MNC subsidiaries act as separate enclaves, the pipeline as a channel only has value for the MNC itself, and not for domestic firms in the surrounding cluster

At the same time as pipelines are opening up some channels for knowledge flow, they may also develop as more closed arenas incorporating only a selection of actors inside the cluster. New knowledge may, for example, be developed within a cluster setting, however mainly through cooperative projects inside units and R&D resources located within the MNC itself. Such projects may benefit from more indirect relations to the cluster, but little knowledge may actually be diffused in direct form from the projects to cluster firms. Corporations may also tap knowledge from their presence in clusters in more ad hoc than systemic ways, its recombination into novel knowledge may, however, be taking place inside strategic and 'closed' alliances. Learning processes inside the corporations may, furthermore, systematically be more 'programmed' also inside clusters to fit internal knowledge management structures, while processes of knowledge flow within clusters are more unpredictable, open and open–ended (Lorenzen and Mahnke 2002). Nevertheless, to some extent the rationale for MNCs being in the cluster necessitates some sort of interpretative and transforming contexts to be established in order to transfer codified and tacit knowledge between the cluster milieu and the corporation.

These questions are connected to some other important aspects very recently discussed by (Christophersen and Clark 2007), namely power relations in firm networks and global networks. It appears that a MNC may be embedded in clusters in such a manner that systemic relations are altered in favour of internalizing knowledge and innovation capacity inside the MNC. They analyse power relative to regionalised SMEs, and conclude that MNCs are able to use their power to get to key production resources. MNCs influence regulatory policy in terms of their strong position in clusters, they argue, thereby affecting which innovations are commercialised and how knowledge is diffused. MNCs also drive the innovation agenda within publicly supported research centres and centres of expertise or excellence. Finally, they

say that MNCs may dominate the regional labour market and compete with SMEs for the most valued segment of the skilled workforce.

To summarize: Seen from the global pipeline perspective, we argue that less knowledge transfer take place within a dependency structure linkage between clusters than a development structured linkage. Research also shows that open pipelines are more positive for knowledge transfer than closed, and that MNCs with strong power tap more easily into the local knowledge base in the host country than weak MNCs.

Local embeddedness

Within international business literature it is widely accepted that foreign subsidiaries are important vehicles in generating new knowledge for the MNC (Bartlett and Ghoshal 1989; Porter 1990; Prahalad and Doz 1987). Generally speaking, MNCs are 'flexible learning structures' (Tsai 2001) that are tapping into knowledge bases in foreign market (Bartlett and Ghoshal 1989; Birkinshaw and Hood 1998). They may tap into knowledge bases through cooperative and inter-organizational arrangement such as joint-ventures, partnerships, licensing agreements, franchising, management contracts, and strategic alliances (Granovetter 1985; Hamel 1991; Lane and Lubatkin 1998), through business relationships (Haakanson and Johanson 2001) or simply through own entities within the corporation. These arguments apply also for MNCs with units in different clusters.

The concept embeddedness has been introduced to capture firms' connectedness and ongoing pattern of social relationship, both internally and externally (Dacin, Ventresca, and Beal 1999). Embeddedness implies alignment and adaptation of processes, routines and practices (Dacin, Ventresca, and Beal 1999; Lane and Lubatkin 1998), and adaptation of resources and/ or frequency of interaction are often used to characterize embeddedness. Accordingly, learning from actors to which subsidiaries are embedded is expressed in the creation of new or changes of existing practices.

In this paper we discuss the question of learning trough local embeddedness by using the concept localized learning, which is defined as *" …how local conditions and spatial proximity between actors enable the formation of distinctive cognitive repertoires and influence the generation and selection of skills, processes, and products within a field of knowledge or activity* (Malmberg and Maskell 2006):1). In this framework, three modes of localized learning exist; 1) learning by interacting, 2) learning by monitoring, and 3) neighbourhoods effects. Additionally, the mechanisms in which transfer of knowledge take place in this framework is through; 1) mobility of labour force, 2) interaction between suppliers and customers, and interaction between the firms and other horizontal actors, and 3) through the spin off of new firms (Inkpen and Tsang 2005). The neighbourhood effect may need some further clarification. A neighbourhood effect refers to unanticipated and unplanned encounters among personnel and managers to change information on such topics as market needs or new technical possibilities, and may be one of the most valuable sources of innovation (Chandler, Hagström, and Solvell 2001; Wolfe and Gertler 2003). On the learning process between firms and entities in the cluster, collaboration may be facilitated by actual activities between different firms, though joint development projects, and also through more formal collaboration between firms and governmental bodies or universities (Malmberg and Power 2005).

Further, we argue that there is a need for searching for details, variations, nuances and changes over time concerning localized learning in a contextual setting. In our context we assume that the search for actors with which the subsidiaries are embedded, should in addition to the relationship between subsidiaries and headquarters include the embeddedness with other producers, local workforce, educational system, the government customers, and suppliers (Andersson, Forsgren, and Holm 2002). As we see, the embeddedness concept has been extended to capture the complexity of local embeddedness, and to make explicit that firms not only are dealing with other firms (Johannisson, Ramírez-Pasillas, and Karlsson 2002; Araujo and Rezende 2003), but also with governmental bodies, both through direct and indirect links.

To summarize: We argue that subsidiaries' function as a pipeline to local clusters is depending on their degree of embeddnesess in the cluster.

The international strategy of the MNC

The three dimensions that we have discussed so far, deal with structural phenomena and external relationships. Both regarding the character of clusters, the pipelines and local embeddedness we find crucial determinants for successful knowledge transfer from one cluster to another. However, successful knowledge transfer between clusters also depends on human action, or managerial decisions. Based on studies on the internationalization of clusters we argue that also in the perspective of transferring knowledge from one cluster to another through MNCs, international strategy matters.

As shown by (Birkinshaw 2000) entry strategy matters, and acquisition of firms that are embedded in local knowledge networks gives better access for the MNC to the local knowledge base than establishing a greenfield. Seen from the local cluster, however, MNCs that establish a greenfield may have a more positive effect on knowledge transfer than acquisition, if the establishment involves the introduction of new technologies and competences in the region (Crone and Roper 2001).

Further, we argue with (Dunning 1993) that the motives for the FDI in the cluster may influence knowledge transfer process between clusters. There are reasons to believe that FDIs that can be characterized as strategic-asset seeking and market seeking promote knowledge transfers to a higher degree than natural-resource seeking and efficiency seeking investments. For example, in a study of Lithuanian industries, Smarzynska found higher productivity in supplier industries to industries with high foreign presence, and the productivity effect is higher when FDI is domestic market oriented compared to export oriented. Domestic market orientation creates more opportunities for local suppliers and customers to interact and learn from MNC subsidiaries (Smarzynska 2002).

Finally, knowledge transfer between clusters through MNCs is also influenced by the degree of autonomy of the subsidiary. Subsidiaries' learning is depending on the degree of autonomy within the MNC. Headquarters that explicitly value knowledge development as part of a performance evaluation criterion have a positive impact on subsidiary local embeddedness (Andersson, Björkman, and Forsgren 2005). This is in contrast to the impact of subsidiaries headed by expatriates. For example, subsidiaries headed by expatriates are found to be less embedded than subsidiaries headed by local managers. Researchers of subsidiary entrepreneurship (Birkinshaw, Hood, and Young 2004) suggest that subsidiary autonomy better positions the subsidiary to explore and develop local suppliers and customers, and make

the subsidiary more attractive to subsidiary managers. Based on the embeddedness concept, subsidiaries with strong and established ties in the local business network may be better equipped to learn and assimilate and get access to tacit and non-codified knowledge. For example, joint projects on product or production processes facilitate complex information exchange and learning. Because subsidiary embeddedness facilitates and stimulate knowledge transfer within the MNC (Yamin and Otto 2004) the degree of embeddedness of other subsidiaries may have an impact on subsidiary learning. (Maskell and Malmberg 1999) suggest that proximity facilitates the process of forming network ties and the ongoing interaction between firms and individuals, and proximity is especially important when tacit knowledge is involved. For firms to willingly share information, firms must recognize that it can benefit its competitive position (Inkpen and Tsang 2005). Embedded relationships make firms more willing to take the risk of leakage to competitors (Uzzi 1997) and because flows of knowledge start at a personal level (Inkpen and Tsang 2005) trust between persons becomes critical.

As a contrast, we argue, subsidiaries with less autonomy and that operate in a routinized way according to instructions from the headquarter, will act as weak linkages between the clusters. By routines we mean 'repetitive, recognizable patterns of interdependent actions, carried out by multiple actors' (Feldman and Pentland 2003).

To summarize: Seen from the MNC acquisition is preferred as entry strategy to greenfield in order to get access to new knowledge in the cluster. Seen from the cluster greenfield is preferred in a knowledge transfer perspective especially if the FDI brings new technology and knowledge to the cluster. Research also shows that investments that are strategic-asset seeking and market seeking promote knowledge transfers to a higher degree than natural-resource seeking and efficiency seeking investments. Finally, subsidiaries with high degree of autonomy tap better into the local knowledge base and consequently represent a stronger potential for knowledge transfer between clusters than subsidiaries with little autonomy. On the other hand, it is easier to transfer knowledge with a MNC if subsidiary has little autonomy.

Two furniture clusters

By regional cluster we mean a clustering of firms and related actors within a defined geographical area, and which may be described by concepts like industry cluster (Porter 1990), innovative milieu (Aydalot 1986), industrial district (Piore and Sabel 1984), or regional innovation system (Asheim and Isaksen 2002). In the following part we will present two regional furniture clusters, one in Norway and the other in Lithuania. The purpose of this section is to discuss the relevance of using these two clusters as illustrative examples.

The data are collected through interviews, statistics, newspapers, and secondary sources. The data are basically collected from two pre-studies in Lithuania. The first one is grounded on interviews in 2005 with three Norwegian-owned subsidiaries within the Lithuanian furniture industry and a Lithuanian furniture company owned by Norwegians in 2005 (Juozaityté 2005). The second is based on some interviews conducted in 2007, among these a new interview with one of the Norwegian-owned furniture subsidiaries in Lithuania. In 2007, moreover, three other subsidiaries of Norwegian firms within other industries were also interviewed. These firms share many of the features characterizing the internationalization process within the Norwegian furniture industry, as all of them have offshored production to Lithuania through introducing production processes based on routines developed in Norway.

It should be noticed however that two of these three subsidiaries belong to industries which allegedly requires higher local qualification skills than is the case in the furniture industries. This may weaken the relevance of comparing. Since the number of subsidiaries within the furniture industry is low we have made these additional interviews as control interviews. We also assume that the level of qualification may be one factor that influences localized learning. Hence, such interviews may turn out to be of value in order to capture both nuances and complexity attached to subsidiary embeddedness and learning, in transitional economies as well as in general.

The main reason for using these two clusters as examples is that several Norwegian furniture companies began to offshore production from Norway to Lithuania and other Baltic states from the year 2000. Norwegian furniture companies thus act as a linkage between the two clusters. They offshored in order to reduce production costs, so that the industry could improve the position on the export market and the domestic Norwegian market, but not the Lithuanian market. The offshoring emerged as a result of dramatic fall in the export of furniture. By reducing costs the industry sought to meet the new competition on the European market (Amdam, Lunnan, and Ramanauskas 2007).

In Norway, most of the furniture companies are based in Sunnmøre, a region with historically strong traditions within this industry. In 2007 the furniture industry in Sunnmøre employed 2430 people (Oterhals and Johannessen 2009). 40 percent of all employees within the furniture industry in Norway are located in the small county Sunnmøre, making this to an industrial districts with some clustering characteristics (Høidal 2004). By way of comparison we could mention that less than 3 percent of Norway's population lives the region.

The furniture industry developed in this region during the interwar period. Due to the long historical presence and position in the district the industry is strongly embedded in the district in different ways. First, it is basically small firms that have recruited employees from the local community. In 2001 there where 506 furniture producers in Norway, of which only three employed more than 200 (Amdam, Lunnan, and Ramanauskas 2007). In 2007 only three furniture companies in Sunnmøre had more than 100 employees. Second, most of them are family owned, or have been family owned until recently. These families are still living in the district where production takes place, and in general they have strong family relations to groups of employees. Third, the firms have strong traditions in horizontal cooperation for instance concerning joint export organization, training centres etc, even though there seems to be a tendency over the last year that the relatively large firms cooperate less with small firms. Similarly, the formal and informal horizontal networking and the horizontal flow of knowledge is still intact, but it seems to have weakened. According to the Annual Report from the business association within the furniture industry in 2003, 'the activities within the different regional groups of producers has decreased over the last years' (TBL-MI 2003). Fourth, the industry has cooperated closely with regional political authorities regarding education of skilled workers.

Not at least due to internationalization, some of these characteristics are under pressure. First, the old industrial structure with several small producers seems to be replaced by a tendency towards concentration. The largest producer, Ekornes, employees 40 percent of all people within the furniture industry in Sunnmøre. Sales revenues for Ekornes was NOK 2.7 billion in 2007, compared to 0.35 billion for Hjellegjerde which is the second largest one. Both Ekornes and Hjellegjerde have over the last two decades acquired some of the small producers in the region.

Second, ownership structure has changed for some of the major actors. Both Ekornes and Hjellegjerde were listed on the Oslo Stock Exchange in 1990s. As a consequence the ownership of firms have been internationalized by accepting foreign investors. Concerning Ekornes, ca 50 percent of the shares are foreign owned in 2009.

Third, the firms have also been internationalized, but this has happened in different ways. Ekornes , made their first FDI in Sweden and Germany in the late 1980s, but after some years they decided to withdraw and produce only in Norway. Still, they have been very successful on the international market, especially with their chair Stressless, and today ca 80 percent of the production is exported. Hjellegjerde and Brunstad, two other major players, decided to offshore production. Brunstad to Estonia and Thailand; Hjellegjerde to Lithuania and Thailand.

Interestingly enough, when these companies began to internationalize by moving production abroad, they chose countries with strong traditions in furniture production. As the following brief comparison shows, the business environment in Lithuania makes the question of local embeddedness relevant. This assumption is also inspired by a rich body of cluster analysis demonstrating that interactive learning processes are stimulated by actors' common experiences, common cultural codes and cognitive frameworks, again supported by a common institutional setting (Asheim and Cooke 1999; Cooke 1998; Asheim and Herstad 2003; Asheim and Isaksen 2002; Bathelt, Malmberg, and Maskell 2004; Mouleart and Seika 2003; Asheim, Cooke, and Martin 2006; deMartino, Reid, and Zygliodopoulos 2006; Gertler 2003; Gertler and Wolfe 2006). Although 'similarity' should not be confused with 'identity', it is from the outset likely that structural and cultural similarities characterizing the two clusters may ease the ability of the subsidiaries to, over time, connect to the transfer of knowledge in the host country.

In Lithuania the furniture industry has a very strong position, and much stronger than in Norway. Woodworking, paper and furniture production represent 10 percent of all industrial production in the country, and the most successful of these three branches is furniture industry (Juozaityté 2005). According to the European Cluster Observatory (www.clusterobservatory.eu), Lietuva, the furniture cluster in Lithuania is one of five furniture clusters in Europe that are categorized by three stars (the Norwegian has no star). More than 22,000 are employed, and it scores very high on export orientation. The cluster is weak on innovation, according to the European Cluster Observatory. This is partly a result of the heritage from the Soviet period, and partly a result of the fact that major actors are subcontractors to companies like IKEA. Even if the cluster is less visible within higher price and design segment, innovative milieus also exist.

There are both differences and commonalities across the two districts or clusters that may be expected to affect transfer of knowledge. First, also in Lithuania the industry is characterized by small firms, but some large exist too. In 2004 the country had 800 producers, of which eight had more than 500 employees. Second, the ownership structure seems to be different since five holding companies had a strong position within the industry. The sales from these companies represented 33 percent of total sales within the wood and furniture industry. Third, the industry had some traditions in inter-firm cooperation. However, as research at Kaunas University of Technology shows, there is – like in Norway – some horizontal cooperation between small firms, but the large ones are not interested in cooperation with the small ones. The industry is consequently criticized for not showing any intent of closer cooperation, for

usually ignoring the domestic experts and for not showing interest in including science and knowledge enhancement in the industry. Fourth, historically the industry has cooperated with the government on educational issues, but the challenge now seems to be lack of skilled workers since many of them have emigrated. The qualification of the workforce in the large companies is, however, still relatively high, while small firms use more unqualified employees. According to the industry, this gap of competence has led to less cooperation between large and small firms (Juozaityté 2005).

Despite some important differences, it is fair to underpin some crucial commonalities, especially the potential that the structural similarities offers for subsidiary embeddedness and learning, even if the production in Norwegian subsidiaries in Lithuania is strongly routinized. Clusters represent codification schemes that manage spatially dispersed but integrated production systems. Clusters foster core interactions between lead firms and key suppliers that resist easy codification, such as design, development of prototypes and the determining of the validity of manufacturing processes (Asheim, Cooke, and Martin 2006). Despite many different focuses (clusters, industrial districts, new industrial spaces, local production systems, regional innovation systems, learning regions and the like) the various territorial models claim that firms in clusters or other similar systems are linked in some way. They can be linked vertically through buying and selling chains, or they can be connected horizontally by use of similar inputs, technologies, services, suppliers and by producing complementary products. These vertical and horizontal links are embedded in close social relationships, networks and in culture. Strong interdependencies among firms and organisations are based upon sharing knowledge. The degree to which firms can tap into a common knowledge base at the local level depends on more than spatial proximity, cultural affinity or corporate culture. The institutional context of the cluster defines how things are done within it and how learning transpires (Breschi and Malerba 2001; Gertler 2003).

From the above, it should be fair to conclude that structural similarities strengthen the subsidiaries potentials to engage in this local broadcasting of knowledge, and that this local buzz is an important element in an industrial milieu that provides similar kinds of experiences and tacit knowledge, as well as institutional frameworks, as we find in Norway. Formal networks covers only a limited part of knowledge flow, hence even rather loose relations to actors in the host environment may be an important source of subsidiary learning. However, we should also address the differences. It is recognized that knowledge heterogeneity within such industrial milieus is an important source of learning otherwise it would be no point in being embedded. If the knowledge circulated in the milieu is identical to that circulating within the firm, there is no reason to invest in embeddedness (Bathelt, Malmberg, and Maskell 2004). Below, we therefore address some important sources of heterogeneity also.

Especially since 2000 the Lithuanian furniture industry has attracted more and more FDI. The largest share of inward FDI flows has come from Scandinavian countries. In fact 44 percent of total FDI stocks in wood and furniture industry in 2005 were of Scandinavian capital, of which 42 percent from Norway. Most of these investments were made by companies with an origin in Sunnmøre. Investments were made both in furniture production and in sub-production for the furniture industry, and the export level of this production from the Norwegian subsidiaries is more than 95 percent. In general the export rate of the Lithuanian furniture is much higher – ca. 60 percent – than in Norway – ca 35 percent (Juozaityté 2005; Romero and Graf 2004).

The higher degree of internationalization of the Lithuanian furniture industry is also illustrated by the fact that Lithuania attracts several international actors within the industry, like Danish companies (Juozaityte 2005), while the Norwegian industry is dominated by domestic owners (Høidal 2004). This may make Lithuanian firms more knowledgeable of internationalization and especially demanding international actors. Since the Danish firms are bigger that the Norwegian firms, the Norwegian may have something to learn about how to reach scale.

Apparently, though, this picture is more or less destroyed when investigating the motives for the offshoring to Lithuania. If we consider the decisions made to invest in Lithuania, it is clear that the intention was to reduce costs by outsourcing, and it is hard to find any vision concerning localized learning. The idea that Lithuania represented some kind of backward economy, and that there was not much learn back form Lithuania is illustrated in a survey of four subsidiaries of Norwegian furniture companies in Lithuania in 2005. All of the interviewed companies stated that while deciding to invest in Lithuania or choosing location for the entity in Lithuania, geographical proximity to certain regions in Lithuania or specific companies didn't matter and was not considered (Juozaityté 2005).

Further, the concrete investments were primarily made because of substantial lower labour costs in Lithuania than in Norway. Within this industry labour cost are approximately 15-20 percent compare to the Norwegian (Amdam, Lunnan, and Ramanauskas 2007). This supports the impression that focus on local learning was originally very low. The concrete practices concerning setting up the new subsidiaries support this impression. New production processes – or routines – were typically introduced and controlled by expatriates with a professional background as skilled workers. According to (Andersson, Björkman, and Forsgren 2005) headquarters that explicitly value knowledge development as part of a performance evaluation criterion have a positive impact on subsidiary local embeddedness. This is in contrast to the impact of subsidiaries headed by expatriates. For example, subsidiaries headed by expatriates are found to be less embedded than subsidiaries headed by local managers.

On the other hand, however, it seems a puzzle why so much of the Norwegian FDI was concentrated to Lithuania. It seems fair to argue, that the actors at least in a more implicit way sensed that the structural similarities would promote a cost effective transfer of routines to the subsidiaries. For instance, the business association of Norwegian furniture producer in 2003 organized a study tour to Lithuania and Latvia with 17 participants. The fact that the aim was to study the competitiveness of the local firms and what kind of challenges they may have represented, indicates that the Norwegian industry were aware of some of the structural similarities, and had some perception of local competence (TBL-MI 2003). We may therefore assume that cultural and structural resonance, common experience, similar pools of qualified workers and flow of tacit knowledge is likely to have been a part of the general cognitive framework that led them to invest in Lithuania.

The case of no learning?

We have shown that the structural preconditions for the transfer of knowledge between clusters should be good in this case, and also the Norwegian actors were attracted by the local competence in Lithuania when they decided to invest in Lithuania. However, if we go closer into the case and follow the industries over time from 2000, the presence of the Norwegian

furniture industry in Lithuania is a story of routinzed production, lack of autonomy and lack of local embeddedness.

Routines
The production processes within the furniture industry could be defined as a routine, and this type of routine is in our cases particularly suitable as a unit of analysis, since theses routines were designed by teams in the home cluster (Sunnmøre) and introduced to the subsidiary in the other cluster by the headquarters of the MNCs. This support the idea that new routines and practices most likely are transferred from developed to emerging economies. We would therefore assume that it may be difficult to identify processes of localized learning in cases when MNCs from developed economies offshore production to less developed countries by transferring routinized production processes from the home country to the new local context, as it happened in the Norwegian–Lithuanian context. However, several dimensions of this case differ from the characteristics of most of the empirical data that are used in the literature on local embeddeness.

On the one hand, the Norwegian companies are small and they have offshored some production lines to Lithuania. The production process is rather simple, based on low local competence, and it is routinized based on standardized manuals designed by the headquarters in Norway. We therefore characterize the local production process as a routine. In the second place, they produce for the international market, and not for the local Lithuanian market. The lack of local customers means that the number of potential types of actors with which they may be embedded is reduced. Consequently, one could allude to recent findings and assume that local embeddedness in general is weak.

The copying of a routine is illustrated by one of the companies: "*The furniture producer has established a copy of the factory in Norway*", a newspaper wrote (Magasinet, Dagbladet, 20.01.2003). In 2007 the same company built a new factory in Panevezys with investments of approximately NOK 40 million, and there is still the same tendency of copying. The technical manager of the subsidiary, a Norwegian expatriate, ascertains that although some concrete tools for the production process are acquired in the local market requirements and preferences are set at headquarters to ensuring that acknowledged and recognised suppliers are used (interview February 2007). Additionally, tools and heavy machinery such as the trucks are second hand from Norway. In the construction process of the new factory, a Norwegian consultancy located at Sunnmøre is used to safeguard, guide and direct the process. Because the company is ISO certified in Norway, certain requirements are required from suppliers.

A parallel history is told by another company. When the subsidiary was formally established in 2000, Norwegian engineers came over from Norway to assist and to build local competence on technical matters, quality development and service (Managing Director, interview, 23.02.2007): "*We were built from scratch, the Norwegian office had the business knowledge, knowledge on quality and customers…all we could add was the present process…. we had nothing to add…. we did not produce this kind of products.*"

Originally this also happened at the subsidiary of another non-furniture company, but the case shows that some local learning may have occurred. "*At the beginning, Norwegian engineers often came over, but this happens more rare now*" (Managing Director, interview, 20.02.2007). "*We started to assembly (the company's) products in March 2004. We started with 15 people and a small range of products, the range become larger and now we have 70 employees and assembly the majority of the company range.*"

As these examples show, the original intention was that the Lithuanians should do what they were instructed to do since the transferred routines were based on well established routines that had developed over time within Norwegian production units. Since routines were transferred and copied, and the MNCs did not address the question of localized learning, one could question whether it is likely to find sources of localized learning. Even though some findings – as we will show – support this scepticism, two factors triggered our interests in searching for any influence on subsidiary learning from external actors to which the subsidiaries relationship with.

Autonomy

Our data shows that there are in general very strong links between headquarters and subsidiaries, which is typical for firms, that offshore production. Most of the subsidiaries were greenfield investment. When they were set up, routines were as mentioned copied. This means that they were separated from their original contexts in Norway before they were transferred. It also means that that part of the value of firm's activities may have been lost (Maskell and Malmberg 1999). On the other hand, the routines were codified by using manuals and linked to the same machines that were used in the home country. This codification may have reduced the loss during the transfer process. (Gupta and Govindarajan 2000) maintain that the tacitness of knowledge is the most widely recognized barrier to transfer, and losses during transmission is greater when knowledge is not codified (Mudambi 2002). Still, it is likely to assume that the new routines were imitated, but not internalized or integrated. Imitation refers to degree in which receiving part enact on transferred practice, internalisation refers to what degree transferred practice are accepted and taken for granted, and integration refers to what degree the transferred practice is linked up with existing routines and practices (Lervik 2005). The lack of internalisation and integration is confirmed by two of the interviewees from 2007 when they say that very often things do not happen locally as expected, since the messages are not understood. Consequently we could assume that the copied routines were susceptible to knowledge from local actors to which they are embedded.

However, we can also see that headquarters have tried to prevent changes in copied routines by different control mechanism. For instance both the furniture company interviewed in 2007 as well as a subsidiary producing for the medical instrument industry have on-line order systems in which orders and order-processing may be controlled from headquarters in Norway. The control aspect is also underlined by the fact that several of the production lines are ISO certified. However, based on our preliminary findings there seem to be a tendency towards more autonomy. As one of the managing directors say: "*I feel we have more autonomy now, before we had to ask for permission for everything. At the beginning, Norwegian engineers often came over, but this happens more rare now*" (interview 20.02.2007)

The loosening of headquarters' control could be interpreted as a result of stronger local embeddedness over time. In one subsidiary, in fact the one that requires higher local competence than the others, the autonomy and local embeddedness is expressed in the fact that it is managed by a Lithuanian, and not by a Norwegian expatriate. In fact the local managing director has 17 years work experience from Kaunas University in Lithuania, and she became member of corporate management team in 2004 when the subsidiary changed from being just a "manufacturing unit" to becoming a site. This means that the subsidiary's

tasks have been extended from just being a production site to also having contacts with the customers. In this position she visits Norway every second week.

Lack of local embeddeness
There are different types of local embeddeness. Since the special character of these subsidiaries as units for offshored production for an international market, embeddness in a *local market* which for instance by (Andersson, Forsgren, and Holm 2002) is regarded as key type of embeddedness, is not a relevant source of localized learning in this case. All of the studied firms export 95 percent or more of the production in Lithuania. Two of four companies from the 2007 interviewees have some contact with their international customers, but the headquarters in the home country make the strategic decision on customer relations. The two other companies do not have any contact with customers at all, but ship all their products to Norway for further distribution.

Also the networks to *local suppliers* seem to be rather weak. Most of the suppliers are international, and not local. As one of the furniture companies says, they buy most of the skin they use form Australia or Argentina. Others (non-furniture companies) use suppliers in Asia. However, the furniture subsidiaries buy some wood products from Lithuanian suppliers, but the degree of contact and exchange of information seem to be limited since the products are quite simple to produce. One company reports that the function of the subsidiary has been extended within logistics to handle suppliers from Eastern Europe. This indicates a development towards more autonomy and consequently towards embeddedness with local suppliers as a more important source for localized learning. However, this subsidiary estimates that still only approximately 15 percent of all inputs in the production are from the local market.

This development, and the development of customer-facing responsibilities described above, suggests that the local subsidiary had developed its capabilities and corresponding mandate or charter over time, resulting in increased autonomy. It is an open question whether this is an intended process driven by HQ, or taking place on the initiative of local management. However, even though the subsidiary increase its capabilities and autonomy, this does not necessarily translate into more spillovers to the local cluster. The firms are mainly export oriented, and likewise are inputs mostly acquired abroadBy downplaying the function of local customers and suppliers as main sources for localized learning in this case, we suggest that if these subsidiaries are embedded in any local actors we should search for these actors within a more general framework of *local industrial environment.* As mentioned, we could assume that the structural similarities would encourage the foreign investors to search for knowledge within the local industry. Even though it is difficult to identify any concrete networks between the Norwegian subsidiaries and local actors, it is interesting to notice that one of the companies that was interviewed in 2005 *"asserted that important factor for the success of their business is that wood and furniture industry in Lithuania is already highly developed"* (Juozaityté 2005). Another said that the level of industry development in Lithuania is the same as in Scandinavian countries, in some specific spheres it seems to be even higher developed. One of these also admitted that they cooperated with local industry *"We have from 4-5 large partners and a plenty of small ones"*. This contact with local partners represents a potential source for localized learning, even though it is difficult to identify at this stage of the research how transfer of knowledge may take place. The contacts should not be overestimated. This firm – like the others – said that they cooperated much more intensively with foreign partners than domestic, and that the main source for getting information about the Lithuanian market was industrial journals and not personal contact.

Among our case subsidiaries all are greenfield investments except for one producer within the medical instrument industry. This was acquired. Another exception is a furniture company, steablsihed by Lithuanians, but later bought by Norwegians. The degree of local embeddedness in the local industrial environment seems to be higher for these two companies than the others. Concerning the medical instrument producser the former (Norwegian) factory manager emphasises that what was acquired was a network and a good managing director (Interview 20.02.2007).

Another aspect of the local environment is *local governmental bodies*. The embeddedness concept has been extended to capture the complexity of local embeddedness, and to make explicit that firms not only are dealing with other firms (Johannisson, Ramírez-Pasillas, and Karlsson 2002; Araujo and Rezende 2003), but also with governmental bodies, both through direct and indirect links. Our empirical data shows that this form of embeddedness may be worth investigating further since one of the subsidiary reports that close relationship with the local mayor has been important for their possibility of expanding production capacity as quick as they want.

Based on our empirical data we will argue that our attemptd to identify actors to which aspects of embeddeness may exist, and actors that may contribute to change routines, leads us to the *local workforce* as the most promising variable. Subsidiaries recruit local employees. Little is know about how local employees act as carriers of local knowledge to the subsidiaries and thereby serve as change agents for the production process. What we do know, however, is that the attitude towards local employees has changes over time form regarding them just as cheap labour resources to respecting their qualifications.

As mentioned, the investors were attracted by the labour costs when they established their subsidiaries. Several companies have – after some time – expressed that the quality of the skilled workers are relatively high. Among four companies interviewed in 2005 two expressed negative opinion about the qualification level of the workforce (Juozaityté 2005). The others were satisfied. One said that *"if a person lacks specific skills, we provide him certain training and teach by ourselves. The important thing is high commitment of employees and in this aspect we are completely satisfied."* The other especially mentioned that workers are hard-working, productive and committed. In an interview with a magazine, a general manager of one furniture company was praising the Lithuanian work-force stating that the quality level is excellent (Magasinet, Dagbladet, 20.01.2003). The same view was expressed by one of the interviewees in 2007:

> "*At the beginning, customers and the company's employees were surprised by the provided standards on the products and local employees…. It costs a bit to communicate knowledge….I believe Norwegians in general believes that foreigners are less intelligent than we are…Lithuanians are systematic, willing to change and loyal to "systems"."* (Interview 20.02.2007).

What may reduce the local labour force as an important source for localized learning in our case, is the fact that skilled workers are hard to recruit after Lithuania join the EU. Some of them emigrate and some move to other competitors. This competition on the labour marked may contribute to the development of the mentioned routines as standardized production processes based on unskilled workers, and consequently reduce the possibilities for localized learning. In our case the subsidiaries seem to prefer unskilled workers, and some argue that

workers may be recruited from the street. Within these subsidiaries the turn-over seems to be higher that expected, and the sick-leave higher than wanted.

Discussion and conclusion

In this paper we have used a case to illustrate some theoretic perspectives on how to explain knowledge transfer from one cluster to another. The case of knowledge transfer from the furniture cluster in Norway to a similar one in Lithuania through MNCs is a case with limited knowledge transfer. Especially during the first years after the first FDI was undertaken standardized knowledge was transferred from the headquarters located in one furniture cluster to the subsidiaries located in another cluster, and this knowledge was introduced as routines in the subsidiaries. But the flow of knowledge seems to have decreased over time and it is also very difficult to document any spillover to local actors in the Lithuanian cluster. Therefore limited knowledge transfer takes place from one cluster to another through MNCs in this case. In order to explain these observations we will focus on the combination of different variables introduced in part one of the paper.

First, the character of the clusters: In this case both clusters are mature clusters, which should favour knowledge transfer. They are also relative old clusters. On the other hand the two clusters are hardly dynamic, which can be illustrated by the fact that the furniture cluster in Lithuania scores low on innovation in the European survey (www.clusterobservatory.eu), which may act as a negative factor according to the theory. The fact that Lithuania as an represents a less developed economy than the Norwegian could also act negatively regarding preconditions for knowledge transfer. But, as we have shown, the size of the clusters is so different that we could assume that this would compensate for the differences in economic development. All in all, according to the criterion character of the clusters, we could say that preconditions for successful knowledge transfer exist in this case, but it is not a sufficient precondition. The similarities regarding the character of the cluster seemed to have been important for Norwegian firms to choose this particular location for offshoring. However, once they started to develop activities there, they hardly made an effort to try to take advantage of the cluster context.

Second, the pipelines: We have shown that there are two conflicting interpretations of the main motive for investing in Lithuania. On the one hand, the Norwegian investors were aware of the existence of the quality of Lithuanian furniture cluster and wanted to get access to the local knowledge base. On the other hand, they wanted to minimize production cost and to invest were labour costs were chip. If we assume that reducing labour costs was the main motive for investing in Lithuania, we could characterize this case as a dependency structure linkage between two clusters. According to the theory knowledge sharing is limited in such linkages (Kim and Zhang 2008; Turok 1993). Therefore, there is theoretical support to our finding of limited knowledge transfer from one cluster to another in this case. This is also the case regarding the character of the pipeline. The Norwegian owners invested primarily for getting access to cheap labour costs, and did not envisage an advanced role for their production subsidiaries. In the early phase there were high investments in knowledge transfer from Norway to the subsidiaries. Technologies and routines were transferred and they invested in learning for the purpose of bringing the local plants up to speed and to act as copies of production units in Norway. Then efforts were toned down, fewer expatriates stayed in Lithuania, and more were left to their own device. In this way pipelines were established across borders to the subsidiaries. These were closed pipelines since they did not reach other actors in local Lithuanian clusters. The closing of the pipelines was – in this case – not a

logical function of structural phenomena, since there were potentials for spillovers to local actors as well as potentials for tapping into a local knowledge-base. The closing of the pipelines was – we argue – results of human attitudes and decisions of strategic character.

Third, embeddedness. As argued, the Norwegian MNCs that potentially could act as a linkage for knowledge transfer between two clusters did neither intend to be nor did in practice tap into any local networks or knowledge base. The degree of local embeddedness was extremely low. The low interest among the Norwegian investors regarding being embedded in the local cluster seems to have a local parallel since Lithuanian furniture producers seem to have be skeptical to foreigners (Zidonis 2007). This observation asks for more research than we have been able to do so far. It should have been interesting to look more into the perspectives and decisions of local firms in Lithuania in order to investigate the degree of active stance and strategy on their part required for spillovers to take place. Do they learn through observation of successful foreign firms?

Finally, seen from an international strategy perspective, we should not be surprised to find limited knowledge transfer between two clusters in this case. Greenfield, which was chosen as the main entrance strategy, would have been the preferred entry strategy for knowledge transfer only if the investors brought new technology to the cluster. This was not the case here. The Lithuania furniture scores low of innovation, and is not any leading international environment for modern design. On the other hand, the technology that was introduced with the Norwegian investments did not challenge this situation, but represented a simple technology for standardized production of simple operations in series. The choice of entry strategy fit to the main motive for investment, namely to save money by reduced labour costs. They were efficiency seeking (Dunning 1993). Limited knowledge transfer was a result of these strategic decisions.

As we discussed in the first part of the paper subsidiaries with high degree of autonomy tap better into the local knowledge base and consequently represent a stronger potential for knowledge transfer between clusters than subsidiaries with little autonomy. In this case the small Norwegian MNCs chose a strategy of extremely low degree of autonomy in order to introduce routinezed practices similar to the practice in production units in Norway. As we also have seen the relationship between headquarters and subsidiaries was loosened in some cases. Expatriates were replaced by locals, and gradually subsidiaries went beyond their original mandate and took more responsibility for inbound logistic and customer facing activities. However, even though the subsidiaries seem to have been upgraded in terms of capabilities, mandate and autonomy, there is still little spillover to local firms. This is understandable since the *reason d'etre* for the subsidiaries is that they are local cost saving copies of Norwegian production units, and that the upgrading should not challenge this position.

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