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**Environmental influences on MNE subsidiary roles: Economic integration
and the Nordic countries**

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Environmental influences on MNE subsidiary roles: Economic integration and the Nordic countries

Abstract. In this paper, we seek to examine the importance of environmental factors on the determining subsidiary roles. In particular, we examine the environmental factors associated with deep integration schemes. Such schemes require a convergence of economic structure due to the establishment of common regional institutions, regulations and policies. Specifically, we distinguish between the scope of activities performed by subsidiaries and their level of competence. The empirical analysis is based on a large-scale survey of foreign-owned units in Denmark, Finland, and Norway. These Nordic countries differ with regard to their EU-membership status – Norway being the ‘outsider’ whereas the others are members – but are very similar to each other in most other respects. Our data show that subsidiaries in Norway report significantly lower scores for both scope and level dimensions of subsidiary development. Effects remain strong even when controlling for other potentially influential factors. The findings indicate that being on the ‘outside’ of the EU may indeed carry the price of becoming less attractive to MNE activity.

Keywords: Location advantages, environmental influences, regional integration, multinational enterprises, subsidiary roles, Norway, Denmark, Finland, periphery.

Introduction

The strategic management literature on the role, dispersion and development of subsidiaries is now well developed (see e.g., Bartlett and Ghoshal, 1989; Birkinshaw, 1996; Birkinshaw and Hood 1998; Holm and Pedersen, 2000; Roth and Morrison, 1992). Nevertheless, it has tended to focus on the MNE specific (i.e., internal) determinants. Little attention has been given to the extent to which the role and competence is determined by the environmental (i.e., external) factors (Birkinshaw and Hood, 1998). This paper seeks to rectify this oversight by examining the response of MNEs to the external environment in the location of their subsidiaries and the assignment and development of different subsidiary roles. It is the contention of this paper that although internal MNE factors play an important role in determining the kinds of activities that a subsidiary in a given location undertakes, the environmental factors influence both the initial entry decision and the competence and scope of the affiliate.

Environmental factors include both location advantages issues as well as political economy issues. We do not intend to provide a systematic analysis of all the environmental determinants of subsidiary roles, nor to argue their importance relative to internal decisions. Instead, we will illustrate that macro aspects associated with location advantages are also significant in understanding subsidiary roles and competences.

Our focus here is on the effect of location advantages associated with *deep* regional integration schemes such as the EU. The importance of location advantages in determining MNE activity within the EU has largely been studied on an aggregate level. Considerably less attention has been paid to the firm-level response¹ to changing location advantages due to integration, although it seems axiomatic that changes in economic structure due to integration have significant implications for the way in which MNEs organize their activities. Our interest in regional integration is not so much on the mechanisms of the process *per se*, but what deep integration represents. One of the mechanisms (and indeed also an outcome) for deep integration schemes is a convergence of economic structure due to the establishment of common regional institutions, regulations and policies. From a European perspective, there is concrete evidence that there are non-trivial benefits to MNE activity operating within the EU compared to operating outside it.

In this paper, we seek to examine the importance of environmental factors on the development of subsidiary roles. We illustrate our arguments by focusing on the specific case of three otherwise-similar peripheral European countries which share a number of common features, but differ in the extent to which their economic and industrial structures have converged as a result of deep integration taking place within the EU. The Nordic countries of Denmark, Finland and Norway provide an excellent setting for studying such processes. While these three

countries are remarkably similar culturally as well as in terms of market size and wealth, an important difference between them has been the variation in their levels of involvement in economic convergence associated with regional integration. We use data collected in a detailed questionnaire survey of foreign owned companies in Denmark, Finland, and Norway. In all, the database comprises 809 subsidiaries of MNEs from more than 20 countries, established over a number of years: about half of the sample was established before the intensification of European regional integration from the mid-1980s.

The External Environment and MNE Activity

The literature on subsidiary development has greatly expanded over the last twenty years, evaluating the dynamics behind the evolution of subsidiary roles, beginning with the seminal work of Bartlett and Ghoshal (1986, 1989). Although they proposed a close link between the influence of the subsidiary and the strategic importance of its local environment, many of the studies on subsidiary roles have mainly approached the issue from an internal perspective. The roles are viewed as the result of corporate headquarters assignment or an autonomous process within the subsidiary. Lorenzoni and Baden-Fuller (1995), for instance, credit the strategic center as having a critical role in a network of units, adding value through contributing its own expertise as well as by coordinating the flow of knowledge within the network. The degree of embeddedness in external business relationships has also been found to influence the development of subsidiary roles (Andersson and Forsgren, 2001; Andersson, Forsgren and Holm, 2001). However, these studies have primarily focused on the immediate business relationships and not dealt with the macro environment or possible differences between nations.

Less attention has been given to the external environment. Although the literature on aggregate economic activity suggests that different roles do evolve, the strategic management

literature, with a few exceptions (Mariotti and Piscitello, 2001; Birkinshaw and Hood, 2000), lacks research relating subsidiary development to exogenous factors that are not firm, network, and/or industry specific.

The external environment can have considerable impact on the scope and competence level of subsidiaries. These are often acknowledged in the literature within the rubric of location advantages. Considerable attention has been paid in the literature to the role of location advantages in determining the initial entry decisions of MNEs in any given market (see e.g., Culem, 1988; Davidson, 1980; Dunning, 1988; Jackson and Markowski, 1996; Lipsey and Kravis, 1982; Mudambi, 1995; Veugelers, 1991). However, once the decision to enter a given market through FDI is taken, the kinds of activity and the level of competence of the subsidiary are also co-determined by the nature of the location advantages of the host location. That is to say, while MNE internal factors such as their internationalization strategy, the role of the new location in their global portfolio of subsidiaries, and the motivation of their investment are pivotal in the structure of their investment, they are dependent on the available location-specific resources which can be used for that purpose. Even if a host location does not have a large domestic market, for instance, an MNE may still engage in local production because of import restrictions. Likewise, weak intellectual property rights protection may limit an MNE's involvement in R&D in a host location that may otherwise be an attractive location for R&D. The point here is that even at the initial investment stage, the scope of activities undertaken in a host location is tempered by the location characteristics. These include all aspects of industrial and investment policy, which can determine the kinds of incentives provided by the host country, as well as more 'traditional' location advantages such as market size, agglomeration economies, infrastructure and asset availability.

The host country's location advantages play an important role in determining the level of competence of the subsidiary. This is on at least two levels. First, the level of competence is a function of the quality of the location advantages that the host location can provide. High competence levels require complementary assets that are non-generic in nature, and are often associated with agglomeration effects, clusters, and the presence of highly specialized skills. In other words, firms are constrained in their choice of high competence subsidiaries by resource availability. For instance, R&D activities tend to be concentrated in a few locations because the appropriate specialized resources are associated with a few specific locations. Second, MNEs have been shown to prefer to engage in sequential investment in locations that provide sub-optimal returns but with which they have prior experience, because firms are known to be boundedly rational (see e.g., Madhok 1997). Furthermore, while the scope of activities undertaken by a subsidiary can be modified more or less instantly, developing competence levels takes time. MNE investments in high value-added activities (often associated with high competence levels) have the tendency to be 'sticky'. Such subsidiaries tend to be embedded with the local milieu in terms of linkages with suppliers, customers and domestic institutions. The linkages are both formal and informal, and will probably have taken years – if not decades – to create and sustain. Firms generally dislike radical change, and will prefer to maintain the status quo if it does not endanger their competitiveness. Thus, when an MNE chooses to exit, it must suffer the costs of entry in another location (in terms of effort, capital and time), and these costs are non-trivial (Narula 2002). Thus where the level of competence of the subsidiary is high, they are more likely to maintain the subsidiary, even where an alternative location may provide a better fit to their overall strategy.

Economic Integration as an External Determinant of Subsidiary Roles

Regional integration schemes represent a specific subset of location advantages. Regional integration has occurred on a *de facto* basis due to economic convergence and an associated growing interdependence through trade and FDI amongst the Triad countries. In certain instances it has been further reinforced by *de jure* political and economic integration between groups of nations. This is best exemplified by the European case, which has been in the throes of integration for half a century.

The static and dynamic gains from regional integration schemes result in both long and short run economic gains. This is due, *inter alia*, to improved economies of scale and scope, increased efficiency through the rationalization and reallocation of activities of firms, and improved inter-regional linkages (Eden, 2000). The improved economic conditions are also expected to positively influence inflows of FDI. In the context of the current paper, we are interested in *deep integration schemes* that may include common industrial policies, elimination of all intra-regional tariff and non-tariff barriers, and common external barriers. In other words, there is *economic integration*. Most prominent of these is the European Union initiative, which has evolved over time from a rather limited free trade agreement to a political and economic union. On the other hand, *shallow integration schemes* essentially involve the reduction of tariff barriers between member countries. It is axiomatic that the benefits from membership in shallow agreements that have been in place for a short period are unlikely to prove as beneficial as deep integration agreements that have been implemented for a long period.

Our interest here is not on the process of regional integration *per se*, but economic integration, and what it represents, in terms of its effect on other location advantages. Deep integration schemes such as the European Union influence the characteristics of locations through two means.

First, integration has market size effects, because MNEs have potential access to a larger single market. Numerous studies have looked at the effects of EU integration on economic activity. Although the positive trade effects of integration are transparent (Baldwin and Venables, 1995, Pain and Lansbury 1997) the evidence on FDI effects is somewhat more ambiguous (Neven and Siotis, 1993; Yannopoulos, 1990). Dunning (1997a, 1997b) in a comprehensive survey of inward FDI into the EU, concluded that the geographical and industrial distribution of inward FDI stocks had changed to reflect a certain level of rationalization, and that overall the spatial distribution of production activities had not undergone a major shift.

However, Dunning's survey – as with many other economic studies – is based on macro-level data, which obfuscates the understanding of changes in the strategies of firms due to regional integration. MNEs have reorganized their spatial distribution within the EU to exploit economies of scale and scope, and to more efficiently exploit the comparative advantages of the various member countries within the EU. However, while the net effects may be zero, the importance of their operations may well have changed. Take an automobile manufacturer with two hitherto independent subsidiaries, one in Spain, and the other in Germany. In the interests of exploiting economies of scale, it may concentrate its body production operations in Spain, its engine manufacturing activities in Germany, and its R&D in Italy (where it hitherto had no activities). Thus, although there has been intra-EU redistribution of FDI, the net effect might simply be an increase in inward FDI in Italy, since the redistribution between Germany and Spain may well have cancelled each other out. Such restructuring has been noted for a variety of firms in a wide spectrum of industries.

Such reorganization has also led to a certain level of disinvestments (Benito, 1997), or downgrading of activities in locations that have not joined the EU. Non-EU MNEs in particular,

regarded the single European market initiative as the basis for the creation for a 'Fortress Europe' with high costs to firms not already established there (Almor and Hirsch, 1995), and reduced their investments in locations that were not part of the Union.

Second, deep regional integration can result in an increasing similarity in the economic structure of the participating countries. Common legislation and coordination occurs through the establishment of supra-regional institutions, resulting in a *de facto* and *de jure* convergence of important variables such as tax rates, quality of infrastructure, competition law, incentive schemes, corporate governance, procurement regulations, etc. (Eliassen and Monsen, 2001).

The effects of regional integration on economic activities such as reorganization and rationalization, suggests that this will inevitably induce some changes in subsidiary roles. Once an MNE rationalizes the number of subsidiaries or reorganizes the activities across borders, the various units will likely experience changes in scope and areas of responsibility. Increases in scope can typically be found when the number of subsidiaries is rationalized or local conditions encourage localization of activities (Birkinshaw, 1996; Poynter and Rugman, 1982). Similarly, the scope may be narrowed to focus on specific activities and build expertise within the selected area (Surlmont, 1998; Chiesa, 1995). Hence, changes in scope are often related to both organizational and spatial considerations.

Scope does not necessarily always determine subsidiary roles, however. Some studies have found a correlation between the subsidiary's competence levels and its role within the MNE (Furu, 2001). Studies on 'centers of excellence', for instance, propose a strong relationship between the level of influence and the subsidiary's competence level (Forsgren and Pedersen, 1998; Fratocchi and Holm, 1998). This research also emphasizes the importance of using the subsidiary's competence in the MNE in order for new roles to develop. High levels of

competence in areas of importance to the MNE thus appear to result in greater subsidiary autonomy.

Consequently, it is useful to look at the combination of scope and competence levels when discussing subsidiary roles. As discussed previously, regional integration often induces changes to the performance and organization of MNE activities. This can be seen both in terms of changes in scope as well as in the development and use of competencies. Figure 1 illustrates the different subsidiary roles that unfold from the various combinations of scope and competence levels.

*****Insert Figure 1 about here*****

Because internationalization is inherently risky, *ceteris paribus*, initial investments tend to be small, perhaps in a sales subsidiary or a small-scale production unit (Delany, 2000; Birkinshaw, 1998). Subsequent development may, if it occurs, proceed along either one or both dimensions. As Figure 1 shows, subsidiaries with many activities but low competence levels are defined as ‘miniature replicas’ that basically mirror the parent organization. These subsidiaries will typically be found in areas that are strategic for locating the entire value chain to achieve economies of scale and scope. Subsidiaries with few activities but high levels of competence, on the other hand, are highly specialized units that add value through their knowledge and competence to the rest of the MNE. Such subsidiaries are often related to R&D activities. There will, without doubt, always be several different combinations creating a variety of roles, as illustrated by multi-activity units. That defines a ‘mid-ground’ of subsidiary roles where probably the majority of subsidiaries can be placed. ‘Strategic centers’ represent subsidiaries with a wide scope of activities as well as high competence levels. Such centers commonly result

from a process of rationalization and downgrading in areas outside the regional integration where the activities and core of competencies are united.

Regional Integration, MNE Subsidiaries and Peripheral Countries

Deep regional integration considerably affects the location advantages associated with peripheral countries. By peripheral countries we refer to countries that are smaller economies relative to the core and larger countries that ‘drive’ and dominate the overall regional economic landscape. However, this paper makes a further distinction between peripheral countries that are insiders (i.e., those that are full members of the scheme) and those that are ‘outsiders’: We expect that it is generally more beneficial – from the viewpoint of subsidiary development – to be located within a regional bloc than outside it. Regional integration promotes the widening of markets, and because ‘insiders’ have easier access to the larger market they are, *ceteris paribus*, in a better position than ‘outsiders’ to exploit economies of scale as well as economies of scope. The liberalization of trade and factor movements within an area should also increase the level of competition throughout the area. An intensification of competition should, in turn, lead to a shakeout of less-efficient actors, and those that remain in an industry are likely to be the most competitive ones. Of course, competitive processes are never at a standstill. As a consequence, units operating within a bloc must strive to better their performance, efficiency or innovativeness. Stated differently: they have to become ever more competent in their line of activities. Units in ‘outsider’ locations may clearly also develop high levels of competence, especially if they are part of strong local industrial clusters or if they enjoy favorable access to unique resources of various kinds. Special circumstances may make particular locations well suited for certain activities, irrespective of the status of the host country in the context of specific regional integration processes. However, whenever operations are predominantly oriented

towards the local market, factors like weaker competition, smaller markets, and more peripheral positions in the corporate network of the parent MNE, work against subsidiaries developing more advanced roles. Subsidiaries in ‘outsider’ locations with the characteristics of, say, ‘strategic centers’ are hence more likely to be the ‘special case’ rather than the ‘general case’.

Countries on the periphery suffer (prior to integration) from smaller markets, and tend to have overcome the disadvantages of small market size by instituting industrial policies that promotes import-substituting type of investments by MNEs. Thus, such locations tend to host subsidiaries that are miniature replicas. That is, the MNE is able to offset the disadvantage associated with small market size and inefficient scale economies *inter alia* by opportunities associated with privileged access to restricted markets.

Upon membership of deep integration schemes, insider peripheral countries experience a decline of their location advantages associated with such privileges, since the state must re-orient their economies to the supra-regional norms established by the core, which is assumed to be offset by an industrial redistribution within the region based on comparative advantage, and potential access to a larger unified market. ‘Outsider’ countries, on the other hand, experience a decline in their location advantages, not because of industrial redistribution, but by virtue of being marginalized relative to neighboring ‘insider’ countries.

This paper compares Denmark, Finland and Norway as a basis for studying the effect of regional integration on subsidiary roles in peripheral counties. These three countries provide an ideal basis for our purposes. All three are part of the ‘Nordic cluster’ (Ronen and Shenkar 1995). They have similar location advantages in terms of market size, income levels, and labor costs (see Table 1) as well as demographics, politics and culture. In addition, by virtue of their size, location and history they are peripheral countries and have the limited location advantages

associated with such countries. All three countries have historically had similar economic structures dominated by small and medium sized enterprises, fostered by policies of import-substitution and welfare states, and have had a historical dependence on natural resources. Although Sweden shares some of these features, apart from having a population twice the size of the other Nordic countries, Sweden has had a significantly different economic history, engaging in industrialization much earlier. Its economy has a disproportionately higher share of large MNEs (Oxelheim and Gärtner, 1994).

This is not to imply that there are no differences in location advantages vis-à-vis MNEs. As shown in table 1, FDI activity in 1970 (measured in terms of FDI stock as a percentage of GDP) was much less significant in Norway and Finland than in Denmark, indicating that the location advantages for MNEs of Denmark were superior to the other two countries. It is worth noting that the levels of FDI were remarkably similar in 1999 (Table 1). This suggests, on an aggregate level at least, that both Norway and Finland have been relatively more successful at attracting FDI flows in recent years. As a result, there are no major differences in location advantages any longer, and there is no clear hierarchy among these countries. As we have emphasized earlier, however, aggregate data do not reflect the kinds of subsidiaries, and the nature of their activities.

The one location advantage on which these three countries differ is the issue of regional integration, where there is considerable variation. Denmark is a ‘veteran’ of European integration having joined the European Community after a referendum in 1972, while Finland joined the EU in 1995. Norway remains an ‘outsider’, but is associated to the EU through the European Economic Area (EEA, a shallow regional integration agreement between some non-EU European countries and the EU), having rejected EU membership twice (in 1972 and 1994) and

remains unlikely to consider full membership. Their different status in the regional integration process that accelerated in Europe from the 1980s onwards – Norway, the ‘outsider’, versus Denmark and Finland, the ‘insiders’ – makes the case of FDI in these countries particularly well suited for such an investigation.

Denmark and Finland have had to harmonize their policies and industrial structure as full members of the EU. By staying out of the EU, Norway has to some extent maintained its import-substituting policies, supporting and encouraging domestic industry through non-tariff barriers and subsidies in several industries. Incumbent MNE subsidiaries are given national treatment, but provided they maintain a certain scope and competence of their Norwegian activities (Nygaard and Dahlstrom, 1992; Kvinge and Narula, 2001). Its membership of the EEA has obliged it to dismantle some of its subsidies. Nonetheless, barriers to trade and investment are still on average at least double of those in most EU countries, and compared to countries such as Germany, UK and Italy more than three times as high (OECD 2000). By being the only non-member in Northern Europe, Norway has thus moved from being on the periphery, to being ‘on the periphery of the periphery’.

***** Insert Table 1 about here*****

These arguments lead to the following propositions:

P₁: Foreign subsidiaries located in Denmark and Finland – countries that are members of the EU – are likely to perform a wider range of value-adding activities than subsidiaries located in Norway, the ‘outsider’ country.

P₂: Subsidiaries located in Denmark and Finland – countries that are members of the EU – are likely to develop higher levels of competence than subsidiaries located in Norway, the ‘outsider’ country.

We recognize that other factors may also influence the subsidiary development, for which we need to control. First, there are factors related to the characteristics of the host country. Most significant among these is the issue of industrial characteristics such as clusters. The presence of an agglomeration of industrial activities in a group of related industries can be an important location advantage that acts as a magnet to firms operating in similar industrial sectors (Benito, 2000; Birkinshaw and Hood, 2000). Also, the resource-based sectors have traditionally been strong in the Nordic countries, attracting a significant share of inward FDI into these countries. Second, home country characteristics could influence the competence and scope of subsidiary activities. Given the similarity of Nordic countries, the low psychic distance between them and the historical relationship between these countries, MNEs from Nordic countries are probably more likely to invest in other Nordic countries. However, precisely because the countries are geographically and culturally close, units are fairly easy to monitor and control, and the required knowledge, competence, and other resources can easily be transferred from companies’ HQs whenever needed. There may therefore be fewer incentives to assist or promote the development of units in other Nordic countries. Closeness may hence actually act as a barrier to subsidiary development. MNEs from other EU countries may also show a similar tendency to invest in other EU countries, relative to ‘outsider’ countries (Mariotti and Piscitello, 2001), but the relative closeness of EU locations may, again, impede subsidiary autonomy. Third, we control for the nature of the subsidiary itself. Subsidiaries that have been established through *de novo*

investment develop differently from those that have been established through acquisitions (Birkinshaw, 1998; Holm and Pedersen, 2000). In addition, there may be variation in subsidiary evolution that reflects differences in the age of subsidiaries and/or their size and involvement in export activities (Holm and Pedersen, 2000).

Method

Sampling and Data Collection

The data for this study were collected in Autumn 1997 as part of a major international research project looking into MNE subsidiary development (Holm and Pedersen, 2000). The general aim of the study was to investigate the heterogeneity of subsidiary roles and the drivers associated with the evolution of differentiated roles. Sampling procedures were designed to cover all substantial MNE activity in the various countries. In Denmark, the Greens directory was used to select companies. In Finland and in Norway, companies were chosen from the Dun & Bradstreet database. Only foreign-owned companies with on-going operations of some significance were selected². The initial sample sizes were 750, 1159, and 656, in Denmark, Norway, and Finland, respectively. The main research instrument in the study was a detailed mail questionnaire developed by the team of researchers. Respondents were either subsidiary executive officers (70 to 80 percent of the cases) or other top-level managers such as vice presidents, financial directors, or marketing executives. The survey, including two follow-up enquiries to non-respondents, resulted in a total of 809 replies distributed across the three countries as shown in Table 2. This gives an overall response rate of 31.5 percent. However, due to missing data on some variables the final sample actually used in our analysis consists of 728 cases.

*****Insert Table 2 about here*****

Measurement and Descriptive Statistics

This study examines whether being a EU member has had any impact on the operations of MNEs in the Nordic countries. The focus is on heterogeneity of subsidiaries' activities and roles. Based on previous literature on the topic, we deal specifically with two dimensions of subsidiary development: (i) the scope of activities undertaken by a given subsidiary (*SCOPE*), and (ii) the competence of a subsidiary in performing a specific task or activity (*LEVEL*). The two dependent variables were operationalized as follows:

$$SCOPE = \sum a_i$$

Where a_i = any given activity i (research, development, production of goods or services, marketing/sales, logistics/distribution, purchasing, human resource management) undertaken a given foreign-owned unit. Since it takes a value of 1 if an activity is performed, and 0 otherwise, the variable simply sums up the number of activities. Hence, values for *SCOPE* range from 1 (i.e. a single-activity unit) to 7 (i.e. the whole range of tasks are carried out).

$$LEVEL = \sum c_i / \sum a_i$$

Where c_i is a measure of the level of competence of the foreign-owned subsidiary in performing a given activity i , as perceived by the respondent on a 7-point scale (1 = weak competence, 7 = very strong competence). Since the level of competence indicator c_i is counted only for activities a_i actually undertaken by a given unit, it provides a measure of the average overall level of competence of that subsidiary.

The focal independent variable of this study is the EU membership status of the host country. It is measured by a dummy variable (*EU-MEMBER*) taking the value of 0 for subsidiaries in Norway, and 1 for subsidiaries in Denmark and Finland. We hypothesize a

positive effect of EU membership on subsidiary development, and we therefore expect a positive sign for this variable.

As noted earlier in the paper, subsidiary development may depend on several factors other than regional integration processes, and in this study we control for additional factors covering a variety of characteristics of the host countries, the home countries of the MNEs, and the subsidiaries themselves. Our controls are as follows:

CLUSTER = 1 if a subsidiary operates in an industry with cluster characteristics, and 0 otherwise. See appendix 1 for a classification of industries.

RESOURCE = 1 if a subsidiary operates in a resource based industry, and 0 otherwise. The following industries were classified as resource-based: agriculture, forestry, and fishing (ISIC 11-13, 3114, 3122), coal, petroleum and gas, metal ore mining, and other mining industries (ISIC 21-29), manufacture of lumber (ISIC 3311), manufacture of pulp and paper (ISIC 3410-3419), manufacture of basic metals (ISIC 37), electricity, gas, steam, and water supply (ISIC 41, 42).

NORDIC-PARENT = 1 if the parent MNE is based in another Nordic country (Denmark, Finland, Iceland, Norway, and Sweden), and 0 otherwise. Similarly, *EU-PARENT* = 1 the parent MNE is based in a EU member country, and 0 otherwise.

ACQUISITION = 1 if the mode of entry of the current parent was through a take-over, and 0 if the subsidiary was established as a green-field operation. *YEARS* counts the number of years elapsed since a subsidiary was established or acquired by its current parent. *SIZE* is measured as the number of people working in a subsidiary in 1996. Even though alternative measures of size exist, such as sales or production volumes, we chose to use number of employees because it gives a far more stable basis for comparisons across countries and

industries. Finally, we control for the extent to which subsidiaries operated beyond the local market by the variable *EXPORT* that measures the export ratio of a unit (i.e. the percentage of exports as a share of total sales) in 1996.

The required information on home-country and subsidiary-level variables was taken from the survey. More descriptive statistics are given in Table 3. The correlation matrix (Table 4) shows that multicollinearity is not a problem in the data set. Further tests of potentially harmful multicollinearity – the variance inflation factors (VIF), and the Belsley-Kuh-Welsch diagnostic (Belsley et al. 1980) – also failed to detect any indications of multicollinearity.

*****Insert Table 3 about here*****

*****Insert Table 4 about here*****

Results

As an initial test of the propositions we conducted an ANOVA to check whether there were any differences between the national sub-samples with regard to the mean values of the two dependent variables of the study. Based on our previous discussion, for both *SCOPE* and *LEVEL* we expected to find distinct differences between subsidiaries in Norway on the one hand and subsidiaries in Denmark and Finland on the other. Formally, our empirical hypotheses are;

$$H_1: \quad \mu^N_{SCOPE} < \mu^D_{SCOPE} = \mu^F_{SCOPE}$$

$$H_2: \quad \mu^N_{LEVEL} < \mu^D_{LEVEL} = \mu^F_{LEVEL} ,$$

where superscripts *N*, *D*, and *F* denote Norway, Denmark and Finland respectively.

The results of the analysis, which are shown in Table 5, turned out to be in agreement with expectations. For both *SCOPE* and *LEVEL*, the mean values for the Norwegian sample are significantly lower than for the Danish and Finnish samples. The difference is particularly pronounced for the *SCOPE* variable. It is worth noting that no significant differences in mean

values were found between the Danish and Finnish samples, which support the hypothesis that differences can be attributed to the EU-membership status of the countries rather than being due to some other national effect.

*****Insert Table 5 about here*****

Even though the ANOVA results lend support to our propositions, they must be regarded as preliminary. We cannot firmly conclude that such differences are associated with countries' EU membership status since the analyses are bivariate and we did not control for other possible reasons for why systematic differences may exist between subsidiaries located in different countries. In order to investigate the possible influence of other factors, a series of regression analyses were conducted introducing the selected control variables. The regression models have the following general form,

$$Y_i = \alpha + \beta \times EU-MEMBER + \gamma \times \mathbf{Z} + \varepsilon ,$$

where \mathbf{Z} is the vector of control variables, α , β and γ are regression coefficients, and ε denotes the error term. In accordance with P₁ and P₂ we expect that $\beta > 0$. The results from a total of four ordinary least square regression analyses for the complete sample are presented in Table 6. The two first columns present results of the models using *SCOPE* as the dependent variable, whereas the two last columns provide the regression results for the *LEVEL* variable. Specifically, columns 1 and 3 present the results for a 'reduced' model with the *EU-MEMBER* dummy as the only predictor, whereas columns 2 and 4 present the regression results for the 'full' model.

*****Insert Table 6 about here*****

As can be seen from Table 6, the coefficients for *EU-MEMBER* – our dummy indicating whether or not a subsidiary was located in a EU member country – are consistently positive and

significant in all regressions. Hence, even when other factors are controlled for, there remains a strong association between the EU membership status of a Nordic country and the development of foreign-owned subsidiaries in those countries. We conclude that support is found for both of our propositions.

It turns out that the regressions perform far better when modeling the *SCOPE* dimension of subsidiary heterogeneity. Model 2, which includes all our control variables in addition to the *EU-MEMBER* dummy, attains an adjusted R^2 value of 0.20, which is quite satisfactory given the complexity of the phenomenon studied and the heterogeneity of the sample³. In contrast, the ‘full’ regression, model 4, for the *LEVEL* variable only explains 3 percent of the variation in that dependent variable. Turning to the control variables, it is noteworthy that the results for subsidiary level variables (*ACQUISITION*, *YEARS*, *SIZE*, and *EXPORT*) are generally stronger than those for industry characteristics (*CLUSTER*, *RESOURCE*) and the home region of the MNEs (*EU-PARENT*, *NORDIC-PARENT*), and particularly so for the regressions with *SCOPE* as the dependent variable. The most consistent result is found for the *YEARS* variable – the age of the subsidiary – which is positive (at significance level $p \leq 0.05$) in both regressions of the ‘full’ model. This indicates that subsidiary development takes time, which is not surprising given the complexity of such processes, especially with regard to competence development.

Regressions models 2 and 4 include a dummy variable, *EU-PARENT*, capturing whether or not the parent MNEs are EU-based. The coefficient for this dummy was insignificant in both regressions which indicates that the origin of the parent company does not *per se* explain role differentiation in Nordic subsidiaries in terms of the number of activities performed by the subsidiaries and their level of competence. However, the effects of various factors in explaining role differentiation could well differ depending on parent companies’ region-of-origin. In order

to further investigate possible differences between EU and non-EU based MNEs, additional regressions were run with the sample split into two subsets (see Table 7, models 5-8). The split sample results largely emulate the results for the full sample⁴.

Discussion

In this paper, we have attempted to identify the effect of environmental factors on subsidiary roles. Although we have illustrated our arguments by focusing on European integration, this represents a proxy for differences in economic structure and industrial policies, which are prime environmental factors determining scope and competence. The growing literature on subsidiary roles has mainly focused on issues internal to the MNE without connecting this to the external environment other than firm, network, or industry specific factors. Even though issues of external embeddedness have emerged, these are still directly linked to the immediate business relationships without considering national differences or changes in macro level policies (Holm and Pedersen, 2000).

Using data on subsidiaries in the Nordic countries, we have tested the possible effects of environmental factors on both scope and competence levels. Our analyses – in which we control for a range of additional factors – support both propositions. The results show that membership of a deep integration scheme such as the EU, by virtue of requiring an economic convergence, the establishment of common institutions and synchronized policy frameworks, plays a significant effect in determining differences in both scope and competence levels. We have controlled for a variety of other factors, including national differences, by selecting countries that are otherwise similar. Furthermore, we have controlled for industry effects, such as the presence of clusters, and other important variables such as nationality of the parent companies. The results suggest that more developed roles can be expected for subsidiaries located within the EU area

than for subsidiaries located outside it. It is worth noting that the model has significantly lower explanatory power for competence levels than the respective model evaluating scope. This suggests that the factors influencing competence levels are not adequately captured in the model. It may also reflect the considerable heterogeneity of firms' strategies, and the fact that their organization of their EU-based activities may reflect just part of their overall global strategies. However, it is evident that regional integration is only one of several issues relating to the external environment influencing subsidiary roles and competence. Longitudinal data on the subsidiary networks of MNEs would be very helpful in order to further explore these issues.

Our results suggest important implications, vis-à-vis policies designed to attract inward FDI. Given the considerable reliance of new and prospective (and largely peripheral) EU members on FDI as a source of capital and technology, our results have considerable policy implications. It is well acknowledged that the net benefits from FDI vary, by the kinds of activities undertaken in a given location, and that different subsidiaries may have widely different roles, ranging from performing relatively simple distribution tasks to having responsibility for a range of activities, including research, development, and manufacturing.

Participating in regional integration agreements is a mixed blessing, insofar as improving the extent and intensity of MNE subsidiary activity is concerned. On the one hand, it implies a possible advantage for participants in regional integration to attract and retain foreign-owned subsidiaries relative to non-participants. Hence, MNE activity and subsidiary development is more likely to take place within member countries. This, in turn, can lead to effects on the host country through increased market competitiveness and value-added activity. On the other hand, however, increased competition due to regional integration may have adverse effects for MNE subsidiaries, since not all firms will survive the effects of increased competition (Benito, 1997).

Furthermore, our study has focused on peripheral countries, both within and outside the EU. This study confirms that there are non-trivial benefits from being in the ‘core’ than being in the periphery, whether in the sense of being peripheral to the EU as a unit (e.g., Norway), or being peripheral in the sense of being economically marginal relative to the core players (e.g. Denmark and Finland compared to Germany and UK). These two effects are hard to separate: it is worth stressing that, except in sectors where there are important and dynamic industrial clusters, small, geographically peripheral countries such as Denmark and Finland may experience a *decline* in MNE subsidiary activity both in terms of scope and competence levels. In seeking EU-wide rationalization (*inter alia* through economies of scale and lower transportation costs), MNE activities that prior to EU membership were conducted locally might be relocated, as these markets are too remote, and local market-size too small to justify such subsidiaries, compared to larger, more central countries.

Notes

¹ Research on firm level issues has concentrated primarily within two streams, focusing on particular locations or kinds of activities. The first is associated with the effects of integration on the location of R&D activities (e.g., Mariani 1999, Pearce 1999, Gerybadze and Reger 1999). The second body of literature is associated with economic geography, which focuses on the interaction between MNEs and location, but with an emphasis on macro-organizational and policy issues. See Dicken (1998) for an overview.

² The cut-off criteria used in the various countries were very similar. In Denmark, only companies with at least twenty employees were chosen. In Norway, only companies with sales of 10 million NOK or more were selected. In Finland, the cut-off points were either a yearly turnover of 5 million FIM or at least twenty employees.

³ In order to check the robustness of results, an ordinal regression was also conducted with *SCOPE* as dependent variable (*SCOPE* has a range of 1 to 7, and can be considered as a polytomous ordinal response variable). The results for both the reduced and the full models are very similar to those obtained for the OLS regressions. The reduced model attained a pseudo- R^2 (Nagelkerke) of 0.02 with the coefficient of *EU-MEMBER* significant at $p \leq 0.01$. The full model produced a pseudo- R^2 (Nagelkerke) of 0.25 with the same set of coefficients being significant as those for the OLS regression in model 2, (i.e. *EU-MEMBER*, *NORDIC-PARENT*, *ACQUISITION*, *YEARS*, *SIZE*, and *EXPORT*). We thank an anonymous reviewer for suggesting this robustness check.

⁴ The only noteworthy exception is the *SCOPE*-regression for the sub-sample consisting of MNEs from outside the EU (model 6), where the coefficient for *EU-MEMBER* is not significant. Hence, in contrast to EU-based MNEs (whose subsidiaries in Norway are likely to conduct fewer activities than their counterparts in Denmark and Finland) this means that for subsidiaries of non-EU based MNEs, it does not matter for the scope of their activities whether they are located in Denmark or Finland or Norway. The indifference of non-EU based MNEs in their choice of location can be due to the fact that they have fewer units elsewhere in Europe on which individual subsidiaries can rely on for assistance and supplies. Any given subsidiary hence have to operate more autonomously.

Table 1. Basic information about Denmark, Finland, and Norway.

	<i>Denmark</i>	<i>Finland</i>	<i>Norway</i>
<i>Population</i> ^a	5.3 million	5.1 million	4.5 million
<i>GNP per capita (PPP) in USD</i> ^a	23,800	21,000	25,100
<i>FDI stock as percent of GDP, 1999</i> ^b	24.2%	24.5%	25.1%
<i>FDI stock as percent of GDP, 1970</i>	5.9%	0.6%	1.6%
<i>Labor cost/hr (nominal USD)</i> ^c	23.0	21.1	22.7
<i>EU membership</i>	Member since 1973	Member since 1995	Not a member

Notes: a. *CIA Fact book* (2001)b. Calculated as $[FDI_t / GDP_t] \times 100$. *World Investment Report* (2000), Statistics Denmark, Bank of Denmark, Statistics Finland, Bank of Finland, Bank of Norway, Statistics Norway, *Statistisk Årbok* (1975 and 2000)c. *Economist Intelligence Unit Country Reports* (2001)**Table 2.** Sample characteristics.

	Number of cases
(a) Total number of cases	809
• <i>Denmark</i>	310
• <i>Finland</i>	238
• <i>Norway</i>	261
(b) Cases with missing data	81
(c) Final sample	728

Table 3. Descriptive statistics ($n = 728$).

	<i>Variables</i>	<i>Description</i>	<i>Mean (SD)</i>	<i>Distribution</i>
<i>Dependent variables:</i>	<i>SCOPE</i>	Number of activities	4.8 (1.6)	
	<i>LEVEL</i>	Competence level	5.4 (1.0)	
<i>Host country:</i>	<i>EU-MEMBER</i>	Host country is EU member		1:67.7%, 0:32.3%
	<i>CLUSTER</i>	Cluster industry		1:19.2%, 0:80.8%
	<i>RESOURCE</i>	Resource-based industry		1:5.4%, 0:94.6%
<i>Home country:</i>	<i>EU-PARENT</i>	Parent based in EU country		1:68.6%, 0:31.4%
	<i>NORDIC-PARENT</i>	Parent is Nordic		1:39.6%, 0:60.4%
<i>Subsidiary:</i>	<i>ACQUISITION</i>	Entry by acquisition		1:60.1%, 0:39.9%
	<i>YEARS</i>	Years since entry	15.2 (17.0)	
	<i>SIZE</i>	Number of employees	217.0 (692.4)	
	<i>EXPORT</i>	Export ratio	22.3 (32.5)	

Table 4. Correlations between independent variables (Spearman's Rho).

<i>Variables</i>	1	2	3	4	5	6	7	8
1. <i>EU-MEMBER</i>	-							
2. <i>CLUSTER</i>	.101	-						
3. <i>RESOURCE</i>	-.058	.138	-					
4. <i>EU-PARENT</i>	-.057	-.029	-.022	-				
5. <i>NORDIC-PARENT</i>	-.096	-.111	-.052	.351	-			
6. <i>ACQUISITION</i>	.154	.037	.017	.008	-.055	-		
7. <i>YEARS</i>	-.032	-.046	-.034	.029	.029	-.455	-	
8. <i>SIZE</i>	.286	.125	-.029	-.055	-.105	.270	.000	-
9. <i>EXPORT</i>	.278	.130	.151	-.029	-.087	.329	-.110	.349

Table 5. Analysis of variance for *SCOPE* and *LEVEL*.

<i>Countries</i>	<i>Mean scores of variables</i>	
	<i>SCOPE</i>	<i>LEVEL</i>
(a) Denmark	5.0484 ^c	5.5361 ^c
(b) Finland	4.9328 ^c	5.4873 ^c
(c) Norway	4.4904 ^{a,b}	5.2519 ^{a,b}
Average values	4.8344	5.3719
<i>F</i> -statistic	8.979 ($p < .001$)	5.638 ($p < .001$)

Note: the superscripts a, b, and c, indicate whether differences in the mean scores for subsidiaries in a given country deviate significantly (at the .05 level) from the other countries.

Table 6. Regression results, complete sample, OLS-estimation ($n = 728$).

<i>Variables</i>	<i>Dependent variable: SCOPE</i> (number of activities)		<i>Dependent variable: LEVEL</i> (competence level)	
	<i>Model 1</i> <i>Standardized</i> <i>coefficients (t-values)</i>	<i>Model 2</i> <i>Standardized</i> <i>coefficients (t-values)</i>	<i>Model 3</i> <i>Standardized</i> <i>coefficients (t-values)</i>	<i>Model 4</i> <i>Standardized</i> <i>coefficients (t-values)</i>
1. <i>EU-MEMBER</i>	.145 (4.157)***	.065 (1.913)**	.117 (3.314)***	.140 (3.679)***
2. <i>CLUSTER</i>		.016 (.475)		-.046 (-1.216)
3. <i>RESOURCE</i>		-.030 (-.890)		-.013 (-.335)
4. <i>EU-PARENT</i>		.033 (.927)		-.033 (-.829)
5. <i>NORDIC-PARENT</i>		.106 (2.957)***		-.018 (-.454)
6. <i>ACQUISITION</i>		.225 (5.937)***		.046 (1.086)
7. <i>YEARS</i>		.102 (2.806)***		.105 (2.597)***
8. <i>SIZE</i>		.100 (2.953)***		.015 (.414)
9. <i>EXPORT</i>		.318 (8.812)***		-.078 (-1.960)**
Model statistics:	$F = 17.284$ *** Adjusted $R^2 = .02$	$F = 21.507$ *** Adjusted $R^2 = .20$	$F = 10.982$ *** Adjusted $R^2 = .01$	$F = 3.184$ *** Adjusted $R^2 = .03$

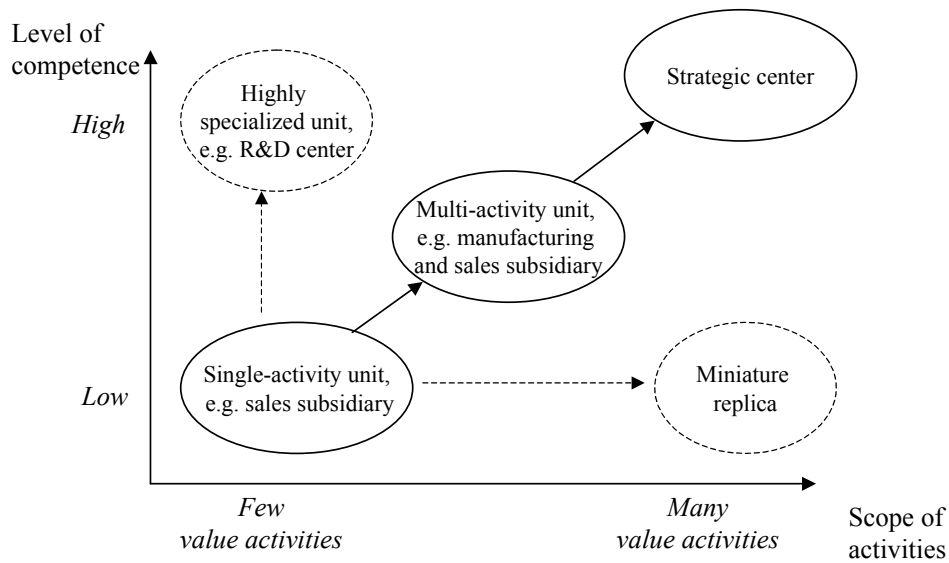
Notes: * $p \leq .10$, ** $p \leq .05$, *** $p \leq .001$

Table 7. Regression results, split samples, OLS-estimation.

<i>Variables</i>	<i>Dependent variable: SCOPE (number of activities)</i>		<i>Dependent variable: LEVEL (competence level)</i>	
	Model 5: EU parents <i>Standardized coefficients (t-values)</i>	Model 6: non-EU parents <i>Standardized coefficients (t-values)</i>	Model 7: EU parents <i>Standardized coefficients (t-values)</i>	Model 8: non-EU parents <i>Standardized coefficients (t-values)</i>
1. <i>EU-MEMBER</i>	.127 (2.950)***	-.038 (-.629)	.133 (2.825)**	.140 (2.019)**
2. <i>CLUSTER</i>	.016 (.377)	.039 (.653)	-.049 (-1.061)	-.044 (-.638)
3. <i>RESOURCE</i>	-.014 (-.341)	-.075 (-1.230)	-.004 (-.092)	-.030 (-.432)
4. <i>EU-PARENT</i>				
5. <i>NORDIC-PARENT</i>	.128 (3.041)***	.056 (.937)	-.023 (-.501)	.006 (.093)
6. <i>ACQUISITION</i>	.209 (4.539)***	.255 (3.732)***	.037 (.736)	.062 (.783)
7. <i>YEARS</i>	.076 (1.725)*	.147 (2.239)**	.118 (2.435)**	.076 (1.005)
8. <i>SIZE</i>	.095 (2.284)**	.115 (1.956)**	.023 (.496)	.010 (.142)
9. <i>EXPORT</i>	.266 (5.872)***	.407 (6.580)***	-.053 (1.085)	-.131 (-1.830)*
Model statistics:	<i>n</i> = 498 <i>F</i> = 14.123*** Adjusted <i>R</i> ² = .17	<i>n</i> = 230 <i>F</i> = 10.870*** Adjusted <i>R</i> ² = .26	<i>n</i> = 498 <i>F</i> = 2.409** Adjusted <i>R</i> ² = .02	<i>n</i> = 230 <i>F</i> = 1.172 Adjusted <i>R</i> ² = .01

Notes: * $p \leq .10$, ** $p \leq .05$, *** $p \leq .001$

Figure 1. Different types of subsidiaries.



Appendix 1. Classification of cluster industries in the Nordic countries.

<i>Country</i>	<i>Cluster</i>	<i>ISIC codes</i>
Denmark	<ul style="list-style-type: none"> • IT and telecommunication • Healthcare • Energy/environment • Functional foods • Furniture and design • Professional services • Construction 	<ul style="list-style-type: none"> • 3830-39,7202 • 3522,9330 • 4100-99 • 3100-99 • 3321-22 • 7202 • 3513,3522,5012
Finland	<ul style="list-style-type: none"> • IT and telecommunication • Healthcare • Energy/environment • Food industry • Forestry, wood and paper • Ship building • Engineering services • Metals 	<ul style="list-style-type: none"> • 3832,8323 • 3522 • 4100-99 • 3121 • 1200-99,3300-99,3400-99 • 3841 • 8324 • 3811-19
Norway	<ul style="list-style-type: none"> • IT and telecommunication • Healthcare • Oil and gas, energy • Fishery • Furniture and wood products • Shipping • Stones and metals • Light metals 	<ul style="list-style-type: none"> • 3832,7123,7202,8323 • 3850-59 • 2200-99,3821,4100-99,4200-99,5023,7115 • 1300-99,3114,3122 • 3311,3321 • 3841,7120 • 2900-99 • 3720-29

Source: *Konkurranskraft i Norden*, Nordisk Ministerråd, Copenhagen: TemaNord 2000:537.

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