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The Case of Poland**

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Regional Motives for Post-Entry Subsidiary Development: The Case of Poland

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ABSTRACT

The issue of location-specific factors of a multinational company's activities has long been investigated by international business scholars. To our knowledge, however, all these studies have put attention on the pre-entry location decision of foreign subsidiaries, rather than the post-entry decision. As such, by incorporating a regional perspective into the study of a subsidiary's development this work offers an understanding of the importance of location-specific factors for the post-entry development of a multinational company's subsidiaries at the regional level. The empirical analysis, used in this work, utilises a discrete-choice model with primary data from an on-line survey of 91 foreign-owned subsidiaries in Poland. The results demonstrate that the Mazowieckie region is the most attractive location for post-entry subsidiary development if knowledge-seeking factors are important to MNCs. Further, the findings indicate that South-East and South-West regions are more favoured for post-entry subsidiary development when efficiency-seeking factors are important to multinational companies. The findings also show that none of the examined regions are significant for the post-entry subsidiary's development if agglomerations factors and infrastructure are important to multinational companies.

Key words: international business, subsidiary development, regional motives, transition context

JEL Codes: M19, L21, L60

INTRODUCTION

As multinational companies (MNCs) are the dominant actors in globalization (McCann, 2008), our knowledge of the causes and consequences of their location choices still warrants better understanding (Beugelsdijk et al., 2010; McCann and Acs, 2011). The understanding of the location of MNC activities is essential for several reasons. First, several scholars argue that the choice of location becomes increasingly important for the business activities of MNCs (McCann and Mudambi, 2004; Arregle et al., 2009; Cantwell, 2009; Chidlow et al., 2009; Piscitello, 2011). Secondly, different regional economic disparities might occur due to the distribution of foreign capital within national borders (Markusen and Venables, 1999; Cantwell and Piscitello, 2005). Thirdly, the location-specific determinants differ between foreign investors at the national level (Chung and Alcacer, 2002; Head and Mayer, 2004) as well as at the regional level (Chidlow *et al.*, 2009; Fallon and Cook, 2010; Hilbert and Voicu, 2010).

Although a considerable amount of attention has been put on the study of specific location advantages as determinants to the geographic localization of MNC subsidiaries, scholars have been preoccupied with *ex ante* observations of entry choice determinants such as firm-specific resources, experience and learning, and country characteristics (Kravis and Lipsey, 1982; Luo, 2001; Madhok, 1997; Chen and Kwan, 2000). Much less research has considered the *ex post* outcomes of these choice decisions and the impact of specific location advantages for the post-entry evolution of the foreign subsidiary (Uhlenbruck, 2004). In fact, one major critique against the literature on subsidiary development is that most studies have only approached the issue from a parent- or subsidiary perspective and less attention has been put on the role of the specific location of the subsidiary as an exogenous impact factor (Benito et al., 2003). The location is often treated as synonymously with the host country in which the subsidiary is located and research is thus constrained to factors that are host country industry-specific (Asmussen et al., 2009; Frost et al., 2002; Porter, 1980) or network related (Andersson et al., 2002).

Our point of departure in this paper is that the development of the subsidiary, in a particular location, is to a large part determined by the specific location advantages present in the particular subsidiary location or as stated by Beugelsdijk et al. (2010: 486) “strategy and IB scholars are wont to give location short shrift”. Moreover, as the awareness of the importance of the regional rather than the national level has increased over recent years within the IB literature (McCann and Mudambi, 2004; Arregle et al., 2009; Asmussen, 2009), it has also been claimed that research on foreign subsidiaries “should add a regional level in their models and analyses” (Arregle et al., 2009: 104). Therefore, in order to understand the behavior undertaken by MNC’s subsidiaries,

incorporating a regional perspective into the study of subsidiary development, is becoming crucial (Buckley and Ghauri, 2004; McCann & Mudambi, 2004).

As much of the literature on subsidiary development is concentrated on developed countries (Etemad and Dulude, 1986; Birkinshaw and Hood, 1998; Birkinshaw, 1999; Holm and Pedersen, 2000; Asmussen et al., 2009), rather little is known about the evolution of subsidiaries in developing countries. Much research on the behavior of MNC subsidiaries in transition economies has been conceptual or anecdotal (Uhlenbruck, 2004). Hence, based on a regional-level dataset obtained from an on-line questionnaire and by integrating two broad strands of the literature, economic geography and international business, this paper contributes with an increased understanding on the link between pre-entry location choice and ex post outcomes of these decisions in terms of the development of an MNC's subsidiaries at the regional level in a transition economy such as Poland. The study analyses factors in the business environment of regions in Poland that influence the post-entry development of foreign subsidiaries and identifies dissimilarities between the central Mazowieckie region and four other regions; the North-West, the North East, the South-West and the South-East. The identification of any differences points to the sensitivity of where to locate new business within a country. A thorough analysis of where specific advantages reside during the entry process is suggested to be an integral part of the strategic planning of foreign market entry of firms. Our study therefore contributes to the literature on the regional geographic course of inflows of foreign direct investments (FDI) (Chidlow *et al.*, 2009; Fallon and Cook, 2010; Hilbert and Voicu, 2010) and to the research on the strategy of foreign market entry.

The remainder of the study is structured as follows. The following section presents the underlying literature and hypotheses formulation. Section three explains the method of data collection, the specification of the model and the variables used. Section four presents and discusses the results. Section five concludes.

BACKGROUND

As such, the subsidiary development stream builds on the idea of an MNC as an “inter-organizational” network and has mainly been concerned with the evolution of subsidiaries over time. In their seminal work, Birkinshaw and Hood (1998) explicitly examined the main factors driving subsidiary development: head-office assignment, subsidiary choice, and local environmental determinism. The interaction between these variables would “determine the strategic role performed by the subsidiary and its evolutionary prospects, in an ongoing process of benchmarking and capability upgrading” (Tavares, 2001: 142). However, one critique against the literature on

subsidiary development is that most studies have approached the issue from either an internal or parental perspective (Benito et al., 2003; Asmussen et al., 2009). This implies that subsidiary development has been studied in terms of autonomous processes within the MNC's subsidiary or corporate headquarters intervention and assignments.

Several scholars have emphasized that the activities of an organization are dependent on the characteristics of the environment in which it takes place (Hannan and Freeman, 1977; Pfeffer and Salancik, 1978). This "environmental determinism" perspective has been adopted in later research on MNCs subsidiaries under the proposition that each subsidiary operates under a unique set of environmental conditions that determine its activities and behavior (Ghoshal and Nohria, 1989; Ghoshal and Bartlett, 1991; Rosenzweig and Singh, 1991; Westney, 1994; Rosenzweig and Nohria, 1995), and to which it has to adapt in order to be effective (Birkinshaw and Hood, 1998).

Early studies linked the subsidiary's business environment to its role within the MNC (Bartlett and Ghoshal, 1986; Ghoshal and Nohria, 1989; Jarillo and Martinez, 1990; Rosenzweig and Singh, 1991). Moreover, while early research was typically focused on the role of the external environment in driving general organisational change (Porter, 1980; Tushman and Anderson, 1986), recent research has stressed the importance of the external environment for the development of the MNC's subsidiary in particular in terms of its resource- and competence level (Holm and Pedersen, 2000; Frost, 2001; Frost et al., 2002; Benito et al, 2003; Asmussen et al., 2009). However, most of these studies have treated the environment in a rather general way without taking into account the distinction between the national and regional level (McCann and Mudambi, 2004).

It is suggested that foreign investment activity has a strong regional dimension (Rugman and Verbeke, 2004, 2005) and that regional strategies are crucial for the competitive advantage of MNCs (Buckley and Ghauri, 2004; Ricart et al., 2004; Uhlenbruck, 2004). Recent studies on location choices of MNCs in transition economies have provided an empirical evidence of the diversity of location-specific factors which drive the regional distribution of inward FDI in those markets (Fallon and Cook, 2010; Chidlow et al., 2009; Hillber and Voicu, 2010).

As regions can be conceptualized using the economic (Rugman and Verbeke, 2004), socio-cultural (Hofstede, 2001) and institutional (Globerman and Shapiro, 2003) perspectives, this work employs a geographical view of a region, where scholars argue that the conceptualization of a region in terms of geographic regional grouping is suitable in studies of subsidiary localization (Aguilera et al., 2007; Arregle et al., 2009).

There has been a considerable attention put on the role of location advantages in determining the initial entry decision of MNCs in any given market (Dunning, 1988; Mudambi, 1995; Veugelers, 1991) and it is recognized that location decisions is important for the future development of firm-level capabilities and competitive advantage (Marshall, 1920; Porter, 1990). However, since

the regional location choice is increasingly seen as a key strategic determinant of competitive behavior (McCann and Mudambi, 2004), there is a considerable little research done on how region-specific resources affect the development of new foreign subsidiaries over time (Uhlenbruck, 2004).

From the literature on subsidiary evolution, it is evident that subsidiary development results from an accumulation and depletion of resources that drive its role over time (Birkinshaw and Hood, 1998). Initially, the parent company allocates resources and activities to subsidiaries, in particular to new ones. However an MNC's support is often insufficient for the successful development of their subsidiaries as the subsidiary's own resource and capabilities may drive its growth or decline over time. In case of newly located subsidiaries, it is likely that the development of such subsidiaries, in particular locations, is dependent on the availability of specific location advantages. Accordingly, and in line with Uhlenbruck (2004), it can be expected that the development of a foreign subsidiary in specific regions is partly determined by the particular advantages and resources residing in these regions. However, anecdotal evidence indicates considerable problems in preserving and exploiting such resources (Estrin et al., 1997; Meyer and Lieb-Doczy, 2003).

We therefore argue that the geographic regions of a country may differ in their types of location-specific advantages and, hence, the post-entry development of subsidiaries is associated to regional location-specific conditions. In the following, we develop some hypotheses concerning the relationship between subsidiary development and four different factors of location specific advantages at the regional level. In essence, the extent to which MNCs have been influenced by these factors during the pre-entry decision and decided the geographical bearing on the entry of a subsidiary, we expect these factors to influence the post-entry development of subsidiaries. In the following section we discuss the impact of four regional factors on subsidiary development; agglomeration, infrastructure, efficiency and knowledge exchange. In line with Porter (2000), the importance of location is essential to the access of these factors. However, whilst Porter (2000) deals with industry clusters without a particular boundary to a country, region or city, this study focuses on the regional level of a country, which might refer to the place in space (Beugelsdijk et al., 2011).

HYPOTHESES DEVELOPMENT

Within the economic geography literature a variety of investment motivations can be found. One stream of theory, initially inspired by Marshall (1920), the so called new economic geography theory (Krugman, 1991, 1993; Fujita et al., 1999; Storper, 2011) demonstrates that the location of economic activity is determined by different factors, of which the search for agglomeration economies is emphasized. The underlying assumption is that firms can benefit from externalities

that are uniquely related to the existence of the geographical concentration of firm activity (Rosenthal and Strange, 2004). Firms that are located in such an agglomeration may benefit from additional productivity advantages that are related to the existence of the specific agglomeration (Head et al, 1995; Head and Reis, 1996; Fujita et al., 1999; Morosoni, 2004).

Empirical studies have confirmed that foreign firms are attracted to specific geographic locations due the existence of agglomeration factors (Disdier and Mayer, 2004; Head and Mayer, 2004). It has been suggested that agglomeration factors such as specific economic clusters as well as by closely-related industries (Wheeler and Mody, 1992; Head and Ries, 1996; Coughlin and Segev, 2000) are important determinants for a particular geographic location. In this way firms can get access to knowledge spillovers as well as to develop a pool of specialized labor and supply linkages. However, from the perspective of MNCs, Bobonis and Shatz (2007: 30) state that many of the studies on how a multinational company can benefit from such agglomeration have not taken into account “the question of whether agglomeration leads to differences in the level of subsidiary operations, rather than just the number of subsidiaries”. In that sense, agglomeration (e.g. the presence of firm clusters) is not associated to a self-fulfilling mechanism where the concentration of firms attracts the entry of new firms, which, in turn, increase the level of agglomeration. From a more broad perspective the phenomenon has been devoted to the flow of foreign direct investment between geographically separated areas, to the development of industries (Porter, 2000) and to the economic growth of countries (Madariaga and Poncet, 2007). An example of the latter is how agglomeration-seeking firms develop their business subsequently to their establishment within a certain geographic area.

Concerning FDI in developing and transition economies, studies indicate that the location decisions of MNCs in Ireland (Barrios et al. 2002) are dependent on agglomeration factors as well as the proximity to major ports and airports. Chidlow et al. (2009) also show that when agglomeration economies is a main motive for investing in particular regions, MNCs tended to choose specific regions (e.g., the Mazowieckie region) despite the fact that other regions were also considered. For an individual subsidiary the presence of agglomeration factors are an important channel through which the subsidiary is able to exploit regionally bound advantages and resources. Hence, based on the assumption that the presence of such agglomeration factors in a particular region is important for the post-entry development of foreign subsidiaries in that particular region, the following hypothesis can be formulated:

Hypothesis 1: The greater the representation of agglomeration-seeking factors in a region, the greater the subsidiary’s post-entry development in that region.

Studies have also shown that factors such as transport and communication infrastructure (Luo et al., 2008), are important for the attraction of firms to certain geographic locations. Recent research shows a positive correlation between the general infrastructure and transportation quality, both at a national and regional level, and FDI inflows (Shaver, 1998; Head et al., 1995). In terms of FDI inflows in developing countries, He and Liang (1999) suggest that the transport infrastructure affects the level of FDI inflows into specific regions in China. Similarly, other research reveals that such geographical factors in terms of e.g., the quality and availability of local infrastructure as well as low transportation costs are important motives for FDI in transition economies (Hodgkinson et al., 2001; Chidlow et al., 2009). This is supported by Zhang (2001), who found that the quality of infrastructure had a strong positive effect on the regional FDI distribution. A similar line of thought is presented by Aghion and Schankerman (1999), who argued that the market entry into transition economies is facilitated by the quality of the infrastructure, through lower costs of communication and learning processes of firms. Since it has been suggested that a developed local infrastructure result in lower communication costs and fewer difficulties in managing business activities (Hodgkinson et al., 2001), it can be expected that this is crucial for the operations of MNC subsidiaries in their specific locations. If the representation of such geographical factors is an important motive for the location of FDI in a specific region, we expect that firms will benefit from lower communication costs and learning processes, which will play a significant role for the development of the subsidiary in this particular region.

Hypothesis 2: The greater the existence of an advanced and efficient infrastructure in a region, the greater the subsidiary's post-entry development in that region.

Other significant motives and location determinants for FDI, frequently discussed in the IB literature are efficiency-seeking factors (Dunning, 1993). These factors are seen as traditional motives for FDI and imply that firms invest abroad to acquire resources not available in the home country, such as a low raw materials or labor cost. Especially in the manufacturing sector, when multinationals directly invest in order to export, factor-cost considerations become important. Further, the intention of the efficiency-seeking investment is to take advantage of different factor endowments, cultures, institutional arrangements, economic systems and policies, and market structures by concentrating production in a limited number of locations to supply multiple markets (Dunning, 1993).

Research on FDI in transition economies show that efficiency-seeking factors such as the availability of low cost production inputs and low labour costs are (Lansbury et al., 1996; Holland and Pain, 1998; Lankes and Venables, 1996) are important FDI determinants. Galego et al. (2004)

confirmed these results for the Central and Eastern European Countries (CEEC). In the same way Bevan and Estrin (2000) and Cieslik, (2005a, 2005b) found efficiency seeking factors of importance for the first wave of EU accession countries in their sample: Czech Republic, Estonia, Hungary, Poland, and Slovenia. In Poland for instance, efficiency-seeking factors are important determinants for the location of foreign subsidiaries in specific regions in Poland, i.e., when these factors are considered important for entry into Poland, then the South-West region was chosen (Chidlow et al., 2009).

If efficiency seeking factors are of importance for the initial choice of entry location of a particular region, then it can also be expected that the development of a foreign subsidiary in this particular region is determined by the existence and successful exploitation of such efficiency seeking factors in this region. We should therefore expect that certain regions are more advanced when it concerns activities affected by the presence of economies of scale and scope, which affect availability of low cost production inputs and low labor costs. Hence, based on the assumption that the presence of factors associated to high efficiency is important for the post-entry development of foreign subsidiaries in a particular region, the following hypothesis can be formulated:

Hypothesis 3. The greater the representation of efficiency-seeking factors in a region, the greater the subsidiary's post-entry development in that region.

Scholars arguing for the knowledge-seeking (or technology-seeking) motive emphasize that one important motivation to expand abroad is the search of new knowledge that are not available in the home markets (Cantwell 1989; Cantwell and Piscitello, 2005). Some recent studies have begun to challenge the view that knowledge-seeking through FDI is done only by firms that want to catch up (Cantwell and Janne, 1999; Chung and Alcacer, 2002). For instance, Cantwell and Janne (1999) suggest that leading technological firms may locate abroad in order to source more diverse knowledge. This is in line with the trend for MNCs to tap into different external sources of knowledge through the establishment of innovation networks (Kuemmerle, 1999; Frost, 2001; Andersson et al., 2002) and links to public research centres, universities, and different industry associations (Nelson, 1993; Breschi, 2000).

Empirical studies show that MNCs are drawn to locate in regions in which the public research base and higher education infrastructure is relatively good (Cantwell and Piscitello, 2002). In a recent study by Chidlow et al. (2009) it is shown that for those investors for whom knowledge was an important regional location determinant, the Mazowieckie region was chosen despite the fact that other regions was also considered. All these considerations suggest that innovative activities tend in general to be favored by specific locations where such location advantages reside. Hence, it can be

expected that the knowledge-seeking factors of importance of the pre-entry decision to enter a particular region, is also related to the post-entry development of the subsidiaries in that particular region.

Hypothesis 4: The greater the representation of knowledge-seeking factors in a region, the greater the subsidiary's post-entry development in that region.

DESCRIPTION OF THE METHODOLOGY AND DATA

The Method

To test the aforementioned hypotheses a discrete-choice model, more specifically the multinomial logit model (MNL) is used. It is not obvious why this method is used to this research question. Following the work of McFadden (1974, 1984), Green (2009) and Long and Freese (2003) it is assumed that foreign investors have an unobserved profit function for their subsidiary development once they entered one of the Polish regions. Their utility function is conditional on their individual characteristics ($X_n\beta_k$) that are identical across alternatives and a random component (ε_{nk}) that is taking place from other unobserved characteristics of their choice. It is assumed that the parameter β_k differs across alternatives and that the n th investor selects a region k that would yield the highest profit for the subsidiary development. If ε_{nk} is distributed independently, identically and according to a Weibull distribution (Maddala, 1977; Manski and Lerman, 1977), the probability that an investor n chooses region k , out of K choices of regions, is a simple expression of:

$$\text{Prob}_{nk} = \text{Prob}(Y_n = k | X_n) = \frac{e^{X_n\beta_k}}{\sum_{i=1}^K e^{X_n\beta_i}} \quad (1)$$

It is essential to mention that the independence of ε_{nk} imposes the independence of irrelevant alternatives (IIA) restriction on the predicted probabilities, which simply means that the choice of the region must be equally substitutable to foreign investors (Hausman, 1978; Hausman and McFadden, 1984).

An interesting feature of the Eq.(1) is that the odds ratio ($\text{Prob}_{nk}/\text{Prob}_{ni}$) depends log-linearly on X_n . Therefore, K log-odds ratios can be estimated by:

$$\ln \Omega_{k|i}(X_n) = \ln \left[\frac{\text{Pr}(y = k / X_n)}{\text{Pr}(y = i / X_n)} \right] = X_n \beta_{k|i} \quad \text{for } k = 1, \dots, K \quad (2)$$

where i is the base category. As $\ln\Omega_{k|i}(X_n) = \ln 1 = 0$, it must be hold that $\beta_{k|i} = 0$ in the Eq. (2). That is, the log odds of an outcome compared with itself are always 0, and thus the effects of an independent variable must also be 0. Hence we will only estimate $K - 1$ outcomes, due to the redundant information (Long and Freese, 2003).

The following sub-sections describe in detail the data and set of variables used for empirical analysis.

The Data

The regional location-specific drivers for post-entry subsidiaries development are examined using a sample of 91 MNEs operating in Poland. Our data comes from a bigger on-line questionnaire which was intended to investigate various concepts of MNEs behavior in relation to the locational determinates of FDI in the Polish regions. The list of MNEs which established their presence in the Polish market, priori launching the survey, was obtained from the Polish Information and Foreign Investment Agency (PAIIZ). The list originally included 1243 MNEs, however, after examining its validity by checking the contact details of each investor using the internet and phone, the final list that was used for the analysis included 852 companies. For more details on how this number was obtained please see Chidlow et al. (2009).

In order to encourage participation in the on-line survey, a multi-stage data collection procedure suggested by Dillman (2000) was employed. As a result, the number of respondents totaled 91, and representing approximately 15% of those initially contacted, was used for the statistical analysis discussed below. For detailed description of how this process was undertaken please refer to Chidlow et al. (2009).

The survey was conducted in February 2005 and the structure of the questionnaire consisted of topics ranging from general information about the MNE to specific information about the Polish location and characteristics relating to the post-entry development of the Polish subsidiary. Due to the objectives of this study, this work focuses only on the part of the questionnaire that particularly relates to the location-specific drivers for the post-entry development of the Polish subsidiary at a regional level.

The regional data for this study is in line with the Nomenclature of Territorial Unites for Statistics (NUTS) level 2. As in Chidlow et al. (2009) the distribution of MNEs across the country, was arranged into five regions for statistical purposes. The regional breakdown was based on a small village, Piątek in the Łódzkie voivodship, which represents the geographical middle point of Poland and Europe as well (Kondracki, 1994). The categorization consisted of the following regions: *North-West* (28 % of the firms in the sample) including the Zachodnio-pomorskie,

Pomorskie, Lubuskie and Wielkopolskie voivodships; *North-East* (11%) containing the Warmińsko-mazurskie, Podlaskie and Kujawsko-pomorskie voivodships; *the Mazowieckie* (25%) consisting of Warsaw, the capital; *South-East* (11%) taking account of the Lubelskie, Podkarpackie, Świętokrzyskie and Małopolskie voivodships; and *South-West* (25%) consisting of the Łódzkie, Dolnośląskie, Śląskie and Opolskie voivodships. Table 1 presents regional characteristic of the above categorization.

Table 1. Characteristics of Polish regions¹

	North – West	North – East	South – West	South – East	Mazowieckie
Total area (in km ²) ²					
- of which towns	21	21	15	18	36
- of which villages	64	46	60	43	84
	3295	3797	2784	2950	9084
Population (in million) ²	7	1	3	2	5
Employment (in thousands) ^{2,3}	696	541	989	929	2276
Unemployment rate (in %) ¹	22	22	19	17	14
GDP ³	40749	25173	40749	22807	153702
Gross Domestic Expenditure on R&D ⁴	197	68	237	164	1994
Researchers employed in R&D ⁵	3	1	3	3	7
Graduates of higher education (in thousands) ²	17	13	24	18	73
Hard surface public roads ^{2,6}	66	62	108	98	73
Railway lines ^{2,6}	9	6	11	6	5
Telephone line (per 1000 population) ²	303	322	309	275	359
Budget expenditure (in million zlotys) ²	253	184	315	253	494
Average monthly wage and salaries ⁷	128	128	128	128	128

¹ Average characteristics for Polish regions, except the Mazowieckie region.

² As of 31. 12. 2002.

³ In percentage of the national average.

⁴ In current prices. General Statistical Office (2003).

⁵ Employed full time; per 1000 economically active persons.

⁶ Per 100 km² of total area in km.

⁷ 1999 = 100.

Source: The General Statistical Office (2003, 2004); PAiIZ (2003, 2004) and authors' own calculations.

Variables

The dependent variable represents the probability of MNE's subsidiary development in a particular region, after the MNE already entered the Polish market. In line with the Eq. (2), the Mazowieckie region was chosen as the base category. The reasons for selecting this particular region as the comparison group are as follow. First, this region includes the capital, Warsaw, which is the largest city in the country. Second, since the transition process began in Poland in the late 90s, this region received the largest share of inward FDI than any other Polish region. Finally, this region is the leading area for business concentration (Nowicki et al., 2009; Godlewska-Majkowska and Zarebski, 2010).

The independent variables were extracted from the existing literature in line with our theoretical discussion presented above. They are investor specific and consisted of 9 drivers assessing the importance of location-specific factors for post-entry subsidiary development in a given Polish region. They formed a separate question in the questionnaire that examined the importance of location-specific factors for the post-entry development of subsidiary in Poland. The degrees of importance of each factor were based upon a five-point scale ranging from “not important (coded 1)” to “extremely important (coded 5)”. Based on the underlying literature the factors were then classified into four groups of explanatory variables. Subsequently, the confirmatory factor analysis (CFA) (Kolenikov, 2009) was used in order to examine the factors inter-relationships as well as to confirm their relevance and significance for the empirical analysis. The CFA results are presented in Table 2.

Table 2. The confirmatory factor analysis: regional location-specific factors for post-entry subsidiary development.

Regional location-specific drivers	Model ^{1,♦}	R ²
<i>I. Agglomeration-seeking factors = “fagglomeration”</i>		
(1) The existence of supporting industries for supply of both parts and components	2.242* (0.139)	0.513
(2) The presence of related industries	2.747* (0.137)	0.265
(3) The existence of a local cluster of firms working on similar activities	2.231* (0.132)	0.443
<i>II. Infrastructure factors = “finfrastructure”</i>		
(1) Roads and transport infrastructure	3.022* (0.127)	0.648
(2) Low transportation costs	2.615* (0.139)	0.507
<i>III. Knowledge-seeking factors = “fknowledge”</i>		
(1) Collaboration with local universities and research centres	1.736* (0.098)	0.217
(2) The ability to recruit local specialist staff	3.473* (0.119)	0.389
<i>III. Efficiency-seeking factors = “fefficiency”</i>		
(1) Comparative low input costs	3.011* (0.123)	0.662
(2) Low operating costs	3.637* (0.106)	0.273
Observations	91	
LR (χ^2) ²	182.34*	
RMSEA ³	0.021*	
CFI	0.994	
AIC	2460.99	

Note:

¹Coefficients from the confirmatory factor analysis (Kolenikov, 2009).

²Test vs. Independence.

³ CI (0.00; 0.09)

♦Standard errors in parentheses. *p≤0.001 **p≤0.005 ***p≤0.010

The CFA confirmed the variable structure that we identified. Based on the findings we use the extracted factor scores for *fagglomeration*, *finfrastructure*, *fknowledge* and *fefficiency* as the measure of the regional location-specific drivers for the post-entry subsidiary development in our empirical analysis. Further, we include four dummy variables. The first three dummies are associated with time. These were included in the model in order to control for time variations arising from the economic changes common to Central and Eastern European countries (Chidlow et al., 2009; Altomonte, 2000). The last dummy variable is related to the entry mode choices of FDI. We take greenfield investment as the base category. This is due to the fact that “firms have much more discretion regarding the location of new plants than with other types of investment” (Hilbert and Voicu, 2010: 58)

Using the explanatory and control variables discussed above, the probability of either locating or not a given region for the post- entry subsidiary development is based on Eq. (1) and has the following form:

$$\begin{aligned} \text{region}_{nki} = & \beta_{0,ki} + \beta_{1,ki} \text{fagglomeration}_n + \beta_{2,ki} \text{finfrastructure}_n + \beta_{3,ki} \text{knowledge}_n \\ & + \beta_{4,ki} \text{fefficiency}_n + \beta_{5,ki} \text{DUM}_{93-96n} + \beta_{6,ki} \text{DUM}_{97-00n} \\ & + \beta_{7,ki} \text{DUM}_{01-04n} + \beta_{8,ki} \text{DUM}_{GFieldsn} \end{aligned} \quad (3)$$

where $k= 1, \dots, 5$ (i.e. 1 for the North-West region, 2 for the North-East region; 3 for the Mazowieckie region; 4 for the South-East region; and 5 for the South-West region); $i = 3$ as the comparison category and $n = 1, \dots, 91$. The time dummies consider the period from before 1992 to 2004 inclusive, with the exclusion of the period before 1992 in the set of time dummies in order to avoid collinearity. The entry mode choice dummy represents 1 for greenfield investments and 0 otherwise. All the explanatory variables in the model are investor’s specific.

RESULTS

Table 3 presents parameter estimates from the multinomial logit model for the regional location-specific drivers for the post-entry subsidiary development in Poland.

Table 3: The multinomial logit model¹

<i>Variables</i>	<i>Coefficients</i>	<i>Variables</i>	<i>Coefficients</i>
1) $P_1 P_3$		3) $P_4 P_3$	
constant	0.293 (0.570)	constant	-3.506** (1.596)
<i>f</i> agglomeration	-0.388 (0.390)	<i>f</i> agglomeration	0.315 (0.560)
<i>f</i> geography	0.317 (0.357)	<i>f</i> geography	-0.639 (0.560)
<i>f</i> knowledge	-1.060** (0.535)	<i>f</i> knowledge	-0.022 (0.663)
<i>f</i> efficiency	0.464 (0.333)	<i>f</i> efficiency	0.957** (0.483)
DUM ₉₃₋₉₆	0.104 (0.718)	DUM ₉₃₋₉₆	1.329 (1.431)
DUM ₉₇₋₀₀	-0.509 (1.046)	DUM ₉₇₋₀₀	3.677** (1.592)
DUM ₀₁₋₀₄	-0.723 (1.199)	DUM ₀₁₋₀₄	2.294 (1.948)
DUM _{GFields}	-0.198 (0.718)	DUM _{GFields}	1.703*** (1.596)
2) $P_2 P_3$		4) $P_5 P_3$	
constant	-0.597 (0.738)	constant	-0.339 (0.682)
<i>f</i> agglomeration	0.650 (0.513)	<i>f</i> agglomeration	-0.087 (0.406)
<i>f</i> geography	0.344 (0.509)	<i>f</i> geography	0.563 (0.385)
<i>f</i> knowledge	-0.671 (0.836)	<i>f</i> knowledge	-0.562 (0.571)
<i>f</i> efficiency	0.047 (0.836)	<i>f</i> efficiency	0.715** (0.820)
DUM ₉₃₋₉₆	-1.887 (1.283)	DUM ₉₃₋₉₆	0.651 (0.819)
DUM ₉₇₋₀₀	0.435 (1.206)	DUM ₉₇₋₀₀	1.020 (1.057)
DUM ₀₁₋₀₄	0.726 (1.233)	DUM ₀₁₋₀₄	-0.105 (1.264)
DUM _{GFields}	-0.289 (0.738)	DUM _{GFields}	-0.559 (0.682)

¹ Standard errors in parentheses

P_3 - Mazowieckie region is the comparison group.

$P_1 | P_3$ - North-West region vs. Mazowieckie region.

$P_2 | P_3$ - North-East region vs. Mazowieckie region.

$P_4 | P_3$ - South-East region vs. Mazowieckie region.

$P_5 | P_3$ - South-West region vs. Mazowieckie region.

* $p \leq 0.1$ ** $p \leq 0.05$ *** $p \leq 0.01$.

In regression 1 the findings, for the comparison of the location choice between the North-West region and the Mazowieckie, show that only one variable *fknowledge* is statistically significant ($p \leq 0.05$). The sign of the coefficient is negative. This means that if knowledge-seeking factors are important to MNCs for the post - entry subsidiary development then the Mazowieckie region is preferred as opposed to the North-West region (Hypothesis 4).

The results in regression 2, for the comparison of the choice between the North-East region and the Mazowieckie region, indicate that none of the variables are statistically significant.

The findings in regression 3, for the comparison of the choice between the South-East region and the Mazowieckie region, demonstrate that three variables are statistically significant. The first variable is *fefficiency* ($p \leq 0.05$). The sign of the variable is positive suggesting that the probability of locating in the South-East region, rather than the Mazowieckie region, is higher for those MNCs for which efficiency-seeking factors are important drivers for the post - entry subsidiary development (Hypothesis 3). The other two variables that are statistically significant in this regression are two dummies. The first is the time dummy DUM_{97-00} which is significant at $p \leq 0.05$. The second is the entry mode dummy $DUM_{GFields}$ which is significant at $p \leq 0.10$. Both of the dummy variables have a positive sign. The time dummy suggests that in years closest to the EU membership the likelihood of post-entry subsidiary development locating in the South-East region is higher than it is in the Mazowieckie region. This might be due to the fact that this region shares its borders with other countries that were joining the EU at the same time. The entry mode dummy indicates that greenfield investment are more likely to locate in the South-East region rather than the Mazowieckie region for post-entry subsidiary development.

The results in regression 4, for the comparison of the choice between the South-West region and the Mazowieckie region, point out that only one variable *fefficiency* is statistically significant ($p \leq 0.05$). The sign of the coefficient is positive indicating that the likelihood for post-entry subsidiary development in the South-West region rather than in the Mazowieckie region, is higher for those MNCs for which efficiency-seeking factors are present in these regions. (Hypothesis 3). However, the magnitude of the variable is 25 % lower than the *fefficiency* variable in the South-East region. This suggests that the South-East region is more attractive for post-entry subsidiary development, even though the South-West region is also considered, when comparing with the Mazowieckie region for efficiency-seeking factors.

Further it should also be stated that the results in our overall model show, *ceteris paribus*, that only the South-East region is considered.

The overall explanatory ability of the model discussed above is satisfactory as shown in Table 4.

Table 4. Model's statistics.

<i>Models statistics</i>	<i>Model</i>
Log-Likelihood	-115.24
Model LR χ^2	48.99(32)**
Observations	91
Pseudo R ²	0.18
Hausman Test ¹	0.16

Notes:

¹ Hausman (1978) specification test for the IIA. ** $p \leq 0.05$

CONCLUDING DISCUSSION

In this work we examine location specific determinants for the post-entry development of MNC foreign subsidiaries in Poland at the regional level. We suggest that the post-entry development of MNCs foreign subsidiaries has a regional dimension in terms of the ability of preserving and exploiting regional-bound location advantages. Consistent with our hypotheses, the results indicate that there are differences in the attractiveness of Polish regions, when location-specific drivers for the post-entry subsidiary development are included and examined.

The results demonstrate that if knowledge-seeking factors (i.e. collaboration with local universities and research centers as well as the ability to recruit specialist staff) are important for the post-entry subsidiary development, then the Mazowieckie region is the most attractive location for subsidiary development even if the North-West region is also considered. This finding is hardly surprising as this region has the highest number of R&D institutions and universities as well as the largest amount of expenditure devoted to R&D by the central government (Chidlow *et al.* 2009).

Further, it is shown that if operating and input costs are seen by MNCs as important drivers for the post-entry subsidiary development than only two regions are more favourable than the Mazowieckie area. These are the South-East and South-West regions, with the South-East region being more highly ranked by MNCs.

The results also show that agglomerations and infrastructure factors are not statistically significant for the post-entry subsidiary's development in none of the examined regions. This somehow is a surprising result as Birkinshaw and Hood (2000) demonstrate that there is an agglomeration effect on foreign subsidiaries in particular locations. This might be because subsidiaries located in leading-edge clusters tend to be relatively autonomous and more embedded in the locality which consequently adds to the development of the subsidiary. Further, Chidlow *et al.* (2009) argue that agglomeration is an important motive for investing in a particular region in Poland. Based on the above, however, one possible explanation for our results may be the absence of a well developed firm cluster and supporting industries in the examined regions as it takes time to make the use of and exploit agglomeration advantages. Another possible explanation for such results could be the emergence of "diseconomies of agglomeration" as the number of foreign subsidiaries in a small area increases, the local costs rise and competition increases among firms in the long-term (Arregle *et al.*, 2009).

In our view, this paper has several contributions. First, by examining the attractiveness of Polish regions with regards to the post-location behavior of MNC subsidiaries, this work contributes to the ongoing debate in the IB field on the regional dimension of MNC's foreign subsidiary (Ghemawat, 2003; Rugman & Verbeke, 2007; Arregle *et al.*, 2009). Second, our work

supports the notion of the importance of geographic regions for MNC's location proposed by Rugman and Verbeke (2007). Third, this work adds to the semi-globalization perspective which points out to evident regional-level effects on the subsequent investment behavior of MNC's subsidiaries (Ghemawat, 2003).

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