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The impact of Romania’s EU accession on the Foreign Direct Investments location - a manufacturing sector analysis -

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Abstract

Several variables (most of them emphasized at regional level) as: the existence of potential markets, infrastructure, the existence of agglomeration economies, R&D intensity, labor costs, raw materials’ cost, are, according to the field’s literature, some of the main determinants of a Foreign Direct Investment. Providing a clear quantification of the importance of each of them is of significant importance for Romania today when the Foreign Direct Investments might be considered one of the main pillars of a future sustainable growth. The novelty brought by this study is the inclusion of Romania’s accession in the EU among the determinants of the Foreign Direct Investment’s localization process. The research is based on a survey conducted on a sample of 235 firms that met five previously defined criteria.

Keywords: Investment strategy, Development region, Sampling mechanism, Foreign Direct Investment, Romania’s EU accession

1. Introduction

As many researches have already shown, there can be a lot of different motives that lay behind the investment decisions of firms in foreign countries. It is argued that "…there are substantial differences in economic performance across regions in virtually every nation. This suggests that many of the essential determinants of economic performance are to be found at the regional level" (Porter, 2003, p.550). Therefore, it is obvious that firms, when considering an investment abroad, will perform analyses of the selected country at a national and also at regional level.

It is already known that after 1990 all ex-communist countries tried to develop different strategies in order to attract as much capital as possible from abroad. These countries considered this path as being one of the most important ways of building a sustainable economic growth (Martin and Velázquez, 2000). Foreign Direct Investments brought in the ex-communist countries a serious inflow of capital, an entire set of management skills and also a lot of new jobs.

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These Foreign Direct Investments can be considered as the main drivers that changed the former planned economies into open and competitive market systems. Noteworthy are also the important technological expertise brought by the multinational companies in countries like Romania and the possibility to have some competitive export products and services.

In the same way they helped exports, these foreign investments can be considered as having a major role in increasing the competitiveness of the Romanian economy and thus providing more and better goods and services for the local markets.

As it is obvious (from official statistical data) there are significant differences in all domains including the economic one between different regions from the same country. This fact, as Porter suggests (Porter, 2003, p.550), might be a serious sign pointing that some of the most important factors that influence the economic performance of an organization are to be found at regional level.

Romania might be considered a typical case because it is obvious that in our country different regions (development regions as known in the official documents) have had different economic development rhythms. For example the economical development of the Bucharest-Ilfov region might be considered an outlier at national level and it can be seen as the result of the convergence of different factors as follows: the great concentration of potential work force, the existence of important financial resources, the high level of the human capital, the existence of the central political power (Bucharest is the capital city of Romania, being also the largest city with a population of about 2 million inhabitants). Because this region might be considered a special case due to all this factors it will not be considered in our analysis (it will only be used in order to build a binary division criterion).

By analyzing the rest of the regions we can observe different development levels, whose explanations are not as obvious and therefore we have conducted this study in order to identify and quantify the most important factors (related to each region’s potential) which influenced the managerial decision of localizing the investment in one region or another. Assuming that foreign companies that invested in Romania have chosen the region where to invest based on a strategic plan; we will focus our research on the environmental scan stage trying to provide a clear identification of the main factors that were considered for each region. Our analysis was conducted on the NUTS II level and also on the NUTS III level.

In the present economical conditions we believe that identifying the strengths and weaknesses (considered by foreign companies in their strategies when deciding where to locate a future investment) of each development region might be of great help for the local authorities because attracting foreign capital (private capital might be seen as a complement of the European nonrefundable funds) can be considered one of the main determinants of a future sustainable economic growth. Also, identifying these strengths and weaknesses at regional level (for Romania), might be of significant importance for a MNE (MNE seek for strategic resources according to Deng P. 2007) that plans a future investment in Romania and it is in the phase of “See” from the “Draw-See-Think-Plan” approach.

2. Literature Review And Hypotheses

2.1. Administrative organization of Romania

After 1990, following the European trend, Romania tried to implement a more regional-based economical policy. Since 1998 Romania is divided, using four criteria (number of inhabitants, surface, cultural identity and functional-spatial relations) into 8 development regions. This regions that serve as NUTS-II units are not yet working at their real potential because they do not have a real administrative role. The NUTS III regions, the 41 counties are still the administrative units even tough they do not meet the required European criteria in order to be eligible as regions for the application of regional policies.

The seven development regions used in our study are as follows: North-East, South-East, South, South-West, West, North-West and Center.

2.2. Main Foreign Direct Investments determinants
Several variables (emphasized at regional level) have been identified in the literature as important determinants of FDI. According to Chakrabarti (2003), an expansion in the market size of a location leads to an increase in the amount of direct investment in that location through an increased demand. Foreign investors are likely to be attracted by large markets allowing them to internalize profits from sales within the host countries. Low unionization rates and strong internal markets are according to Woodward (1992) significant in the process of choosing a future location for foreign companies. Population is considered a pretty good measure of the market size and it indicates the economic dynamics of a region or state’s market growth potential (Bagchi-sen and Wheeler, 1989). Another approach identifies GDP as an important measure of the local market size when analyzing the Foreign Direct Investments. (Laura Alfaro 2003, Reschenhofer et al, 2012).

**H1:** The existence of a potential market is one of the most important determinants of a FDI.

Another key factor that determines the Foreign Direct Investments is, according to the literature, the infrastructure. A positive relationship between infrastructure and inward FDI was identified. Empirical studies support for the importance of infrastructure in FDI location decisions. These reasons are provided in studies by Wei and et al. (1999), Mariotti and Pischitello (1995), Broadman and Sun (1997) and He (2002). Therefore we can assert that good infrastructure is significant in attracting Foreign Direct Investments in a specific region (Wei and others, 1999; He, 2002).

**H2:** Infrastructure is an important determinant for a FDI.

The existence of agglomeration economies is another major determinant of FDI. Agglomeration economies refer to the positive externalities and economies of scale associated with spatial concentration activities and co-location of related production facilities (Chadwick, 1989; Krugman, 1991; Smith and Florida, 1994). There is substantial evidence suggesting that multinational companies are attracted to clusters of economic activities in their own and in closely related industries and activities (Glickman and Woodward, 1988; Wheeler and Mody, 1992; Head and Ries, 1996; Devereux and Griffith, 1998; Guimaraes et. al., 2000; Driffield and Munday, 2000). As Coughlin, Terza and Arromdee (1991) proved, the density of manufacturing activity was one of the main factors considered by the foreign firms in the US during 1981-1983 when they chose a location. Another variable connected to agglomeration economies is population density (Lale Berkoz, Sevkiye SenceTurk, 2009).

**H3:** Agglomeration factor is very important in bringing a new FDI in a specific region.

According to Cantwell (1989) knowledge-seeking investments vary across locations because they are influenced by location specific factors, such as the number of scientists and educated people in the area, previously established innovations, R&D intensity, the education system and good linkages between educational institutions and firms. Thus, companies may supplement their existing technologies by expanding internationally to access new knowledge. Therefore, such an expansion may suggest two types of knowledge-seeking behavior between firms originating from leading versus lagging technical centers (Cantwell and Janne, 1999).

Lansbury et al. (1996a) proves that the research intensity and labor cost have a significant influence on the Foreign Direct Investment. Also other studies bring solid proves showing that the majority of the Foreign Direct Investments were attracted in the Eastern and Central Europe by low labor costs and highly qualified workers (in some fields).

**H4:** Developed education systems, previous innovations, R&D intensity, existence of prestigious universities form another important factor that can bring a FDI in a specific region.

**H5:** Labor cost and labor qualification are significant factors that can attract a FDI in a specific region.

Available cheap raw material is one of the main important factors that determines the localization of a production facility in a foreign country according to Dunning (1983, 1993a). Esrin et al. (2001) shows also that the quest for resources was a significant reason that brought Foreign Direct Investment in Eastern Europe. The results are further confirmed by Galego et al. (2004) for the Central Europe and also Eastern Europe.

**H6:** The resources (raw materials) cost is a significant determinant of Foreign Direct Investments.

After Romania became a member of the European Union on the 1st of January 2007 the borders could no longer be considered a barrier and thus, workers, firms and capital could move freely in and out. Considering some of the characteristics of the Romanian development regions, the accession in the EU might be considered a factor with a significant impact on the localization process of the Foreign Direct Investments in Romania.
H7: Romania’s accession in the EU can be considered a significant determinant in the localization process of a Foreign Direct Investment.

2.3. The PEST analysis

All the aspects involved by the proposed 7 hypothesis are of great importance for a MNE when using the framework involved by a PEST analysis (or the most recently developed STEEPLED analysis) in an environmental scanning process. Also, the characteristics of the Romanian development regions (analyzed in this paper) might be considered as inputs in a SWOT analysis performed by the management of a MNE that takes in consideration the opportunity of locating a future subsidiary in Romania.

It is obvious that based on the particular profile of each firm some of the characteristics have a significant higher importance than others and therefore, ranking the above mentioned characteristics at the level of all seven development regions, would be of great help in a SWOT analysis. However, ranking them (the characteristics based on the importance they had in attracting FDI) it is not the purpose of this paper and it will not be further discussed.

Performing a SWOT analysis at regional level (when talking about the attractiveness of each region for FDI) could be also an effective tool used by the Romanian authorities for developing new economic policies or an entire new economic framework (more adequate for the new European perspective of Romania). The necessity of such an analysis is obvious today when the main topic of the social and political agenda is the administrative reorganization of the country, into a number of regions (between 8 and 12) that can meet the European requirements.

3. Methodology

3.1. Research Goal

The main goal of this study is to identify if Romania’s accession in the European Union, on 1st January 2007, triggered a change in the location process of the Foreign Direct Investments (Romania’s EU accession became an important factor considered in the strategic plans by firms that decided to invest in Romania). Thus, the main determinants of a Foreign Direct Investment, as identified by the literature, were analyzed for all the seven development regions except Bucharest-Ilfov region.

3.2. Research design and data collection

In order to collect the required data, a survey was organized among the managers of the firms (from the manufacturing sector) created in Romania as result of a Foreign Direct Investment. The firms included in our survey had to fulfill the following criteria: (1) to be firms that have more than 100 employees; (2) to be companies that were created between 1990 and 2009; (3) to be companies that were still operating in 2009; (4) more than 50% of the original investment should be foreign; (5) firms should be activating in the manufacturing industry.

Data were collected with the help of a questionnaire that was organized in two modules: the first used for collecting some information and some general characteristics of each company and the second module designed to collect information about the reasons that determined the investment in that specific region. Our interest in this research is mostly on the second module that gathered data regarding four main groups of determinants: (1) infrastructure, (2) labor force, (3) agglomeration factors and (4) other factors. Also noteworthy is the fact that, for each of the four groups, several items were used in the questionnaire. The answer expected to all these items was a score ranging from 1 (this factor was never considered) to 5 (this factor was very important in the decision process).

Using the phone and the e-mail address we tried to contact the managers of all the companies that have fulfilled the five criteria in order to organize a complete statistical survey. Only 235 managers from the ones contacted responded to our questionnaire, and provided valid data. Therefore, our survey became a sample survey and the sampling mechanism became important for the inferential part of our analysis. The main problem raised by this issue was the fact that we could not assume that our sample was random because the action of responding/not responding could not be considered a process which generates randomization. The existence of different response rates across different
regions was also an issue that could be considered as a problem generator in the phase of data analysis (response rates vary from 45.9% in the NE region to 29.7% in the West region).

In order to ensure the statistical significance of our results we addressed this problem by conducting a thorough analysis of the selection mechanism. Our basic need when conducting this analysis was to obtain some form of evidence that the selection mechanism was quite similar to randomization. For all the firms included in our target collectivity we received from the authorities a few administrative data which we used for constructing four control variables. The four variables are as follows: (1) dichotomous variable - technology level of the activity (High Tech/Low Tech); (2) dichotomous variable – EU membership of the investor (EU member/ Non EU member); (3) ordinal three classes variable - number of employees in 2009 (low number, medium number, large number); (4) ordinal three classes variable – 2009 income (low income, medium income, high income). The next step that we took was to compare the distributions of these four variables for the sample of respondents with the distributions of the same variables in the initial target population and in the non-respondents sample. As for statistical test used, we limited our approach to the Mann-Whitney-Wilcoxon and the Binomial tests from the SPSS software package. Thus, we conducted several tests trying to validate the hypothesis that the distributions of the respondents for all four variables do not deviate significantly from the distributions of the non-respondents (the p-values of the Mann-Whitney test for each of the four variables: (1) - Asymp. Sig 0.109, (2) - Asymp. Sig 0.247, (3) - Asymp. Sig 0.079, (3) - Asymp. Sig 0.221).

After conducting all these tests, still acting with caution, we can assert that there is not enough statistical evidence that can lead us in rejecting the null hypothesis. Therefore we can assume that the selection mechanism, the decision of participating/ not participating to the survey, generated a sample pretty close to a random sample. Therefore, based on our collected data we will proceed further with analyzing the factors that were considered by foreign investors in the process of localizing a future direct investment.

3.3. Econometric model and explanatory variables construction

In order to assess if Romania’s accession in the European Union, on 1st January 2007, triggered a change in the location process of the Foreign Direct Investments we used two logistic regressions. The two models used are logistic regressions:

Model 1: $\text{choice} = \beta_0 + \beta_1 \text{FACTinfr} + \beta_2 \text{FACTlab} + \beta_3 \text{FACTconc} + \beta_4 \text{FACTr&d} + \beta_5 \text{FACT mark} + \beta_6 \text{FACTcost} + \beta_7 \text{DUM1} + \beta_8 \text{DUM2} + \epsilon$

Model 2: $\text{choice} = \beta_0 + \beta_1 \text{FACTinfr} + \beta_2 \text{FACTlab} + \beta_3 \text{FACTconc} + \beta_4 \text{FACTr&d} + \beta_5 \text{FACT mark} + \beta_6 \text{FACTcost} + \beta_7 \text{DUM2} + \epsilon$

In both of them the dependent variable (choice) is the binary answer (YES/NO) to the question: “Since Bucharest-IIfov region is the most attractive in terms of location of FDI, have you taken into account at the start of your investment the region to locate your investment?” Very important to note, in this matter, is the fact that Bucharest-IIfov development region attracts, in Romania, the majority of the Foreign Direct Investments.

The independent variables are constructed based on the items of the four FDI determinants described in the previous section.

Table 1. The independent variables used in the logistic regressions

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Construction method</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACTinfr</td>
<td>Variable obtained as a linear combination of the following items:</td>
</tr>
<tr>
<td></td>
<td>• Transportation cost</td>
</tr>
<tr>
<td></td>
<td>• Roads quality</td>
</tr>
<tr>
<td></td>
<td>• The existence of nearby airports/harbors</td>
</tr>
<tr>
<td></td>
<td>• The existence of viable land for the future investment</td>
</tr>
<tr>
<td></td>
<td>• The existence of favorable conditions for distribution of the products</td>
</tr>
</tbody>
</table>
FACTlab

Variable obtained as a linear combination of the following items:
- The existence of available labor force
- The low cost of the labor force
- The existence of available qualified labor force
- The high level of education of the local inhabitants

FACTcon

Variable obtained as a linear combination of the following items:
- The existence of raw materials suppliers in the region
- The existence of other companies with the same activity field in the region
- The existence of other foreign companies in the region

FACTr&d

The score for the item - The existence of universities and research centers in the region

FACTmark

The score for the item - The existence of a potential market in the region

FACTcost

Variable obtained as a linear combination of the following items:
- Low rent levels or low land acquisition price
- Availability of raw materials at low costs in the area
- The existence of tax incentives for investors

Dummy 1

0 - if the investment was located before 1st January 2007
1 - if the investment was located after 1st January 2007

Dummy 2

The technology level of the investment: 0 - LowTech, 1 - HighTech

The entire construction process followed a four step methodology. First, all the 17 items used were standardized and so, 17 new variables were created. In the beginning of the second step these new variables were moved into LISREL software package. With the help of LISREL the Confirmatory Factor Analysis was conducted several times, more exactly, one for each of the following variables: FACTinf, FACTlab, FACTcon, FACTcost. Based on the scores resulted from each CFA, the four new variables were constructed. Each of the new variables was constructed as a linear combination of the associated items (using the scores listed in Fig. 1).

![Diagram](image-url)

Fig. 1. CFA scores
3.4. Analyses and Results

After the construction process, the four new variables were also standardized. Then, using the SPSS statistical program, a correlation analysis was performed in order to assess the existence of a multicollinearity phenomenon. The results of our undertaking are listed below in Table 2. Based on these results we have decided to include all these factors in our two models.

Table 2. The independent variables used in the logistic regressions

<table>
<thead>
<tr>
<th></th>
<th>FACTinfr</th>
<th>FACTlab</th>
<th>FACTconc</th>
<th>FACTcost</th>
<th>FACTr&amp;d</th>
<th>FACTmrk</th>
</tr>
</thead>
<tbody>
<tr>
<td>FACTinfr</td>
<td>1</td>
<td>0.365</td>
<td>0.405</td>
<td>0.300</td>
<td>0.264</td>
<td>0.223</td>
</tr>
<tr>
<td>FACTlab</td>
<td>0.365</td>
<td>1</td>
<td>0.216</td>
<td>0.121</td>
<td>0.127</td>
<td>0.120</td>
</tr>
<tr>
<td>FACTconc</td>
<td>0.405</td>
<td>0.216</td>
<td>1</td>
<td>0.240</td>
<td>0.280</td>
<td>0.226</td>
</tr>
<tr>
<td>FACTcost</td>
<td>0.300</td>
<td>0.121</td>
<td>0.240</td>
<td>1</td>
<td>0.337</td>
<td>0.465</td>
</tr>
<tr>
<td>FACTr&amp;d</td>
<td>0.264</td>
<td>0.127</td>
<td>0.280</td>
<td>0.337</td>
<td>1</td>
<td>0.273</td>
</tr>
<tr>
<td>FACTmrk</td>
<td>0.223</td>
<td>0.120</td>
<td>0.226</td>
<td>0.465</td>
<td>0.273</td>
<td>1</td>
</tr>
</tbody>
</table>

Then, using this new data set (the dependent variable, the standardized independent variables according to Table 1 and the dummy variables) the SPSS statistical program was used to run the two logistical regressions. The main results obtained are the ones listed in the following table.

Table 3. Coefficients of the explanatory variables in Model 1 and Model 2

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Sig.</td>
</tr>
<tr>
<td>Const</td>
<td>-1.151</td>
<td>0.000</td>
</tr>
<tr>
<td>FACTinfr</td>
<td>-0.176</td>
<td>0.379</td>
</tr>
<tr>
<td>FACTlab</td>
<td>-0.171</td>
<td>0.332</td>
</tr>
<tr>
<td>FACTconc</td>
<td>0.096</td>
<td>0.603</td>
</tr>
<tr>
<td>FACTr&amp;d</td>
<td>-0.002</td>
<td>0.990</td>
</tr>
<tr>
<td>FACTmrk</td>
<td>0.481</td>
<td>0.007</td>
</tr>
<tr>
<td>FACTcost</td>
<td>-0.007</td>
<td>0.974</td>
</tr>
<tr>
<td>Dummy 1</td>
<td>-0.603</td>
<td>0.458</td>
</tr>
<tr>
<td>Dummy 2</td>
<td>-0.860</td>
<td>0.082</td>
</tr>
</tbody>
</table>

As shown in the above table, differences between the two proposed models are of a very little magnitude. In both models we have two explanatory variables that are significant for the model at a Confidence Level of over 90%. Therefore it became obvious that investors who are going to develop a High-Tech company are more inclined to locate their investment outside the Bucharest-Ilfov area. A plausible explanation for this fact might reside in the communist era when specific regions were specialized in different industry fields. Thus, foreign investors might seek for those specific areas when deciding to locate their investment. The other significant factor is the one referring to the companies’ attempt to find new markets. The market seeking companies are more inclined to locate their investment in the Bucharest-Ilfov region (both models lead to the same conclusion). At a reasonable Confidence Level of over 65% labor force related aspects might be considered also as being important. Thus, firms that are showing great interest in finding available and cheap labor force, are more oriented towards other development regions, except Bucharest-Ilfov one. The last factor that might be considered important for our model, but with a lower Confidence Level (only 60%) is infrastructure. In the same manner firms that show a great interest in the aspects related to infrastructure are more inclined to locate their investment outside Bucharest-Ilfov area.

Dummy 1 explanatory variable is not bringing any improvement in the model 1 where it is used (it has a very high value for Sig.). Therefore it is obvious that the decision process, over the location of a future investment, of a foreign
investor has not suffered severe alteration after Romania was accepted as a member in the European Union (An important role might have had here the fact that Romania is not yet a member of Schenghen Area). The little difference between the two models is also evidence that variable Dummy 1 is not significant. Although, we should treat this results with extreme caution because very few observations were available for the period 2007 - 2009 (therefore the robustness of our results is questionable).

4. Conclusion

The main findings of our research are supporting (at the level of Romania) what literature describes as causal links between some regional factors and the Foreign Direct Investments. Thereby, we can assert that our approach has revealed that foreign investors (concerned by the manufacturing industry) may see Romania as being attractive mostly because of opening new markets and also because of the existence of available cheap labor force (these facts are according to previous researches).

As mentioned earlier in this paper, using such a model at regional level might reveal the strengths and weaknesses of each region and therefore might be considered a useful tool before deciding to perform a SWOT analysis or in some stages of a strategic planning process. Thus, we suggest, for further study (that would have a significant importance for a MNE that performs an environmental scan in Romania at regional level), an approach destined to clearly rank the importance of all eighteen items (used in the present paper in the CFA analysis for constructing the independent variables used in the econometric models) for each region, in the context of FDI attractiveness.

The potential change in the location process (decision) of a FDI triggered by Romania’s accession in the European Union, on 1st January 2007 was not confirmed by our analysis and therefore we can assume that Romania’s EU accession was not a significant aspect considered by companies when planning their future investment strategies. However, as I have mentioned earlier, these results should be regarded with great caution because of the low number of observations available for the post adherence period, years 2007-2009.

We also think that such a study needs to be performed in other economic fields (other that manufacturing industry) where Romania’s EU accession might have triggered a change in the FDI location process and therefore might be considered an important factor used by foreign companies (that analyzed the possibility of investing in Romania) when planning their future investment strategies. Also, for the manufacturing industry, we suggest that further study concerned with finding an event that might have triggered a strategy shift in the location process of FDI should analyze earlier events such as: year 2004 when the DA political alliance and the president Traian Basescu took the power or the year 2000 when Romania started negotiation for a future EU accession.

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