DISTRIBUTION AT THE LEVEL OF DEVELOPMENT REGIONS OF FOREIGN DIRECT INVESTMENT: DETERMINANTS AND CAUSES OF DISPARITIES

Dan PÎRLOGEANU, Vlad BULĂU

Alexandru Ioan Cuza University of Iaşi

Abstract

The transition to democracy has made the economic policy of the Romanian state change from centrist to regional, based on four criteria: population, surface, cultural identity and functional relations. In 1998, Romania was divided into eight regions: North-West, Center, North-East, South-East, South-Muntenia, Bucharest-Ilfov, South-West Oltenia and the West region. In the current economic climate, foreign direct investment is needed to reduce regional economic disparities. Studies related to the location of an investment in a particular region began in 1826, with the modeling of concentric circles.

Keywords: Development regions of Romania, fdi determinants, economic factors, demographic factors, innovation factors, factors related to innovation

Introduction

Johann Heinrich von Thünen (1826) sets the foundations of location science, his model being the reference point of all the elaborated works on the theory of location. The theory elaborated by him emphasizes the use of agricultural land systematically and according to the area where the exchange takes place. The explanation given for the systematic organization of space is in the economic field because it is focues on profit.

The use of the land is seen by von Thünen through a concentric geometric model made up of four circles. These circles reflect a general, perfectionist model for land use. It demonstrates how a trader should consider production, transport and efficiency costs to cover his expenses and make profit. Depending on the desired output and the different profitability of each crop, the products will have distinct cost curves, thus serving as a basis for

different land use. The importance of von Thünen's work lies in the existence of a rational spatial organization in order to obtain an economic benefit.

The criticisms made in the literature of this model consist in the fact that the theory describes a state of isolation, an earth with a homogeneous character, with no external trade and an absent transport infrastructure. Although the model is a reductionist one, obersive principles are viable, research focusing on the use of land and the way in which production is organized.

The next major contribution to the subject is provided by Weber (1929) in his work on industrial production. Its theories show how industry will grow taking into account the costs of transporting raw materials and products, labor and agglomeration savings. His focus is on searching for the optimal location that can be found by identifying an area where transport costs are minimal. Weber's problem can be simplified by taking into account the two key locations: the raw material and destination of the finished product, important variables to find the ideal setting for the location of the industry.

Two other factors that Weber emphasizes are labor costs and agglomeration savings, being seen as factors that can influence the optimal location of an industry. Both issues have been seen as factors that can influence the optimal location of an industry, but have been treated with less attention than the role of transport costs. If labor costs are relatively uniform, this factor will be less important in choosing the location. If they are not uniform, then there is the issue of balance between the cost of transport and the cost of labor force. This is the case with congestion economies where some cost savings are possible by locating near similar or related industries. However, this is also a situation where there will be compromises on transport and labor costs.

Contributions of Christaller's localization theory from 1933 to central locations are generally recognized, as did Lösch's work from 1940. The themes emphasized by the two describe the relationship between the central locations (urban areas) and the aria they serve. Although these relationships are the result of urban evolution, the principles of ordering consumer goods and services have been seen and described as hexagonal models, where cities are at the center of the associated hexagons. While von Thünen was interested in the spatial organization of land use, the main focus of central locations was the distribution and use of goods and services by reaching certain thresholds.

The threshold of a good or service is the minimum market (total consumption) that is needed to set up a new firm (or manufacturer and service provider in the city) and keep it on the market. The distance of a good is the maximum distance people will go to buy that good or service. These concepts can be understood in detail by indicating the location of the business and the maximum distance to go. This area reflects the area of business potential of a business based on distance. For the business to continue its existence, it must have sufficient demand for its products within that area. If this fails, the business will cease to exist. From a space perspective, the threshold must be reached before the distance, if a business is to remain viable.

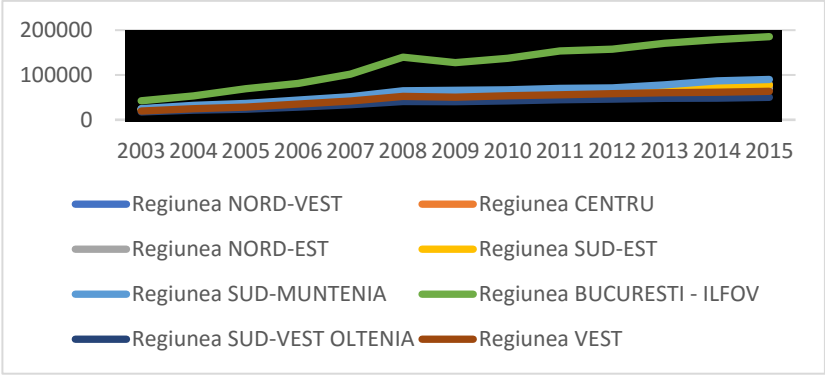
There are also studies on the link between foreign direct investments and their spatial distribution on the territory of Romania. Danciu (2010) presents the main drivers of economic growth, labor-related costs, education and infrastructure. In the beforementioned analysis, it is underlined that the regions where agriculture is predominant, foreign investments have small volumes.

Nistor (2012) presents a study on the link between economic growth and FDI inflows. The study demonstrates that the reduction of disparities between regions can be achieved through economic growth and directing foreign investment to these regions.

Dornean and Oanea (2015) demonstrate that human resources have the greatest impact on foreign investment at regional level. Specialized labor is presented as a key factor in attracting foreign investors, and salary increases in some regions can have a negative impact on investment flows.

Evolution and regional analysis of foreign direct investment in Romania

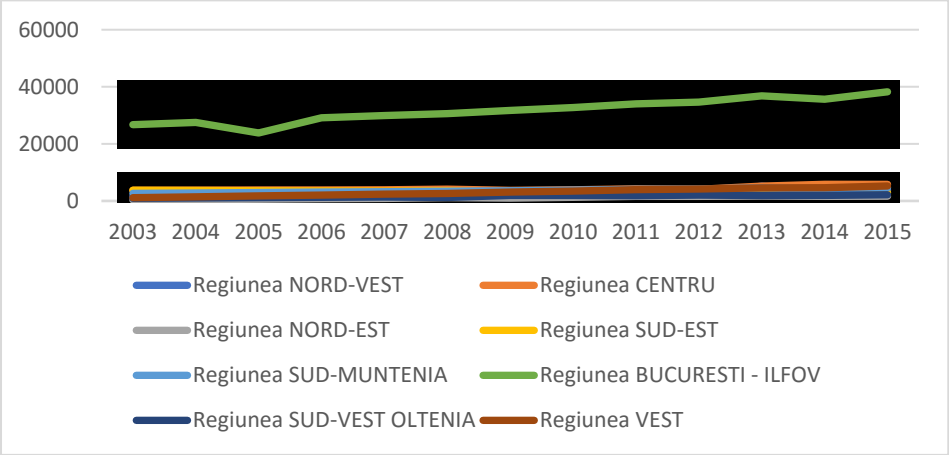
Figure 1 - Regional GDP evolution (million RON), between 2003 and 2015



Source: National Institute of Statistics (www.insse.ro)

Figure 1 shows the evolution of Gross Domestic Product by region of development. The chart captures the large discrepancies within Romania. The Bucharest - Ilfov region has risen well over the other regions, with Gross Domestic Product being over 3 times higher than the poorest region, South - West Oltenia and double the next region in terms of gross domestic product, South - Muntenia. Between 2008 and 2009, the impact of the global economic crisis has been felt most strongly in the most developed region of the country, Bucharest - Ilfov, followed by the West and South - East regions due to the relocation or bankruptcy of large companies. The moment of overcoming the crisis in 2010 has brought new growth in all regions, but the gap between the capital and the rest of the regions has widened even more. Average wages in these regions recorded very small increases, between 300 and 500 Lei, between 2008 and 2015, compared to an increase of almost 1000 Lei in the Bucharest-Ilfov region.

Figure 2 - Evolution of the balance of foreign direct investment (million Euro), by development regions in the period 2003 – 2015



Source: Reports of the National Bank of Romania (www.bnr.ro)

Figure 2 shows the evolution of the foreign direct investment balance by development regions between 2003 and 2015. The proximity to central powers and economic development, well above the national average of the Bucharest-Ilfov region, made over 60% of the foreign direct investment balance to be found in this region in the year 2015. The North-East Region holds the lowest foreign investment stock of 1,662 million Euros in the year 2015, being 23 times smaller than the Bucharest-Ilfov region. The economic crisis affected mainly the provincial regions, where the foreign investment stock decreased in the period 2008 - 2011. The period was followed by increases in foreign investment flows in these regions but at a great distance from the Bucharest-Ilfov region. The lack of a vision of foreign investment, a regional promotion strategy and the inefficiency of national foreign direct investment agencies have led to a lack of visibility for potential investors and major discrepancies at national level.

In order to study the causes of regional disparities in attracting foreign direct investment, the regression analysis method will be used using SPSS v20. The analysis included four categories of factors: demographic, innovation, infrastructure and economic. The analysis was carried out between 2003 and 2015 due to the availability of data. For collecting the data, the

databases of the National Institute of Statistics and the database of the European Commission, Eurostat, were used.

In the category of demographic factors were included: the population aged between 20 and 64, being considered legally able to work, urban population level, rural population level, population density (inhabitants / square kilometer), number of graduates of pre-university education and the number of graduates in university education.

Innovation-related factors were selected: the number of research workers and the number of enterprises focused on product research and innovation in each development region.

In the category of infrastructure related factors, the ratio of motorway / surface area and the number of households with Internet access were included as determinants.

The economic factors included in the analysis are: monthly earnings in lei, gross domestic product per region, in million lei, number of newly established enterprises per year in each region, total number of enterprises, "employment rate index" quantified by the civilian employment / labor resources (number of people able to work) * 100 and unemployment-related expenditures, which may be a factor of the economic gap between regions.

Due to the annual gap in the indicator series, the average was used for the analyzed period, 2003 - 2015. The averages were calculated using the "Mean" function of the SPSS program.

The dependent variable used in the regression analysis is the stock of foreign direct investment per development region.

The results of the obtained media are presented in Table 3, and the results of the Pearson, F-test, t-test and significance coefficients are shown in Table 4.

Table 3 - Average of the statistical values of the determined factors of the foreign direct investments in the development regions in Romania, between 2003 and 2015

Factors		North-West Region	Central Region	North-East Region	South–East Region	South-Muntenia Region	Bucharest–Ilfov Region	South-West Oltenia Region	West Region
Demographic factors	Population (20 - 64 years)	*1821166,6*	*1702499*	*2383748*	*1878247,5*	*2091757*	*1671247,2*	*1434805,7*	*1328970,6*
	Urban population	*1540479*	*1583188*	*1761986*	*1605834*	*1403319*	*2278949*	*1103742*	*1284936*
	Rural population	*1294068*	*1052027*	*2157604*	*1272828*	*1866548*	*212408*	*1109666*	*732576*
	Population density	*80*	*74*	*101*	*80*	*98*	*1232*	*80*	*61*
	Graduates of pre-university education	*65329,23*	*56600,92*	*89352,92*	*62218,92*	*72335,69*	*47156,69*	*55669,62*	*44733,62*
	Graduate university education	*17195,77*	*17713,62*	*15077,08*	*10425,62*	*7639,46*	*48018,15*	*9416*	*14686,85*
Factors related to innovation	No. of research employees	*3438,54*	*3111,46*	*3839,15*	*1844,31*	*3755,38*	*20615,92*	*2354,54*	*3060,62*
	Research-oriented enterprises	*495,23*	*539,85*	*483,77*	*808*	*381,23*	*833,23*	*141,54*	*212,23*
Factors related to infrastructure	Mileage motorway/ surface	*0,00118*	*0,00062*	*0,00000*	*0,00066*	*0,00626*	*0,03062*	*0,00000*	*0,00126*
	Internet access	*56,07*	*53,47*	*42,26*	*44,53*	*49,96*	*63,68*	*50,18*	*58,1*

Economic factors	**Wage earning**	*1059,08*	*1088,23*	*1049,38*	*1097,38*	*1142,85*	*1690,15*	*1143,77*	*1152,69*
	GDP region	*54961,66*	*53830,18*	*50478,81*	*52524,55*	*60181,48*	*123018,35*	*37344,86*	*46570,6*
	Newly established businesses	*27,75*	*28,74*	*24,9*	*25,82*	*20,52*	*38,08*	*22,55*	*31,25*
	Total registered enterprises	*68896,15*	*59565,46*	*53925,54*	*58415,46*	*53490,85*	*115729,54*	*36339,31*	*46284,92*
	Employment rate	*68,08*	*62,83*	*54,35*	*56,78*	*57,56*	*76,83*	*60,35*	*66,22*
	Unemployment Support Expenses	*194464808*	*249812346*	*231482531*	*172643385*	*231482531*	*165604439*	*189608241*	*167475923*

Table 4 - Correlation test results, ANOVA and regression coefficients of the determined factors of foreign direct investments in the development regions of Romania

Factori determinanți		**Pearson**	**F - test**	**t - test**	**Sig.**
Demographic factors	**Population (20 - 64 years)**	*-,162*	*,162*	*-,402*	*0,701*
	Urban population	*,811*	*11,501*	*,391*	*0,015*
	Rural population	*-,689*	*5,433*	*-,331*	*0,59*
	Population density	*,993*	*433,376*	*20,818*	*,001*
	Graduates of pre-university education	*-,448*	*1,503*	*-1,226*	*0,266*
	Graduate university education	*,995*	*62,225*	*7,888*	*,001*
Factors related to innovation	**No. of research employees**	*,998*	*245,595*	*15,671*	*,001*
	Research-oriented enterprises	*,586*	*3,14*	*1,772*	*0,127*
Factors related to infrastructure	**Mileage motorway/ surface**	*,985*	*194,424*	*13,944*	*,001*
	Internet access	*,689*	*5,173*	*2,274*	*0,032*
Economic factors	**Wage earning**	*,983*	*168,197*	*12,969*	*,001*

	GDP region	*,976*	*122,533*	*11,069*	*,001*
	Newly established businesses	*,796*	*10,385*	*3,223*	*0,08*
	Total registered enterprises	*,925*	*35,748*	*5,979*	*0,01*
	Employment rate	*,782*	*9,456*	*3,075*	*0,02*
	Unemployment Support Expenses	*-,394*	*1,103*	*-1,05*	*0,334*

According to the regression analysis, the demographic factors of the urban population, the population density and the number of graduates in the university education are essential factors in attracting foreign investments at the level of the region. Urban populations can create an economic environment to attract foreign investors, due to the level of population and industrialization present in the urban environment. In addition to industry, service and financial areas are attracted to the urban zone, due to the benefits of city economies and the high level of population.

Density of the population reduces costs related to the transport of goods or the distribution of services and serves a larger number of potential customers, with respect to the surface. In addition to issues relating to the distribution of goods and services, infrastructure and transport are other areas that can attract foreign investors to densely populated areas.

Although many industries do not require university graduates, due to foreign investors' preferences for the extractive industry, manufacturing, trade and construction, foreign companies are interested in areas where there are a large number of graduates. Vertical foreign investments aiming at minimizing costs related to final production require qualified, specialized staff to reduce the cost of production of goods or services. In the case of these investments, graduates of university studies are needed to reduce the costs of qualification and specialization and thus explain the interest of investors for regions where there is a large number of graduates with an university diploma.

Of the innovation-related factors, only the number of employees in the field of research appears to be important for attracting foreign investors. Multinational companies interested in product research and development will be interested in people with innovation capabilities, and the large number of people in this branch is driving foreign investment in innovation and research to regions where their numbers are high.

The category of infrastructure-related factors shows the interest of foreign investors in the areas where they are developed. The Bucharest-Ilfov

region has the highest motorway density, reported on the total area, and the largest number of households with Internet access (88.8% in 2015). Due to highways, production, transport costs and distribution times are much lower in regions where these high-speed roads exist. Internet access is a key growth factor in developing countries, reducing the cost and time of transmitting information. The Internet simplifies access to information, easily connects a large number of people, increases labor productivity, simplifies financial transactions and boosts e-commerce. A developed infrastructure leads to economic growth and, at the same time, to attracting a larger number of foreign investors, driven by new economic opportunities.

Economic factors strongly influence the foreign direct investment balance, the only factor in the no-impact analysis being the annual spending on unemployment benefits. Wage earning is a key factor, and wage increases will drive demand and consumption, providing new opportunities for investor profits growth. Although wage rises have the tendency to increase production costs, small increases of the wages do not influence foreign companies, especially horizontal investments, benefiting from increased population incomes and upward demand.

Gross domestic product is a major indicator of annual economic growth. Regions where economic growth is recorded above the average of other regions will boost the decision of foreign investors to start new projects in that area.

The newly established enterprises and the total number of registered enterprises are essential indicators of economic activity, describing a prosperous business climate and access to the necessary commercial staff. A large number of companies also show an opening of the region to commercial transactions, being an important factor in attracting foreign investment.

The employment rate is strongly influenced by the level of education, income and access to employment. Low levels of this indicator may indicate that a particular region is disadvantaged, the rural population is predominant, but there are also opportunities for growth and abundance of human resources. Income is low in regions where the employment rate is low, and foreign investors are interested in regions where this indicator is higher, at the expense of the abundance of the labor force.

Conclusions of the study

This analysis brings a new perspective on the existing literature, including a large number of determinants of foreign direct investments in the development regions of Romania. The results show that out of the 16 variables studied, only the population aged between 20 and 64, the number of rural residents, the number of research-based enterprises, and unemployment-related expenditures do not influence the preference of foreign investors for a particular region.

The Bucharest - Ilfov region is leading by far when it comes to determinant level and the attracted foreign direct investment flow. The next region in accordance to the level of attracted investment balance is the Center, with 5.831 million Euro, while the Western region occupies third place, with a balance of 5.237 million Euros, in the year 2015. At the opposite pole is the South-West Oletenia region with 2,172 billion and North East, where the foreign direct investment balance is 1.662 billion euros.

By geographical position, the Centru region is preferred by foreign investors because it can serve the other arials equally while being in the proximity of other European states. Nevertheless, the disparities between the richest region, Bucharest - Ilfov and the rest of the country are very high, and the analysis shows the direction the other regions have to take in order to reduce the gaps.

At the level of the population, both the government and the local authorities must facilitate access to university education for the inhabitants, in order to gain greater economic growth in the future, and to attract more foreign direct investments. The difference between the level of university graduates in the Bucharest - Ilfov region and the average of the other regions is 364%. The North - West and Center regions are following, with over 17,000 graduates on average each year, followed by the North - East and West region, where there are around 15,000 graduates annually. In southern Romania, the number of graduates is over 50% lower than in the North - West, West, Center and North - East regions, and this gap explains the differences between the foreign investment balance attracted to the region. Disparities can be reduced by developing university centers in other regions of the country and offering study programs based on the current and future needs of the labor market. Another necessary measure is to allocate higher amounts of the GDP to education, to increase student scholarships and to offer paid internship or practice programs to students during their studies.

"Urban population" and "population density" factors are other demographic determinants that drive foreign direct investment. At regional level, the North-East region has the largest urban population, but it is far from the density of 1,232 inhabitants per square kilometer reached by the Bucharest-Ilfov region. Although the North-East region has a higher population and density than the other regions, with more than 20%, excluding the Bucharest-Ilfov region, the lack of infrastructure, greater distance from Western European countries and low income does not stimulate the flow of foreign direct investment. The industrialization of cities, through the creation of industrial parks, and measures designed to boost the economy by offering tax cuts or development programs for start-ups are needed to increase the urbanization of other disadvantaged regions.

Another measure needed to boost foreign direct investment in the other regions is to increase the funding of research programs, where Romania ranks last in Europe. At regional level, in Bucharest - Ilfov, there are 20,615 people in the research field, compared to the average of the other regions, 3,057. The North East Region is the following, taking into account the number of research employees, with a median of 3,839 people. Compared to the West and Center regions, where the foreign investment balance is triple to the North East, the number of research employees is higher by 727, respectively 778, but the small differences between these regions and the dominant position of the capital do not encourage foreign research-oriented companies to move to the east. At the opposite pole is the South-East region, where only 1844 people are in the field of research. Gross Expenditure on Research is 0.38%, compared to the European average of 2%. Reducing this gap will boost future economic growth as well as attract foreign direct investment. Funding research programs, especially those related to industry, which are of interest to foreign investors and the creation of research hubs around universities, would greatly boost foreign investment inflows and reduce gaps between regions.

The lack of highways is a major impediment to attracting foreign direct investment. In the North-East and South-West Oltenia regions, there is no mileage of built-up motorway, and in the other regions, with the exception of the Bucharest-Ilfov region, where there is a density of 0.03 km of motorway per square kilometer, the situation is almost similar. Infrastructure development and the implementation of the Master Plan for Transport should be a priority of government development, which would make a huge

contribution to reducing disparities in foreign direct investment between regions.

The use of the Internet and the solutions it offers to the economy is another key factor in attracting foreign direct investments. Urbanization would facilitate access to the internet due to the possibility of providing this service at a reasonable price, but rural areas should not be neglected, where there should be more investment in the telecom infrastructure of predominantly rural areas.

At country level, in the Bucharest - Ilfov region, the average salary is almost 1000 Lei higher than the country average. The next region by revenue is the West, where the net average monthly wage is 1787 Lei, higher by 225 Lei compared to the poorest region, North East, at the level of 2015. Purchasing power and demand is higher in the west and the center of the country, which makes these regions attract a greater number of foreign investments compared to the east and south of the country, but the massive difference of 858 RON compared to the Bucharest-Ilfov region, at the level of 2015, are leading the foreign investment to the capital. Reducing wage gaps could be achieved by implementing laws that equate budget wages in central government institutions in the capital with those in other regional institutions. Reducing taxes on employees in regions where incomes are low in the North - East and South of the country could boost wage growth and boost economic growth. Creating and subsidizing technology companies as well as the development of the IT industry, where revenues are higher, would boost wage growth in many regions of the country and help attract foreign investment to these.

Gross domestic product is a robust determinant in attracting foreign direct investment. The proximity to the central institutions and the high level of direct investments in the analyzed period are essential factors for the Bucharest-Ilfov region's growth over the other regions. In this region, Gross Domestic Product is almost triple the average of the rest of the regions. The next region, South - Muntenia, has a Gross Domestic Product of RON 90.026 million in 2015 due to industrialization in the Argeş and Prahova counties, but 50% lower than Bucharest - Ilfov, and in the poorest region is South - West Oltenia, the level of this indicator is Lei 50.128 million. The Western Region is positioned on the penultimate position in terms of Gross Domestic Product, but relative to the population, it outstrips the other regions in terms of the GDP / capita indicator, except for the capital. Antepenest position is occupied by

the North-East region, but the large population, with more than 1.7 million inhabitants compared to the West, makes the region to have the lowest GDP / Capita ratio and attract the smallest foreign direct investment. The gap between the capital and the rest of the country could be covered by human resource development and investment in education, which will produce a more skilled workforce, increased urbanization by creating industrial parks that will favor the urbanization phenomenon, increasing population density in urban areas, and not least, massive investment in infrastructure to link Europe's disadvantaged regions.

The number of enterprises registered in the capital is almost double that of the rest of the regions. The reasons behind these figures are mainly the high density of the population and high incomes, which generate an increase in demand and consumption of goods and services. The discrepancy could be reduced by launching start-up programs that would boost the creation of new firms that will contribute to the economic development of the regions and attract foreign direct investment.

Last but not least, the difference in the distribution of foreign investments is due to the inefficiencies of the Romanian authorities. After 1989, there were six institutions in Romania that had the purpose of attracting foreign investors. The lack of a force to represent the government in negotiating with potential investors and passing them from one institution to another has made them turn to other countries where the agencies in this field are better performing their tasks. Strengthening such an institution could reduce the differences between the Bucharest - Ilfov region and the other regions, and be as well as a sign for investors that would suggest that Romania is interested in attracting foreign capital. In the absence of such an agency, foreign investors concentrate around the richest region, due to the possibilities of maximizing the profits it offers and the large number of foreign companies present.

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