

FOREIGN INVESTMENTS AND DISPARITIES IN REGIONAL DEVELOPMENT

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A b s t r a c t

Investments are crucial in creating economic growth and development on national and regional level. Specific kind of investments are foreign investments. Above their impact on labour market and economic entities of a host country, they also contribute to transfers of technology, methods of management and indirectly to quality of products and services.

The aim of the article is to identify the level of interdependence between location of enterprises with foreign capital and regionally diversified level of economic development in Poland. The conducted analysis was based on utilisation of data concerning the number of economic entities with foreign capital in regions (NUTS 2) of Poland as well as the number of people employed in enterprises with foreign capital, that were collated with GDP *per capita* of regions.

Empiric findings brought to the conclusion that location of enterprises with foreign capital was concentrated in regions of Western Poland and in Mazowieckie voivodship. At the lowest pitch enterprises with foreign capital concerned regions of Eastern Poland. The analysis revealed high statistical dependency between concentration of employed in economic entities with foreign capital in Polish regions and GDP *per capita* of that regions. More enterprises with foreign capital were located in regions with higher GDP *per capita* as well as more workers were there employed. In 2007 GDP *per capita* explained 84.89 per cent of spatial distribution of economic entities with foreign capital (measured by the number of workers). Additionally, the described phenomenon was growing in size through the last years (mostly due to Mazowieckie voivodship).

INWESTYCJE ZAGRANICZNE A DYSPROPORCJE W ROZWOJU REGIONALNYM

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Słowa kluczowe: inwestycje zagraniczne, lokalizacja, rozwój regionalny.

Abstrakt

Inwestycje odgrywają istotną rolę w kreowaniu wzrostu i rozwoju gospodarczego, zarówno na poziomie centralnym, jak i regionalnym. Specyficznym rodzajem inwestycji są inwestycje zagraniczne, które oprócz oddziaływania na rynek pracy oraz podmioty gospodarcze kraju goszczącego, w pewnym stopniu przyczyniają się do transferu technologii, metod zarządzania oraz pośrednio poprawy jakości wytwarzanych produktów i usług.

Celem artykułu jest wskazanie stopnia współzależności między lokalizacją przedsiębiorstw z kapitałem zagranicznym a poziomem rozwoju gospodarczego regionów Polski. Przeprowadzona analiza opierała się na wykorzystaniu danych o liczbie podmiotów gospodarczych z kapitałem zagranicznym w województwach oraz liczbie osób zatrudnionych w przedsiębiorstwach z kapitałem zagranicznym, które zestawiono z PKB *per capita* regionów.

Badania empiryczne wykazały wysoką koncentrację przedsiębiorstw z kapitałem zagranicznym w zachodniej Polsce oraz w województwie mazowieckim (mierzone ilorazem lokalizacji przedsiębiorstw oraz pracujących). Najmniejsza koncentracja podmiotów z kapitałem zagranicznym dotyczyła natomiast wschodniej Polski. W trakcie prac analitycznych zaobserwowano statystyczną zależność między koncentracją pracujących w podmiotach z udziałem kapitału zagranicznego w różnych regionach Polski a PKB *per capita* tych obszarów, zgodnie z którą statystycznie więcej pracujących i podmiotów z udziałem kapitału zagranicznego znajdowało się na obszarach o wyższym poziomie zamożności. W 2007 r. PKB *per capita* opisywał 84,89% przestrzennego zróżnicowania podmiotów z kapitałem zagranicznym (mierzonemu liczbą osób pracujących). Dodatkowo zaobserwowano zjawisko nasilającego się przestrzennego zróżnicowania lokalizacji przedsiębiorstw z kapitałem zagranicznym w skali regionalnej (za które głównie odpowiada województwo mazowieckie).

Introduction

Investment projects represent an important component determining the future economic growth and development. The positive influence of the capital accumulation increase is reflected in the generated economic growth of the country. This is the second after productivity increase supply factor of economic growth of Poland during the years 1994–2007 according to the neoclassical Solow-Swan growth model (NAZARCZUK, MARKS-BIELSKA 2009, p. 271). The high investment rate in the cross section of the regions is the condition of stable economic growth and in the long-term it stimulates economic growth and closing the gap between the economically weak regions and the economy of the country.

The specific role of the foreign investments involves not only the influence on the labor market (mainly through creating jobs and reduction of unemployment) but also the influence through multiplication effects and cooperation with local entities on the economy of the host region. Foreign investments, in addition to the inflow of capital, involve availability of modern production technologies and management methods, innovation, availability of sales markets, they proliferate entrepreneurial attitudes, indirectly influence the improvement of production quality, effectiveness of the economy and increase the

income of the population (BOJAR, KURYS 2009, p. 33, DZIEMIANOWICZ, p. 4). That is why they contribute to growth and economic development of regions (ALFARO et al. 2004, p. 108), although (as highlighted by the authors of the referenced work) the level of development of the local financial markets is of key importance for achievement of positive effects from location of the foreign direct investments. The growth in itself resulting from the direct foreign investments is achieved mainly through the financial markets.

Goal and methodology of studies

The paper aims at presenting the level of correlation between the location of enterprises with participation of foreign capital and the level of economic development of the regions of Poland. The conducted analysis was based on the information on the number of business entities with foreign capital and employment in enterprises with participation of foreign capital, which was compared with the GDP *per capita* of the individual regions.

During the analytical work the definition of the foreign investors by the Central Statistical Office (GUS¹) was applied, as the definition by the NBP would narrow the research sample excessively (UMIŃSKI 2002, pp. 21–22). Considering the fact that the most frequent form of enterprises with foreign capital is the commercial company such entities were subjected to the analysis. The so-called location quotient was applied for analysis of concentration of enterprises with foreign capital. This is a popular indicator used for analysis of industry and employment companies within specific economic sectors of the region or the share of the region within a larger area, e.g. the national economy (GUIMARAES et al. 2009, p. 360). It is described by the formula:

$$LQ = \frac{e_i/e}{E_i/E}$$

where:

e_i – employment in enterprises with foreign capital in the region (other economic categories such as e.g. the number of enterprises can also be used);
 e – total employment in the region, E_i – national employment in enterprises with foreign capital, E – national employment.

¹ GUS considers the entities that possess foreign capital and conduct business activity to be foreign investors. In case of the NBP approach the acceptance of the limit of the foreign partner's share of at least 10 percent would limit the research sample significantly compared to the GUS definition.

The value of the $LQ=1$ indicator represents the share of employment in enterprises with foreign capital equal to that in the national economy. The value of the $LQ>1.25$ indicator represents relative specialization of the region.

The basic measures of dispersion, i.e. spread and variability coefficient were applied for assessment of changes in the level of concentration of enterprises with foreign capital (absolute values) during the years 2003–2008. Computation of the location quotient was done on the base of the data on the number of enterprises with foreign capital and the number of people working in such enterprises.

During the studies the hypothesis was verified according to which location of enterprises with foreign capital contributes to establishing the differences in the GDP *per capita* in voivodships of Poland. More frequent location of enterprises with foreign capital in the voivodships with high GDP *per capita* is the cause of that phenomenon. The Pearson's correlation coefficient (that allows determining the level of correlation between the studies phenomena) was used for verification of that thesis. The significance level of 0.01 was assumed. On the other hand, the determination coefficient was used to show to what extent the variability of the explanatory variable (GDP *per capita*) explains the variations in the effect variable (the number of enterprises with foreign capital), i.e. to what extent the spatial diversification in the GDP *per capita* describes the distribution of enterprises with foreign capital among voivodships. In the work the data for the years 2003–2008 concerning location of enterprises with foreign capital and for the years 2003–2007 describing the regional GDP parameters was used.

Location of enterprises with foreign capital

Location of enterprises (also those with foreign capital) means positioning in the space of economic activity and refers directly to the algorithm (method) of selecting the place for operating the business in the national, regional and local scale (WIELOŃSKI 2007, p. 9). The location decisions are influenced by numerous factors of objective (and frequently measurable) factors as well as subjective factors dependent on the individual characteristics and system of values of the investors. The major factors considered in taking the enterprise location decisions include (GODLEWSKA 2001, pp. 14–15, PARYSEK 2007, p. 14, WINIARSKI 1999, p. 52):

- access to resources necessary to conduct business activity (e.g. resources of labor, raw materials base),
- economic, social and technical infrastructure, transport access, environment status,

- “adjustment” of the economic activity type performed to the manufacturing structure of the local economy and availability of skilled labor,
- identification of limitations and hazards to the economic activity conducted,
- size of the regional and local markets as well as possibilities of their development,
- level of economic, civilization-cultural and system of values development, preferences and priorities of the local population,
- general safety level,
- possibility of cooperation with other business entities, scientific and educational institutions, etc.,
- effectiveness of authorities in relations with investors.

The assessment of the potential location for conducting business activity depends on the type of planned or performed activity, planned volume of production, distance from the sales market, infrastructure level development as well as the knowledge and perception of space of the investor and his subjective evaluation of importance of individual factors (in case of small enterprises the behavioral factors are frequently of major importance) (PONIATOWSKA-JAKSCH 1999, p. 34). Investment activity of a given area depends on the individual demand for specific factors of location, size and structure as well as character of the investment project by a given investor. The better the correlation between the characteristics of a given area and the demands of the entrepreneur, the largest are the chances for positioning the business in a given place (BUDNER 2004, p. 24). Specific locations can be characterized by high attractiveness for location of only highly specialized industries and at the same time low attractiveness for business in all other industrial sectors.

The choice of location remains correlated significantly with the level of generated costs, possibilities of market expansion and labor productivity (KUCIŃSKI 1998, p. 25). Choice of the optimal place for location of the enterprise is determined by the possibility of assuring convenient conditions for operation of the specific business entity. It is done through identification of the locations offering the possibly lowest costs of procurement, sales, investment outlays, labor costs as well as those allowing cooperation with local and regional partners, production of high quality goods and services and access to qualified labor force.

In view of the empirical research conducted in Poland from the regional perspective (GOLEJEWSKA 2008, p. 203) *favorable location and transport connections, absorptive sales market in the region, high supplies and low costs of labor, possibility of taking over vacant production facilities and relations between the foreign investor and the region* are considered the most important factors for location of foreign capital projects. Additionally, the factors that

could have significant influence on attracting foreign capital included: economic potential of the region (partially developed as a result of absorption of the European Union funds) and activities of local authorities undertaken to attract foreign capital.

Diversified economic characteristics of regions, similarly to uneven distribution of resources, availability of skilled labor, technical infrastructure quality and, first of all, different levels of attractiveness for investments caused spatial diversity in saturation with foreign capital among the regions of Poland².

Studies conducted by CHIDLOW et al. (2009, p. 129) showed that foreign investors for which the sales market, knowledge and benefits of agglomeration were the main location factor chose Mazowieckie voivodship as the location for their business despite considering also other regions. The investors that based their choice on low costs of resources, availability of labor and geographic location as the main factors favored other regions to Mazowieckie voivodship.

Analysis of location of the Foreign Direct Investments (FDI) during the years 1995–2005 presented uneven distribution of those entities among the regions of the country (GOLEJEWSKA 2008, p. 203). The statistical analysis conducted by that author allowed identification of regions that were the “winners” (Mazowieckie, Silesian, Wielkopolskie, Lower Silesian and Małopolskie) and the “losers” (Świętokrzyskie, Podkarpackie, Warmińsko-Mazurskie, Lubelskie and Podlaskie) as concerns attractiveness to the foreign capital. Additionally, the majority of the investment projects with participation of foreign capital implemented by 2000 (69 percent of the capital invested) were concentrated in metropolitan areas (or in the largest cities of Poland) while corridors of up to 15 km from the major national roads agglomerated 59 percent of such investment projects (DOMAŃSKI 2001, pp. 98–99, 104).

Synthesis of the presented research results might lead to the conclusion that the wealthier regions were at the same time more attractive to foreign investors. The global literature describes that phenomenon in different ways. For example, the regional GDP does not determine the inflow of Japanese foreign investments into China (CASSIDY, ANDREOSSO-O’CALLAGHAN 2006, p. 525), while other studies (COUGHLIN, SEGEV 1999, p. 26) identified GDP, productivity and coastal location as the additional determinants of foreign investments inflow into China. This paper is an attempt at verifying that issue in case of the realities of Polish economy.

² The statistical correlation between the level of the investment attractiveness of the region and presence of foreign capital is presented, among others, in the paper by NAZARCZUK, LIZIŃSKA (2009, p. 134).

Discussion of the results of studies

Location of enterprises with participation of foreign capital was diversified spatially among the regions of Poland (Fig. 1). The conducted analysis showed the highest concentrations of enterprises with foreign capital (measured by the location quotient) in voivodships: Mazowieckie (2.09), Lubuskie (1.36), Lower Silesian (1.19), Western Pomeranian (1.02) while the lowest concentrations of such enterprises were observed in the voivodships of Eastern Poland: Podlaskie (0.25), Świętokrzyskie (0.27), Lubelskie (0.38), Podkarpackie (0.39) and Warmińsko-Mazurskie (0.45).

Additionally, during the years 2003–2008, the distance between Mazowieckie voivodship and the other regions of the country in attracting foreign capital increased (after excluding that voivodship from the analysis the variance coefficient responsible for the spatial distribution of the entities with foreign capital throughout voivodships of Poland decreased significantly from 136.7 percent to 74.81 percent in 2008).

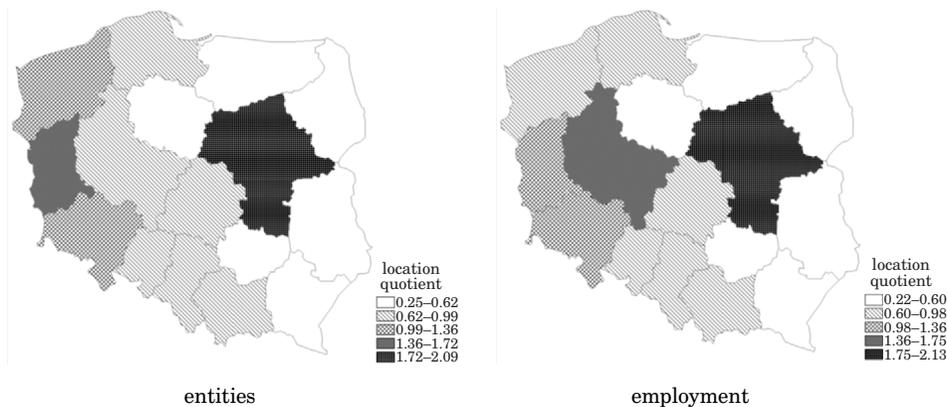


Fig. 1. Concentration of entities with foreign capital in 2008

Source: own work.

As concerns the employment in foreign enterprises the highest values of location quotient were obtained by: Mazowieckie (2.13), Wielkopolskie (1.38), Lower Silesian (1.33) and Lubuskie (1.05) voivodships while the lowest values described four voivodships of Eastern Poland: Podlaskie (0.22), Lubelskie (0.25), Warmińsko-Mazurskie (0.32) and Świętokrzyskie (0.34) and additionally Kujawsko-Pomorskie (0.48) voivodship.

The highest density of entities with participation of foreign capital was recorded in Mazowieckie voivodship (mainly Warsaw) and in the western

regions of Poland. Those regions at the same time were among those with the highest GDP *per capita* in Poland. The results obtained indicated a significant linear correlation between the concentration of entities with participation of foreign capital and the GDP *per capita* in the regions of Poland (Poland=100). The values of the linear correlation coefficient were statistically significant (at the significance level of 0.01), and their values indicated an increasing correlation between those two categories (increase from 0.8818 in 2003 up to 0.9214 in 2007). Additionally GDP *per capita* in 2007 described 84.89 percent of spatial diversity of entities with participation of foreign capital (measured by employment). Additionally the degree of explanation of the spatial diversity of employment in enterprises with participation of foreign capital during the years 2003–2007 increased by 7.13 percent points, which implies increasing spatial diversity of employment in those entities (tab. 1).

Table 1

Correlation between concentration of enterprises with foreign capital and the level of economic development of regions

Statistical measures	2003	2004	2005	2006	2007
Location quotient (employment) and GDP <i>per capita</i> (PL=100)					
Correlation coefficient	0.8818	0.9032	0.9169	0.9150	0.9213
Determination coefficient	0.7776	0.8158	0.8407	0.8373	0.8489
Location quotient (entities) and GDP <i>per capita</i> (PL=100)					
Correlation coefficient	0.7893	0.8028	0.8277	0.8377	0.8154
Determination coefficient	0.6230	0.6445	0.6851	0.7018	0.6649

Source: own work.

Location of enterprises with participation of foreign capital was less dependent on the GDP *per capita* (linear correlation coefficient was 0.8154 in 2007), which allowed concluding that its variance explained 66.6 percent of location of enterprises with participation of foreign capital. This indicated higher influence of other factors determining location of entities with participation of foreign capital (among others the presence of Special Economic Zones, diversity in the technical infrastructure quality, human resources quality, nearness of metropolitan centers, etc.).

Summary and conclusions

On the base of the conducted analyses, the formulated research hypothesis assuming that the location of enterprises with participation of foreign capital contributes to establishment of differences in the GDP *per capita* in Polish

voivodships was verified positively. The results obtained presented a significant correlation between affluence of the region (measured by GDP *per capita*) and the concentration of enterprises with participation of foreign capital (and employment in those entities). Relatively frequent location of enterprises with participation of foreign capital in voivodships with a high level of GDP *per capita* indicates an important role of the regional markets size and availability of resources in determining location decisions. High concentration of entities with the regions with high GDP *per capita* is correlated to high wages, large population and relatively high productivity of labor in those areas of the country. At the same time, in most affluent areas of the country the largest scientific centers and metropolitan areas that are highly attractive for location of foreign investment projects are situated. They assure access to the resources of qualified labor, they have convenient transport connections and well-developed social, economic and technical infrastructure.

Relatively more frequent location of foreign investment projects in more affluent regions contributed also to establishment of the differences in the level of regional development as it hindered gaining positive effects from location of such projects in case of less affluent regions. Considering the consequences of foreign direct investments location for regional economies that frequently involved, in addition to the flow of capital, the transfer of knowledge, management methods, cooperation with local entities, tightening competition and improving quality of produced products and services, it should be concluded that actions aiming at increasing investment attractiveness (and improvement of the image) of less affluent regions are necessary. The Program of Economic Promotion of Eastern Poland and activities implemented in individual regions (e.g. the project "Consistent investor service system in Warmia and Mazury") are examples of the positive direction of activities in that field.

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References

- ALFARO L., CHANDA A., KALEMLI-OZCAN S., SAYEK S. 2004. *FDI and economic growth: the role of local financial markets*. Journal of International Economics, 64: 89–112.
- BOJAR E., KURYS J. 2000. *Bezpośrednie inwestycje zagraniczne a konkurencyjność regionu słabiej rozwiniętego (na przykładzie Lubelszczyzny)*. In: *Konkurencja i koegzystencja regionów w procesie integracji europejskiej*, Ed. E. Bojar, Katedra Ekonomii i Zarządzania Gospodarką Politechniki Lubelskiej IV Wydział Nauk Technicznych Lubelskiego Towarzystwa Naukowego Towarzystwo Naukowe Organizacji i Kierownictwa Oddział w Lublinie, Lublin.
- BUDNER W. 2004. *Lokalizacja przedsiębiorstw. Aspekty ekonomiczno-przestrzenne i środowiskowe*. Wyd. drugie uaktualnione, AE w Poznaniu, Poznań.

- CASSIDY J.F., ANDREOSSO-O;CALLAGHAN B. 2006. *Spatial determinants of Japanese FDI in China*. Japan and the World Economy, 18(4): 512–527.
- CHIDLOW A., SALCIUVIENE L., YOUNG S. 2009. *Regional determinants of inward FDI distribution in Poland*, International Business Review, 18(2): 119–133.
- COUGHLIN C.C., SEGEV E. 1999. *Foreign direct investment in China: a spatial econometric study*. Working Paper. Federal Reserve Bank of St. Louis, 1999-001A: 1–31.
- DZIEMIANOWICZ W. *Inwestycje zagraniczne jako czynnik rozwoju polskich regionów*. Ekspertyza na zlecenie Departamentu Koordynacji Polityki Strukturalnej w MGPIPS. <http://www.funduszes- strukturalne.gov.pl/informator/npr2>.
- GODLEWSKA H. 2001. *Lokalizacja działalności gospodarczej. Wybrane zagadnienia*. Wyższa Szkoła Handlu i Finansów Międzynarodowych, Warszawa.
- GOLEJEWSKA A. 2008. *Lokalizacja bezpośrednich inwestycji zagranicznych*. In: *Lokalizacja przemysłu a konkurencyjność polskich regionów (w kontekście integracji europejskiej)*. Ed. A. Zielińska-Głębocka. Wyd. UG, Gdańsk.
- GUIMARAES P., FIGUEIREDO O., WOODWARD D. 2009. *Dartboard tests for the location quotient*. Regional Science and Urban Economics, 39 (3): 360–364.
- KUCIŃSKI K. 1998. *Lokalizacja jako element kształtowania pozycji rynkowej firmy (na przykładzie fabryki samochodów Opel)*. In: *Współczesne uwarunkowania lokalizacji przemysłu w Polsce*. Ed. K. Kuciński. Monografie i Opracowania, 434, SGH, Warszawa.
- NAZARCZUK J.M., LIZIŃSKA W. 2009. *Level of Investment Attractiveness and Scale of Foreign Investments during the years 2005–2006*. Olsztyn Economic Journal, 4(1): 125–137.
- NAZARCZUK J.M., MARKS-BIELSKA R. 2009. *Czynniki wzrostu gospodarczego Polski w świetle neoklasycznego modelu wzrostu*. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu, 39(1): 266–273.
- PARYSEK J.J. 2007. *Wprowadzenie do gospodarki przestrzennej*. Wyd. Naukowe UAM, Poznań.
- PONIATOWSKA-JAKSCH M. 1999. *Innowacje infrastrukturalne a przedsiębiorczość*. In: *Lokalne uwarunkowania przedsiębiorczości*. Ed. K. Kuciński, Monografie i Opracowania, 459, SGH, Warszawa.
- UMIŃSKI S. 2002. *Znaczenie zagranicznych inwestycji bezpośrednich dla transferu technologii do Polski*. Wydawnictwo Uniwersytetu Gdańskiego, Gdańsk.
- WINIARSKI B. 1999. *Konkurencyjność: kryterium wyboru czy kierunek strategii i cel pośredni polityki regionalnej*. In: *Konkurencyjność regionów*. Ed. M. Klamut, Wyd. Akademii Ekonomicznej im. Oskara Langego we Wrocławiu, Wrocław, pp. 9–20.