

## **ACCESSIBILITY OF TRANSPORT AND ITS IMPACT ON THE ATTRACTIVENESS OF INVESTMENT IN POLISH VOIVODSHIPS (PROVINCES)**

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**Abstract:** A decision on the location of foreign investment should be preceded by a detailed economic analysis. In this analysis, the factors of location are of huge importance. They are what decide whether a specific region is attractive for a potential investor or not. Out of the factors of location a group of factors which is of particular importance is what can be referred to as the accessibility of transport. These factors have been placed under specific analysis in this paper. An attempt has also been made to define the impact of the accessibility of transport on the attractiveness of investing in Polish voivodships.

**Key words:** accessibility of transport, factors of location, attractiveness of investing, regions, Polish voivodships

### **Introduction**

The condition for the development of each market is that of investment, particularly direct investment. This is of huge importance for such less developed countries as Poland. In these countries it is necessary to create the appropriate conditions for long lasting economic growth. The capital which remains at the disposal of the domestic investors is however insufficient to initiate the processes of modernization and development. These indications facilitate the creation of the theory that in conditions of a strong lack of domestic capital it is necessary to increase the role of foreign direct investment (FDI).

The condition for the realization of FDI in a given country is that of mutual benefits for the investor and the country which receives the foreign investment. The basis of decisions on the part of the investor and the country which receives the investment should be through the realization of an economic analysis.

In the process of taking investment decisions the factors of location are of huge importance. They determine the attractiveness of investing in a defined country and particular regions in the country in question. The attractiveness of investing in a country or region results from the unique combination of the factors of location. The optimum combination of the factors of location from the point of view of the investor facilitates the reduction of investment outlays, as well as the running costs of the functioning of an enterprise.

Many factors exist which decide to a greater or lesser extent on the choice of a location for realizing the investment. Among the factors of location one particular group is of utmost importance, which can be defined as the “accessibility of transport”.

The aim of this paper is to characterize the factors of location that are decisive in the choice of the factors of location of the investment with particular regard to the group of factors defining the accessibility of transport in particular regions. This facilitated the classification of Polish voivodships with relation to their accessibility to the means of transport.

### **Accessibility of transport and other factors of location**

Taking a decision to realize an investment in a given region depends on many conditions. The key significance in this process lies with the factors of location, which define the so-called attractiveness of investing in regions. The attractiveness of investing in this paper is understood as the ability to entice investors to choose a defined region as their location [1]. The attractiveness of investing therefore, means a combination of benefits resulting from the location which are possible to achieve during the course of running business activity. These benefits result from the specific features of the region where the business is run. A grouping of these conditions facilitates the distinction of the so called factors of location. In consequence, the attractiveness of investing in a region is determined by a combination of the factors of location. The investor in choosing the location is guided by its attractiveness. The investor searches for a place which allows him to reduce investment outlays, as well as the running costs of the business. This at the same time, facilitates the maximisation of profits. A very significant aspect is also the possibility of restricting the investment risk [2]. It is not possible to define the attractiveness of investing in regions in the case of all types of investments. Various sectors and specifics of running a business lead to the fact that other factors of location are preferred. It is possible however, to distinguish particular universal factors. They enable the definition in an approximate way of the attractiveness of investing in all regions e.g. voivodships in Poland. In Poland, research on the attractiveness of investing in regions has been run since 2005 by the Research Institute on the Market Economy (Instytut Badań nad Gospodarką Rynkową – IBnGR) [2], [3], [4]. The results of this research in this paper has been placed under detailed analysis in the area defined in the aim of this paper.

In the research run by IBnGR, a set of scores of variables was analysed. Subsequently, these indicators were grouped as factors of location. These groups of factors provided the basis of the spatial variation of Polish voivodships. All variables were grouped as the following groups of factors:

- accessibility of transport,
- labour resources,
- market absorption,
- economic infrastructure,
- social infrastructure,
- level of general safety,
- activity of voivodships with regard to investors.

From the point of view of the realization of the aim of this paper the most detailed analysis was directed at the accessibility of transport.

***Accessibility of transport*** is one of the most important factors which is decisive as regards the attractiveness of investing in a given region. Its level is mainly formed by two factors: the geographical location of regions and the availability of the main factors of the infrastructure of transport. These factors are inter-connected as the geographical location of the region to a certain degree decides on the level of development of the transportation infrastructure. Such aspects as the length of road and rail networks or the congestion at transportation hubs such

as airports depend on the location of a region. Apart from the quantitative aspect, the qualitative aspect is also important. In the case of a potential investor, not only is the amount of roads important, but first and foremost, how fast he can move to another location and how much it would cost is a priority.

As regards the location of a region, in the case of a potential investor such factors as the distance from the western borders of Poland, the relative location with regard to the capital – Warsaw, the relative location of regional centres and international airports are of great importance.

The requirements referring to the availability of the elements of transportation infrastructure are varied depending on the type of business run. They are varied in the case of each of the afore-mentioned types of business activities: industrial, services and advanced technologies [4].

In the case of industrial activity, road transportation and the possibility of reducing its costs are of key significance. Production and logistic systems of contemporary enterprises are aimed at optimizing the level of stocks and their management. One of the basic assumptions of these systems is the timely supply of the key elements necessary for production. The road and rail infrastructure in Poland are poorly developed. In addition, Poland is in this regard strongly varied from a regional point of view. With relation to this fact, the western border regions of the country are more attractive for investors [2].

In the case of the services sector and those sectors which use advanced technology the time of travel is very significant. This is first and foremost conditioned by the quality of the road and rail networks, accessibility of international airports and the transportation offer at hand. The accessibility of the road network in this case is of less significance. Of course, the exception to this rule are logistic centres, which are located at express routes and motorways. However, regardless of the type of enterprise a very important element is the distance from the main agglomeration centres. This is both in terms of time and geographical distance. An agglomeration centre ensures entrepreneurs of easier access to qualified employees who often constitute a significant market for these enterprises.

At present, Poland is deprived of a complex network system of motorways, express routes and fast rail connections. This makes the effective location of industry and services difficult. This does not ensure the appropriate quality of servicing the transportation of goods and passengers. The lack of a road network of an appropriate standard is currently one of the most serious barriers to the development of the country. This considerably hinders the possibility of availing of such attributes that Poland has, such as its geographical location and the market size [5].

Particular regions of Poland are strongly varied with regard to the accessibility of transportation. The main reason for this is the transit location of this country. Regions where international transportation corridors run through are in a better situation. These lead to the development of a network of express routes and the modernization of rail connections. Regions which lie in the areas outside the main communication routes from west to east and from north to south are characterized by a worse level of accessibility of transport and at the same time the attractiveness of investing there. The accessibility of transport is decided by the length of roads and their congestion. In the case of foreign investors, quality is also of importance. This aspect is not of a high level in Poland however.

In the case of the rail network, the most observations do not result from the length or congestion, but from the level of exploitation. There is an insufficient rail network to facilitate a fast speed of travelling. The poor condition of tracks means the necessity of restricting the speed of trains on many lines. This worsens the competitiveness of the services offered [2].

The airport infrastructure in Poland consists of the central international airport in Warsaw, 2 main regional airports in Gdańsk and Cracow, as well as 9 other regional airports. In recent

times in Poland, there has been a dynamic development of air transportation. The growth in the number of air carriers and the increase in the number of connections offered by cheap airlines has had an impact on the improvement of the accessibility of transportation in the areas served by regional airports.

In sum, the availability of transport infrastructure is very varied. The western regions of the country are in a better situation. In these regions there is visibly more foreign investment, particularly as regards industrial activity. In the case of service activities and activities in the area of advanced technologies, air and rail transport are of greater significance. Generally speaking, the role of accessibility of transport in forming the attractiveness of investing in regions is associated with first and foremost the following:

- enabling the supply of raw materials and components necessary for production,
- enabling the supply of finished products for clients,
- ensuring the conditions of passenger transport which facilitate direct contact with suppliers, co-workers, clients and advisors [2].

Apart from the accessibility of transport the attractiveness of regions should be assessed by analysing and evaluating other groups of factors at the same time. However, due to the nature and aim of this paper, they will be described here in general terms.

**Labour resources** are counted as being among the most important factors that decide on the attractiveness of investing in regions. They condition the efficient functioning of an enterprise. To a large degree, this is also decisive as regards the level of costs. Both the quantitative aspects and the qualitative labour resources should be taken into account. The assessment of labour resources was enabled by such resources as: the number of employed, the number of unemployed, the number of work vacancies, influx of secondary school and college graduates, as well as the level of remuneration.

**Market absorption** indicates the possibility of the sale of goods and services by a potential investor on a given regional market. This is therefore decisive to a great extent with regard to the speed of returns on the investment outlays incurred. The location of investment in a region of large market absorption enables the restriction of transportation costs. Market absorption is defined as availing of the following features: the size of the market, wealth of households, investment costs of enterprises, investment costs of local authorities.

**Economic infrastructure** influences the efficient realization of the investment and its further functioning. The attractiveness of investing in a region is first and foremost influenced by such elements as: density of institutions from the business environment, presence of scientific and technical centres, the number of trade fairs and exhibition events and the functioning of the special economic zones.

**Social infrastructure** influences the attractiveness of investing in regions in an indirect way, by shaping the living conditions in a given region. The variation of regional areas with regard to social infrastructure leads to the migration of people. The assessment of social infrastructure was served by such factors as: the number and activity of cultural institutions (theatres, cinemas, culture clubs), as well as the saturation of hotel and catering infrastructure.

**The level of general safety** to a small degree influences the level of investment outlays and the costs of functioning for an enterprise. It does however have a greater social context. The

impact of safety on the attractiveness of investing in a region is defined by the following: the level and structure of crime and the level of crime detection.

*The activity of voivodships with regard to investors* plays an important role in taking decisions about the location of investment. Apart from the presence of favourable factors of location in a given region, the activity of the local authorities is significant. The presence of these factors may be insufficient if the investor is unaware of their existence. It is accepted that this activity with regard to investors can include the following types of activity: the degree of preparation of investment offers and information and promotional activity with regard to investors.

### **Accessibility of transport and the attractiveness of investing in Polish voivodships**

In the analysis of the attractiveness of investing in Polish voivodships, data which was derived from public statistics was used. This was supplemented with information from the Polish Agency of Information and Foreign Investment (Polska Agencja Informacji i Inwestycji Zagranicznych – PAIiIZ). Detailed surveys were carried out referring to the assessment of the information and promotional activity of Polish voivodships with regard to investors.

Scores of indicators were used for the assessment of the attractiveness of investing which are as exact as possible in describing the particular factors of location. Subsequently, these indicators were divided into 7 groups of factors.<sup>1</sup> The greatest significance is given to labour resources and costs. Further down in the hierarchy of the factors assessed were the accessibility of transport and the activity of voivodships with regard to investors. Less significance was given to market absorption and the level of development of economic infrastructure. It has been acknowledged that the relatively lowest significance is that of the level of development in social infrastructure and the level of general safety. The aforementioned groups of factors and their importance is presented in Table 1.

Table 1. Factors and their significance for the attractiveness of investing in Polish voivodships *Source: Analysis on the basis of [2].*

<b>Factors</b>	<b>Weight (%)</b>
Accessibility of transport	20
Labour costs	25
Size and quality of labour resources	
Market absorption	15
Level of development of economic infrastructure	10
Level of development of social infrastructure	5
Level of general safety	5
Activity of voivodships with regard to investors	20
Total	100

<sup>1</sup> A detailed description of the methods of research is to be found in [2].

Created on the basis of the afore-mentioned 7 groups of factors of location, the synthetic indicator of attractiveness of investing facilitated the creation of a ranking list of the voivodships. This ranking is provided in Table 2.

Table 2. Assessment of attractiveness of investing in Polish voivodships in 2007

Source: Analysis on the basis of [4].

	Accessibility of transport	Labour resources and costs	Market absorption	Economic infrastructure	Social infrastructure	Level of general safety	Activity of voivodships with regard to investors	Attractiveness of investing in voivodships
Voivodship	Ranking							
Śląskie	6	1	2	2	1	15	5	1
Dolnośląskie	1	5	5	1	3	12	1	2
Mazowieckie	5	10	1	3	4	14	2	3
Małopolskie	8	2	3	4	2	10	11	4
Wielkopolskie	2	4	8	7	9	7	3	5
Łódzkie	9	3	6	11	7	11	4	6
Pomorskie	11	11	4	6	5	16	7	7
Zachodniopomorskie	3	8	9	13	6	13	6	8
Opolskie	7	13	7	8	12	5	8	9
Lubuskie	4	12	10	10	15	8	9	10
Kujawsko-Pomorskie	10	6	14	12	8	9	13	11
Podkarpackie	14	9	12	5	13	1	12	12
Warmińsko-Mazurskie	13	15	13	9	10	6	10	13
Świętokrzyskie	12	7	16	15	11	4	15	14
Lubelskie	15	14	15	16	16	3	14	15
Podlaskie	16	16	11	14	14	2	16	16

For the purpose of assessing the accessibility of transport, the density of suburban road infrastructure, accessibility to western borders, accessibility to capital and the ranking of the airport were all taken into account. The results of this analysis enable the classification of voivodships in the following order:

1. Dolnośląskie,
2. Wielkopolskie,
3. Zachodniopomorskie,
4. Lubuskie,
5. Mazowieckie,
6. Śląskie,
7. Opolskie,

8. Małopolskie,
9. Łódzkie,
10. Kujawsko-Pomorskie,
11. Pomorskie,
12. Świętokrzyskie,
13. Warmińsko-Mazurskie,
14. Podkarpackie,
15. Lubelskie,
16. Podlaskie.

The most favourable set of factors constituting accessibility of transport is characterised by the Dolnośląskie voivodship (Lower Silesia). This high position is influenced by the opening of the new sections of the motorways in recent times. This is similar to the case of the voivodship classified in second place – that of the Wielkopolskie voivodship. In addition, this voivodship has a good connection with Warsaw and has a relatively rich network of international air routes at its disposal. Against the background of these first two voivodships, the voivodships of Zachodniopomorskie and Lubuskie are characterised by a decidedly lower density of road networks. These voivodships hold a high fifth position thanks to mainly the most favourable location in the structure of the network of road and rail infrastructure, as well as the best access to air transport. In the case of the voivodship of Silesia, its sixth position is the result of a very high density of road infrastructure, as well as the relatively well developed network of air transport. The strong point of the voivodship of Opolskie is the good location with regard to the western borders of the country, as well as the ease of access to them thanks to the motorway. The position of the voivodship of Małopolskie is the result of a well developed network of international air routes and to a lesser extent the large density of road networks. The position of the voivodship of Łódź first and foremost results in the central location and its short distance from Warsaw. Others in the ranking include the voivodships of Kujawsko-Pomorskie and Pomorskie. These are characterised by average indicators describing the accessibility of transport when placed against the background of the whole group of voivodships [2], [3], [4].

Voivodships which are clearly lower than the average include the following: Świętokrzyskie, Warmińsko-Mazurskie, Podkarpackie and Lubelskie. These voivodships are to be found at a significant distance from the western borders. They are also characterised by the lack of air routes with the exception of the voivodship of Podkarpackie. The ranking of the accessibility of transport is completed by the voivodship of Podlaskie. This is characterised by the low density of road networks, large distance from the western borders, as well as the lack of international air routes [4].

## Summary

In taking an investment decision the factors of location are of key significance. These are what determine to a great extent the conditions of functioning, the amount of investment outlays and the costs of running the business located by the company in a given region. In the group of factors of location a high position is held by such characteristics which can be generally classified as the accessibility of transport.

In the analysis of the attractiveness of voivodships by PAIiZ, the most important factors were acknowledged to be those describing the labour resources and costs in a given voivodship. Lower down in the ranking of the attractiveness of investing in voivodships is the accessibility of transport alongside the activity of voivodships with regard to regions.

The availability of transport to a very large degree is therefore decisive in the attractiveness of investing in Polish voivodships. In part, the accessibility of transport results from independent reasons and ones depending on activities undertaken by local authorities. In the first case, this refers to the geographical location of the region. In the second case, this refers to equipping the region with the main elements of transport infrastructure. In fact, this is also the by-product of activities of local authorities, as well as the strategies of particular governments with regard to certain regions. When combined, these conditions create a set of factors which potential investors analyse and assess in a detailed manner before investing in Poland.

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