



THE COMPETITIVE POSITION OF BORDER AREAS IN RELATION TO THE POLISH AND GERMAN REGIONS

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Abstract

Borderlands are areas where competitiveness develops in a very particular way. On the one hand, they are often preferred areas, which are less socio-economically developed. At the same time, the development of integration processes facilitates the establishing and realisation of cross-border cooperation. This is accompanied by increasing competitive pressure from neighbouring regions across the border, which is mostly linked to the building-up of the competitiveness of territorial units. The Polish-German borderland is an example of a region characterised by the greatest discrepancies in the level of socio-economic development in the European Union and for this reason it was chosen for analysis.

The purpose of this paper was to analyse spatial variation in the level of competitiveness of territorial units in the Polish-German borderland (NUTS2 regions). The position of the borderland in the socio-economic structure of both countries was determined on this basis and the level of competitiveness of the regions on both sides of the border was compared. The analysis was dynamic in character and covered the years 2002 and 2008.

In the light of the research conducted it was concluded that spatial preference was analogous to economic preference when analysing the relationship between the German part of the borderland and the rest of the country. On the Polish side of the borderland such a coincidence did not occur. The more advanced development level on the German side, although considerably higher, does not constitute „a civilization gap”. In some respects Polish regions had a better competitive position than the German ones. The study revealed similarities in the main factors contributing to competitiveness on both sides of the border. However, the significance of these factors was different.

Key words

competitiveness • cross-border cooperation • Polish-German borderland

The aim and scope of the research

The borderlands are areas where competitiveness develops in a very particular way. They are often areas, which are less socio-economically developed and therefore require more attention. At the same time, the development of integration processes facilitates

the establishment and realisation of cross-border co-operation. This is accompanied by increasing competitive pressure from neighbouring regions across the border. This mostly concerns the building up of the competitiveness of territorial units. The Polish-German borderland is the example of a region characterised by the greatest discrepancies in the

level of socio-economic development in the European Union (see Schmidt-Seiwert et al 2006) and for this reason it was chosen for analysis.

The purpose of this paper is to analyse spatial variation in the level of competitiveness of the territorial units of the Polish-German borderland. The analysis was carried out in the following way: the Polish part of the borderland in relation to the rest of Poland, the German part of the borderland in relation to the whole of Germany, the Polish part of the borderland in relation to the German part of the borderland. This helped to determine the following things: the position of the borderland in the socio-economic structure of both countries as well as the relationship of competitiveness in the Polish vs. German borderlands. In addition, this paper aims to identify the factors determining the competitive position in the regional contexts found in the Polish and German parts of the borderland.

The position of the borderland in the socio-economic structure of both countries was determined on this basis and the level of competitiveness of the regions (NUTS2) on both sides of the border was compared (see Fig. 1). The analysis was dynamic in character and covered the years 2002 and 2008.

Based on the competitive position identified for the regions situated in the western borderland of Poland in relationship to the whole of Poland,

and those of the eastern borderland of Germany in relation to the whole of Germany, an attempt was made to determine the type of regions they are according to the core-periphery model introduced by Friedmann (1974). The key issue was the answer to the question whether the geographical periphery (i.e. peripheral location) coincides with periphery in the socio-economic sense.

The competitiveness of territorial settings

The issue of competition and competitiveness is currently one of the most important streams of research conducted in the scientific literature for the general public (Smit 2010), and the concept of competitiveness is well established in the activities of local and regional governments at almost all levels, both in Poland as well as in most other countries. Despite extensive theoretical achievements and years of experience in implementing this idea, it still arouses a great deal of controversy. At the same time, there are numerous difficulties connected with a clear and unambiguous definition of the concept, the explanation of mechanisms that determine it and establishing methods how to pursue it as part of the economic element in company operations and in their terri-



Figure 1. Area covered by the analysis.

torial settings. These problems concern, in particular, the development of competitiveness of units in the borderland area, which haven't yet been studied comprehensively.

The concept of territorial competitiveness was developed by Porter (1990). Based on the proposed model of a diamond, he described the competitiveness of countries as a result of main factors affecting one another (Porter 1990): *Factor Conditions, Demand Conditions, Firm Strategy, Structure and Rivalry, Related and Supporting Industries*.

This model was later further developed, modified and expanded with new elements explaining the competitiveness of each country (Smit 2010). The basis for the concept of territorial competitiveness is to determine whether it is at all possible for territories to compete with each other. As Lever (1999) points out, in many areas one can observe:

- investment in the production of goods and services,
- an increase in the significance of existing and the creation of new business entities,
- an increase in population, which is the source of a certain level of income, human and social capital, political power and increase in demand,
- public funds from national and international financial resources,
- the location of hallmark events, understood as fairs, exhibitions, cultural and sports events at international level (Hall 1989), as well as elements of infrastructure (e.g. of national or continental importance).

According to Bontje and Musterda (2009), however, the competition between regions focuses mostly on direct domestic and foreign investments, flows of highly-skilled workforce and the allocation of government resources.

When considering the concept of territorial competitiveness and its effects, Trabold (1995) proposes a hierarchical model of four main aspects of competitiveness. It comprises the following:

- ability to sell (export ability of the area),
- ability to attract foreign investment and workforce (strength of location),
- ability to adapt to the changing conditions of the surroundings,
- ability to earn, which allows the financing of current expenditure and investment needs and the generation of profit.

In this context the improvement of competitiveness may be achieved through (Chorianopoulos 2010):

- supply-related activities connected with the improved co-ordination of activities undertaken by the main actors of the economy in the study area,
- demand-related activities, aimed at improving those elements which are most sought-after by companies (e.g. infrastructure developments),
- working on a desired and unique image (e.g. marketing policy).

According to Bristow (2005) the determination of the level of territorial competitiveness requires the determination of:

- the significance of the region for the competitiveness of companies,
- the role of the competitiveness of companies in generating a good economic situation in the region,
- conditions for regional competitiveness and strategic competitive behaviour.

Although there are many aspects to a competitiveness policy, the effectiveness of activities with a positive sum is one of the most important. They should be realised in the first place in the territory in question (Malecki 2004).

The concept of regional competitiveness has been widely adopted within the framework of the regional policy of the EU and a large number of highly developed countries and became one of its main objectives. This led to the development of research into indicators measuring competitiveness in various territorial settings. Documents connected with creating regional policy treat the promotion of regional competitiveness as a completely unquestionable phenomenon, which is at the same time favourable for the economy and in which everyone, wins (Bristow 2005). It is debatable, however, whether it is always so in real economic life.

Many experts and practitioners in the field of regional policy treat competitiveness as a natural law of the modern capitalist economy (Kitson et al. 2004) as a result of the popularity of the idea of competitiveness. In many countries (e.g. the USA, UK, Belgium, Italy, Holland, Japan), international organisations (European Council of Competitiveness working under the European Commission) or private institutions (World Economic Forum in Switzerland, Competitiveness Institute in Spain, Council on Competitiveness and Institute for Strategy and Competitiveness in the USA) created special institutionalised MDWTs, whose aim is to assess the level of competitiveness and develop a strategy to

boost it (Kitson et al. 2004). For the end customer, one of the best competitiveness rankings in terms of number and significance are those prepared by the World Economic Forum (Malecki 2004): Global Competitiveness Programme (since 1979), Global Information Technology Report (2002), Environmental Performance Measurement Project. There are also other important publications, such as World Competitiveness Yearbook (since 1989), European Competitiveness Report (since 1997).

Understanding regional competitiveness is crucial for strategic planning intended to support development processes. This is the reason for the great number of studies determining the conditions and character of the competitiveness of particular territorial units. Also, a great many techniques for measuring competitiveness have been created, e.g. Multi-Sector Qualitative Analysis (Roberts & Stimson 1998).

As a result of the widespread use of rankings or comparisons of territorial settings, scientific studies concerning competitiveness take the form of checklists, and the research carried out consists of verification of various sets of indicators (Bristow 2005). As the significance of each feature for regional development differs, the indicators used concern different development factors and are based on various models of development (Churski 2008; Szafranek 2010). Therefore, it is not surprising that the choice of each author is more or less subjective, as there is no unambiguous and cogent evidence proving the significance of a given indicator in the process of developing competitiveness. Thus, it is hardly possible to compare these studies, and their application in the real economic space is debatable. It seems, however, that in the context of globalisation of the economy the use of comparisons and the creation of rankings of economic effectiveness for particular areas is unavoidable. Such comparisons may become useful, for instance, in redirecting regional policy. It seems unfounded, however, to perceive the competition between regions as a zero sum game (Kitson et al. 2004).

Competitiveness has become a key element of the regional policy implemented by the EU, as well as in each member state. This is confirmed by a number of documents which are strategic, analytical-and-study in character and which are formulating the objectives, conditions and rules for the development competitiveness, e.g. AEI (1993, 1997), European Commission (2004a, 2008), Euro-

pean Union (2007). Also, at the level of Poland and Germany all the most important documents devoted to regional policy take into account the issue of territorial competitiveness.

Another aspect of territorial competitiveness is connected with the scale according to which it can be assessed. Although a large number of studies concerning competitiveness concentrate on the national level, Porter (2003) suggests that according to a number of analyses significant determinants of competitiveness are to be found at the regional level.

In the studies conducted to date the concept of competitiveness refers to countries, states, and regions (NUTS2), as well as to lower administrative levels (LAU1, LAU2) (Leśniak 2006). The subject of the competitiveness of cities is extensively discussed in the literature (Healey & Dunham 1994; Church & Ried 1996; Begg 1999; Dziembowska-Kowalska & Funck 1999; Lever 1999; Rogerson 1999; Kresl & Singh 1999; Van den Berg & Braun 1999; Malecki 2002 among others).

The notion of competitiveness has various definitions. This is the result of defining it from the point of view of various conditions, factors, effects etc. In order to conduct a study of the competitiveness of the borderland this paper adopts the definition created by the European Commission which states that competitiveness is the ability to provide goods and services which meet the needs of international markets while maintaining a high and permanent level of income, or, more generally, the ability to generate a relatively high level of income and employment in the situation of external competition (AEI 1999). This definition seems the fullest as it combines a scientific approach with a practical one because it is used in the regional policy of the EU.

An important element of the discussion connected with territorial competitiveness was the search for its most important conditions. It needs to be stressed that on the basis of various studies many factors were identified which were attributed the key role in defining the level of development of competitiveness. A comprehensive review of conditions of territorial competitiveness was done by Leśniak (2006) and Szafranek (2010) among others. Leśniak (2006) distinguishes fourteen main groups of competitiveness factors related to problems in the socio-economic sphere (Tab. 1). As Szafranek (2010) points out when analysing competitiveness, it is more important to include as wide as possible a thematic range than a great number of variables.

Table 1. Factors concerning territorial competitiveness.

No.	Types of factors	Examples
1	location rent	location in the vicinity of international routes (TINA, TEN) central location (good accessibility in terms of transport) border location
2	economic	diverse sectoral structure of the economy the degree of external and internal connections between companies high proportion of services in the company structure development of entrepreneurship (mainly SMEs), including those with foreign capital situation on the labour market
3	demographic	structure by sex and age population growth in the region, poviát and commune
4	human capital	skilled and qualified workforce readiness for lifelong learning knowledge and skills of the people
5	social capital	people's tendency to form various associations and organisations direct participation in election decisions in the country the sense of bond and regional and local identity
6	innovation	the presence of R&D institutions, higher education institutions ability to create and absorb innovation connections between the actors of the region (a learning region)
7	quality of surroundings (the environment) and development of tourism	diversity of the landscape good quality of air, water and soil large number of forests, presence of nature reserves the presence of high quality tourist infrastructure and its use by tourists
8	cultural	cultivating traditions, customs and beliefs
9	business environment	the presence of business environment institutions (sections J and K) organising fairs, especially international ones
10	technical infrastructure	development and diversification of the transportation system (multimodal transport: motorways, railways, rivers, airports) and telecommunications investing in 'environmental' infrastructure (waterworks, sewage system, wastewater treatment with water purification)
11	social infrastructure	efficient system of education, efficient healthcare service network
12	activity of local authorities	tendency to form goal-oriented unions, associations (also cross-border in character) co-operation within cities, communes, partner regions) influence on the development of local entrepreneurship, local and regional marketing, accessibility of public institutions strong leadership
13	situation in the country	the general socio-economic condition, political climate the model of regional policy (financing) and sectoral policies adopted financial situation of the country
14	international	liabilities of the country resulting from agreements and membership in international organizations possibility of obtaining foreign funds (e.g. EU) internationalisation of the economy

Source: Leśniak (2006).

Competitiveness of borderland areas

Borders are, by nature, areas of contradiction in many respects: gates and barriers, protection and trapping trap, safety and the lack of

it, contact and conflict, identification and differentiation, and lastly, co-operation and competition. With time, these apparent dichotomies can intertwine, but they can also co-exist in the same people or co-function within the same institutions, some of which deal with the space of

two neighbouring countries on a regular basis (Anderson & O'Dowd 1999).

The existence of borders leads to a decrease in the economic effectiveness of regions in terms of the labour market and GDP. The main reason for this is reduced mobility of labour resources and restricted contacts between companies. That is why the main objective of co-operation policy should be to overcome the barrier of the border in these very respects (Van Gorp 2009). Economic development in border areas depends on the following elements (Krätke 1996):

- the diversity of institutional space, including the variety of economic entities,
- the relationship of co-operation and the level of development of negotiating structures on both sides of the border,
- the effectiveness with which formal communication channels operate and the network of institutions promoting innovation, knowledge transfer and co-operation.

The border also creates a number of opportunities. Economic entities can use the advantages resulting from operating in different countries and a variety of economic conditions (e.g. lower labour costs, legal regulations, entering new markets). The physical proximity can also be a stimulus to the creation of an innovation network (Heidenreich 1999). Cross-border economic connections can become an important element of regional and national innovation systems (Heidenreich 1999; Koschatzky 2000). Research shows that the current level of real trans-border connections is very limited in this respect (Koschatzky 2000).

Van Geenhuizen and Van der Knaap (1996) summarise the results of research conducted in the EU in the 90s of the 20th century and show that on the whole the level of cross-border connections was low, even at borders which were very open in character (e.g. Dutch-Belgian). McCallum (1995) reached the same conclusions on the example of the American-Canadian border, where the very existence of the border greatly decreased the turnover despite its great permeability, and the cultural, institutional-legal, and language similarities.

The border plays a significant role in international trade as its existence is connected with various policies, physical and mental distance, differences in the preferences of customers etc. The border factor plays an important role even when it concerns integrated and culturally homogeneous countries (e.g. Canada and the USA). The main

reason for this situation is, according to Turrini and Van Ypersele (2010), differences in the legal systems. Because of these differences, the act of crossing the border is associated with the weakening of the competitive position of goods and service providers. Consequently, companies prefer clients from their own countries rather than those across the border.

The role of the significance of the border as a trade barrier was also confirmed in the research conducted within the EU (Chen 2004; Gil-Pareja et al. 2006). Internal trade flows are, according to their findings, four to six times higher compared to international trade flows. The smallest impact of the border was observed in those big countries, which were the first to initiate the process of integration (e.g. Germany, France, Italy). In countries characterised by smaller economic potential which joined the integration processes at a later stage and are located further away from the main economic core of the community (Spain, Portugal, Finland) – the significance of the border was clearly more noticeable (Chen 2004).

Although border is an important element weakening the development of economic connections the studies indicate the existence of a number of efficient mutual interactions. On the basis of an analysis of associations functioning in border regions Mora (2011) proves that neighbouring regions mutually influence their economic specialisation. The strength of such influence is, in turn, connected with the length and intensity of co-operation. Therefore, institutional cross-border co-operation can influence the direction of economic development (Mora 2011).

As regards border regions, according to Krätke (1996), the promotion of the socio-economic development of a given unit plays a greater role in determining future prospects for their competitiveness than location within the borderland. Border location is undoubtedly a source of many limitations and possibilities. They affect socio-economic conditions for development to some extent, but do not finally determine them. In this context the borderland is a meeting of areas with very different conditions affecting competitiveness (the 'space' of particular countries). It is very often peripheral in a geographical sense (location) as well as economically. Different sources of competitive advantage on both sides of the border may become an element facilitating the establishment of co-operative relationships, even in a situation of increased com-

petition, and subsequently create the conditions for the formation of cross-border regions. But it may also result in a lack of a stronger relationship network and long-term independent functioning of the regions on both sides of the border.

The category of periphery used in this paper is connected with the concept of core-periphery introduced by J. Friedmann and refers to the socio-economic system of each country. It is based on the perception of the whole economic space as divided into the 'central' areas, i.e. so-called cores, which may form subsystems with high ability to generate innovation, and the remaining areas – peripheries (Friedman 1974). Because of the advantages and location of conurbations, the cores are usually large towns and cities. They dominate over peripheries not only in the economic, but also in the political and cultural sense. This domination tends to be deepening (Gawlikowska-Hueckel 2003). Connections between centres and peripheries are mostly one-sided, and finally lead to the development of cores at the cost of peripheries. The main purpose is to achieve the effect of spill over of advantages onto peripheral regions (Grosse 2007). The concept of core-periphery is usually used to account for the economic relationship in the borderland.

Conditions of competitiveness in the Polish-German borderland

A detailed review of the main conditions for the development of crossborder economic connections in the Polish-German borderland based on the literature allows the following features to be distinguished:

- areas located on both sides of the border can generally be described as structurally weak in terms of socio-economic development (Gruchman et al. 2002),
- deep transformations of socio-economic systems following political changes in the 90s of the 20th century (Krätke 1996) are observed at the same time on both sides of the border,
- there have been dynamic changes in the way the Polish-German border has operated after 1990 – from severe isolation to full integration (Krätke 1996; Ciok 2004; Dołzbłasz & Raczyk 2012),
- a low level of networking in regional economies on both sides of the border (Krätke 2002),

- impact of the war period, stereotypes and prejudices, distrust towards foreigners, the fear of domination (on the Polish side) and competitive pressure (on the German side) (Heidenreich 1999),
- a relatively big cultural barrier (Krätke 2002; Leibenath & Knippschild 2005; Meinhof & Galasiński 2005; Tujdowski 2009) and language barrier in the borderland (Jańczak 2009; Wilkinson 2009),
- the fear of competition from abroad, mainly observed on the German side of the borderland prior to Poland's accession to the EU (Krätke 2002),
- as regards the organizational and legal aspects of competitiveness there is a definite similarity between the rules and methods of protection from competition. As regards Poland and Germany, due to both countries' membership of the EU, the conditions of operation of and competition between companies in the borderland area seems to be generally similar (Parisi 2010),
- a slightly peripheral location of the whole of the borderland in relation to the best developed regions of the EU,
- although the main competitive advantage of the East German borderland (compared to the rest of the country) seems to be lower labour costs, it is accompanied by lower productivity (Görzig & Gornig 2001). On the Polish side the regional variation in costs is minimal. Lower labour costs are accompanied by lower productivity compared to West Germany,
- territorial units on both sides of the border are varied both in terms of size as well as skills, which is the result of differences in the political and administrative systems of Poland and Germany (Leśniak 2006). This translates into different models of local and regional development policies.

Method of analysis

In order to define the competitive position of border areas in socio-economic systems, for Poland and Germany respectively, the principal component method was applied. The study adopted two underlying assumptions concerning variables and components (Czyż 1971): variables and components are standardized, and components are not correlated. The statistical analysis was con-

ducted using correlation matrixes. The analytical procedure consists of a few stages covering the following:

- the review of statistical material available,
- the creation of an observation matrix,
- the choice of diagnostic features and the construction of a matrix of information,
- the application of a taxonomic procedure.

Two simultaneous analytical procedures were carried out for the regions of Poland and Germany. The statistical analysis used Eurostat databases. A set of input data was selected and it initially contained 31 socio-economic features from the statistical material available describing particular aspects of competitiveness. The identification of diagnostic features was performed by applying a preliminary correlation analysis. Its purpose was to eliminate those features, which carry almost identical information, and not to reduce the space occupied by variables, for which purpose principal components analysis is used. With this in mind, a threshold of the indicator at a high level of correlation was adopted, with $r=0.89$, and significance of the correlation coefficient at $p<0.01$. This means that variables which repeat 79% of the information were eliminated.

At this stage 7 variables were eliminated from further analysis: the number of patents per one million employees, gross domestic product per employee, the participation of the employed in sections J and K, the total unemployment rate, the employment rate among women, the economic activity rate for women, the rate of economic activity among women aged 55-64. The final elimination of variables was done for Poland and Germany at the same time. For further analysis 24 features were selected¹.

¹It was: GDP per inhabitant according to PPP, share of the gross added value from sector I, share of the gross added value from sector II, the share of the gross added value from the market service sector, share of the gross added value in sections J and K, share of the gross added value from the sector of non-market services, the employed in services/industry, unemployment rate among people aged 15-24, unemployment rate among women over 15, long-term unemployment rate, total employment rate of the population over 15, share of the employed in the high-tech sector, expenditure for R&D per employee, the number of patents per one million inhabitants, birth rate indicator, net migration indicator, demographic dependency rate, share of people of pre-working age, indicator of activity of people aged over 15, economic activity indicator for the population aged 55-64, the number of people killed in car accidents per one million inhabitants, the number of places in managed accommodation per one thousand inhabitants, share of foreign tourists in the total number of tourists, indicator of net bedspace occupancy.

From the 24 selected features, 5 principal components were chosen for the region of Poland and 4 components for the German regions, which account for 78.6% and 80.1% of the common variance respectively. Due to the fact that the last component adds very little to the information on the competitiveness of the Polish regions (accounts for 8,6% of the common variance) it was not included in further analysis. The rotated component matrix was used as the basis for further discussions². The names of particular components were assigned on the basis of the features most correlated with them (Appendix 1) with the threshold value of the correlation coefficient at a level of $r=0.707$.

In the next stage the observed units were divided into homogeneous classes in the context of the selected principal components and the value of the synthetic indicators were obtained using Jenks' natural breaks method. The numerical scale was replaced by the quality scale.

The significance of components of competitiveness in the Polish-German borderland

The components selected and adopted for further analysis describe the same component of competitiveness for Poland and Germany. However, the order of the elements is different, which indicates their different significance for competitiveness in both countries.

In 2008 the competitive position on the Polish side was largely determined by the level of economic development and the innovation economy (26% of the common variance) and the demographic structure (13.9% of the common variance) (Appendix 1). In 2008 on the German side great significance was displayed by the employment situation (27.6%) and the level of development of the innovative economy (22.4%). In German regions the first two factors were extracted, and had a very similar, significant level of explaining of the common variance, which is the feature distinguishing them from the Polish regions, where there was only one determinant. On the Polish side the

²The rotation process leads to the fact that the selected factors are highly correlated with a small number of features, and the features correlate with a small number of factors. This allows one to identify them much more unambiguously.

next factors extracted (2-5) had similar meaning as regards the level of competitiveness (around 13-14% of the common variance), which indicates the diversity of competitiveness factors.

In Polish regions components 3 and 5 basically concern the employment market. Their significance is smaller compared to the German side. (Appendix 1).

On both the Polish and German sides the development of the service sector is very significant in determining the nature of regional competitiveness (DE - 16.5%, PL - 13.4%) with this component ranking as the third most important on the German side, and the fourth most important on the Polish side (Appendix 1). The difference lies in the significance of particular service sectors. In the German regions the development of the business environment sector dominates, which is typical of highly-developed economies. On the Polish side non-market services play the crucial role. They do not indicate - with the exception of education - a high level of development. On the contrary, they are a sign of a less dynamic development of the service sector.

Compared to 2002, there were no major changes in competitiveness factors on the German side. In 2002 one more component was identified, the fifth one, and this concerned demographic processes (10% of the common variance). This is a symptom of a decrease in the significance of the demographic factor in the competitiveness of the regions on the German side in 2008.

Compared to 2002, we can observe changes in the Polish regions as regards the significance and order of identifying factors, which determine the character of the competitiveness of the regions. The other dominant factors were the level of economic development and the innovation economy (26% of the common variance) and the labour market (23.4%). As we can see, the significance of the labour market factor decreased in 2008. The third factor was connected with non-industrial activity (agriculture and tourism) (13.7%). The significance of demographic factors in the competitiveness of the Polish regions also changed. In 2008 the significance of this factor increased as regards its order of appearance (rising from fourth position to second). As far as accounting for common variance is concerned, the increase is insignificant (12.8% in 2002, 13.9% in 2008).

The spatial variation in competitiveness of Polish-German border regions

When analysing the level of regional competitiveness one should bear in mind that their competitive position is largely conditioned by the competitiveness of the core areas (metropolitan hinterlands, main conurbations) (Jakubowicz & Raczyk 2003). It is accompanied by a significant variation in intraregional competitiveness, which is characteristic of the borderland, as in other Polish regions.

The spatial structure of the economic potential of Polish regions exhibits a very high level of diversity. In the Polish-German border area this diversity is significant. However, there is no clear dominance of one region in all spheres of competitiveness (Fig. 2, Fig. 3).

As regards the level of economic development and the innovation economy, the border areas are characterised by a relatively high level of development, (with the exception of the Lubuskie Region (the last class)). In the first case it results from the influence of important metropolitan centres (Wrocław, Szczecin), the location of many foreign and domestic investments, the development of the business environment sector, a high level of professional activity and human resources. The Lubuskie Region is deprived of an extensive metropolitan region. Thus, the activity of investors in the region is not intensive and the business environment is underdeveloped. The economic structure is dominated by the traditional sectors of the economy.

The Zachodniopomorskie and Lubuskie Regions have favourable demographic structures. This mainly influences the high birth rate and positive migration balance. As a result, the regions are characterised by low values of demographic dependency ratio and share of the pre-working population. A very unfavourable situation is observed in this respect mainly in the Dolnośląskie Region and is caused by a negative birth rate and the existence of large areas affected by trends to depopulation (the Sudety Mountain).

The economic activity and level of employment of the borderland population is low (Lubuskie, Dolnośląskie) or even very low (Zachodniopomorskie). This is largely the effect of the way statistical data concerning the economic activity of the population was gathered. The data includes all household members of individual farmers, which

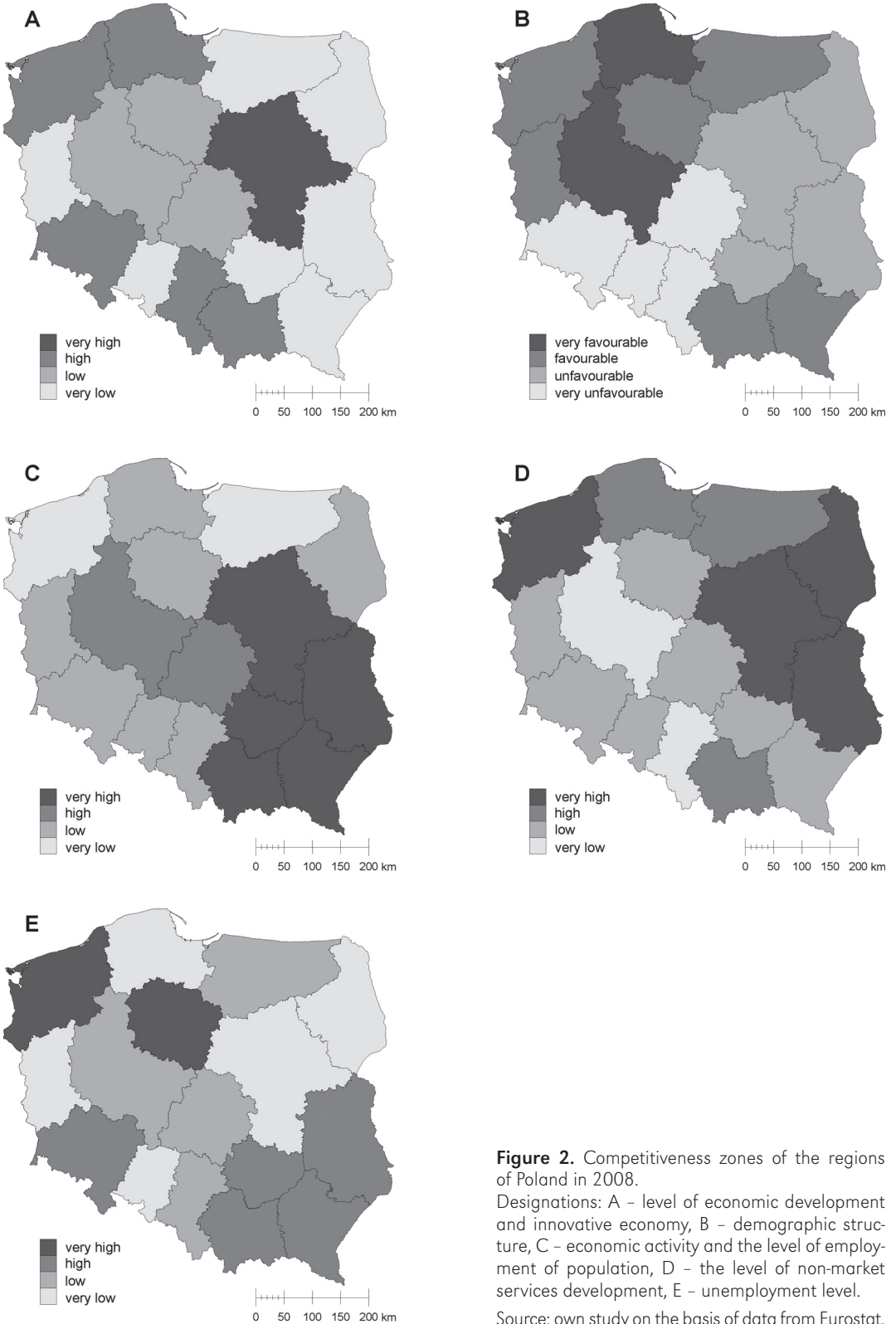


Figure 2. Competitiveness zones of the regions of Poland in 2008.

Designations: A – level of economic development and innovative economy, B – demographic structure, C – economic activity and the level of employment of population, D – the level of non-market services development, E – unemployment level.

Source: own study on the basis of data from Eurostat.

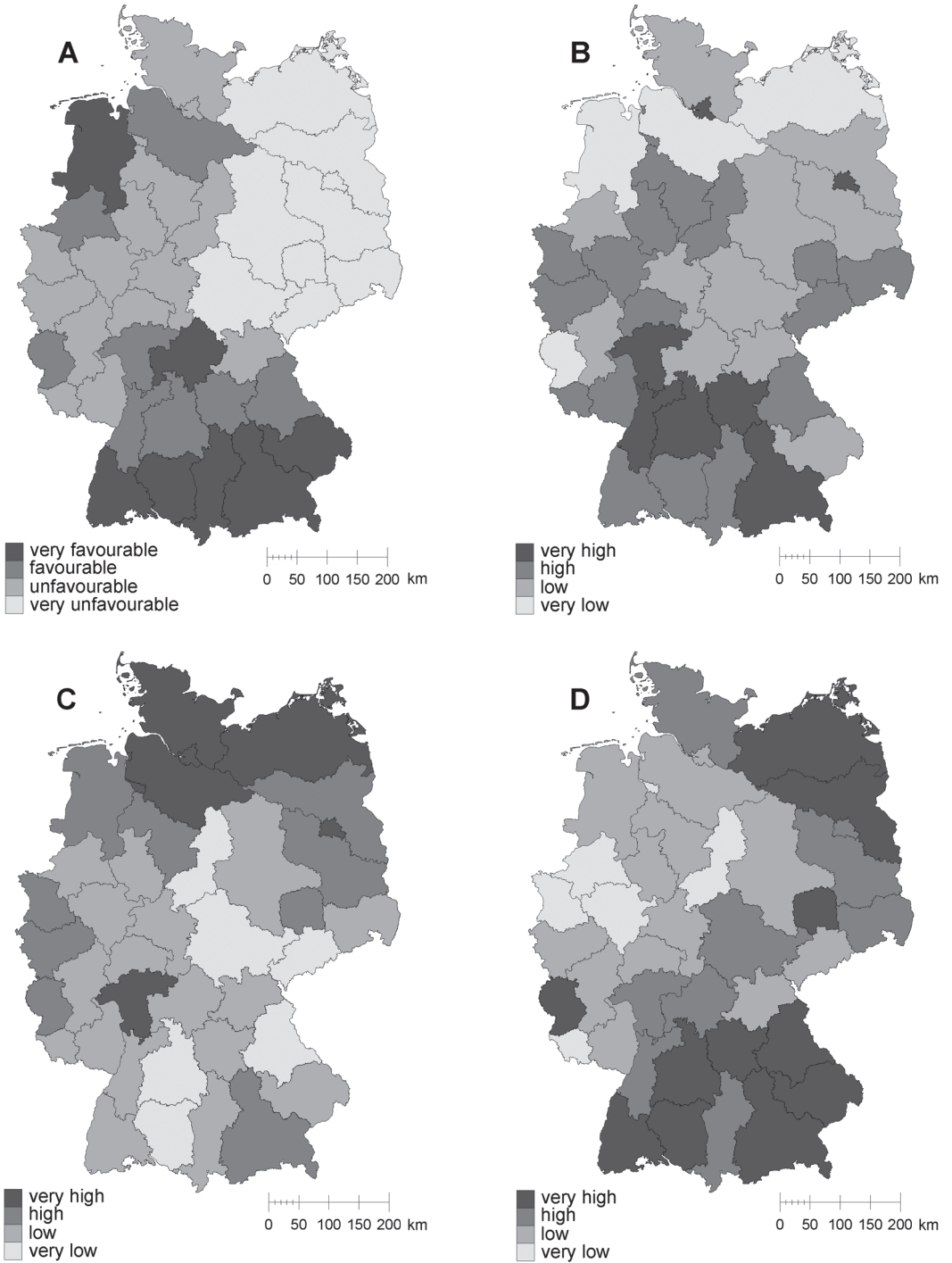


Figure 3. Competitiveness zones of the regions of Germany in 2008. Designations: A – situation on the labour market, B – level of innovative economy development, C – level of the service sector development, D – economic activity level. Source: own study on the basis of data from Eurostat.

significantly overestimates the results obtained in the rural areas (south-eastern part of Poland). The actual spatial variation in the level of activity, particularly in the industrial sector, is probably the result of the level of economic development. In this context the borderland should achieve a better position compared to the rest of the country.

When analysing the development of non-market services, it needs to be noted that from the regional competitiveness point of view this component can be interpreted in two ways: on the one hand it indicates the development of the service sector (at least a part of it), and on the other, it signifies the underdevelopment of important spheres of service activity (especially the business environment services sector), and very limited development of the industry sector. This may be connected with economic structures typical of peripheral areas. Although the vast majority of the borderland is characterised by a low participation of the non-market services sector, it is very difficult to unambiguously assess the significance of these spatial structures for competitiveness.

The unemployment level component is connected with the unemployment rate among teenagers, the unemployment rate among women and the level of long-term unemployment. The borderland shows high variation in this respect: from the highest values of unemployment indicators which are found in the Zachodniopomorskie region to the relatively low values in the Lubuskie region.

The crucial factor determining the competitiveness of the German border area was the introduction of market changes, which occurred after 1991. The federal government was highly involved in the process. An important role was also played by actors in the socio-economic sphere who came from the richest areas of the country, and which led to the regions of the western and southern part of the country becoming the greatest beneficiaries of the consolidation of Germany (see Steffel 1999). Economic development in eastern Germany was connected with radical reorganisation, and in many cases a complete collapse of the most important economic enterprises of the time. This was accompanied by investments from the richer regions. As Steffel (1999) points out they were mainly connected with the trade and food-processing industry sectors and were motivated by the introduction into a new labour market, lower costs of labour and

production, large workforce resources and proximity of the markets for the goods in Central-Eastern Europe. The spatial distribution of economic potential in Germany reflects profound, historically-based differences between the areas of the former German Democratic Republic and Federal Republic of Germany. In relation to the border area this factor is additionally reinforced by the peripheral geographical location. As a result, these regions are typified by underdevelopment and numerous problems which are structural in nature.

As far as the labour factor is concerned, the whole border area is characterised by a very unfavourable situation in relation to the remaining German regions. This concerns both the volume of the labour market, its scale, and the structure of the unemployment. This occurs despite the high intensity of labour-related migration to the richest areas. This problem is partly reinforced by the social security system, which neither encourages the search for, nor the acceptance of low-income employment.

The factor connected with the level of development of the innovation economy indicates a clear geographical regionalisation on a national scale – the southern regions are characterised by higher values of this component compared to the north of the country. The border area can be described as a region of low level of innovation, but it is very diverse. In this respect Berlin together with its immediate surroundings (Greif 2001) and Dresden stand out positively. The region of Mecklenburg exhibits the lowest level of innovation, which can be explained by the significance of agriculture and tourism in the economic structure of this region.

The level of development of the service sector in the economic structure is the function of two factors:

- the existence of large metropolitan regions (e.g. Berlin, Hamburg),
- slow development of the industrial sector. However, some areas of the service sector enjoyed favourable conditions e.g. tourism (Mecklenburg, Schleswig-Holstein).

The border area is characterised by high, or even very high levels of development of the service sector. This is, however, mainly the result of the regression of industrial activity. Usually, this is not connected with new forms of service activity (less knowledge-intensive services).

Spatial variation of the economic activity factor in Germany showed some relationship with the level of economic development (e.g. Bavaria), as well as a fixed pattern of economic activity resulting from historical conditions (the areas of the former German Democratic Republic). In this context the economic activity of the borderland was high, or even very high. However, this did not translate into success in the economic sense. This also indicated the existence of great potential resources (workforce) which, due to the high level of long-term unemployment, were subject to permanent degradation. This is also a sign of the significant investment needs in the border area, especially in relation to time-consuming ventures. A relatively low level of utilisation of the existing potential of workforce resources indicates a role of the factor of competitiveness of the regions located on the other side of the border (Polish as well as Czech) which presumably is important. In this context it can affect cross-border relationships and make them more competition-orientated rather than cooperation-centred.

Conclusions

The study carried out showed that in the Polish-German borderland area the significance of the competitive factors operating also differs. This results from the very great differences in the level of development. Between 2002 and 2008 the greatest changes in competitiveness conditions took place on the Polish side. They did not, however, lead to the unification of competitiveness conditions on both sides of the border. Despite the intensity of the integration processes (Poland's accession to the EU in 2004 and to the Schengen Zone in 2007) we can see that the competitive advantages differ between the Polish and the German sides.

In the context of Friedman's core-periphery concept as regards the German border area, the peripheral geographical location is twinned with a peripheral position in the economic sense (with the exception of Berlin). The competitive posi-

tion of the Polish border regions, on the other hand, *vis-à-vis* all other regions within the country varies. This concerns both the spatial patterns of the general level of competitiveness, as well as each of its components. Certainly, the peripheral geographical location coincides with a peripheral economic position.

A characteristic feature of the Polish-German borderland is the fact that the regions characterised by a higher level of socio-economic development (the German side) at the same time constitute peripheries on a national scale. On the other hand, however, much less developed regions on the Polish side may be, in many cases they are described as the core regions. This situation affects the opportunities for the development of cross-border co-operation, as the natural scope of interest of both the Polish as well as the German sides of the borderland will be to try to intensify co-operation with the core German regions and not co-operate with each other. Therefore, there might appear strong relationships in the borderland which are competitive in nature (especially as regards competing for social, financial or human resources capital etc.). At the same time, there are possibilities for creating and realising a common Polish-German competition between the borderland and outside regions (competition through cooperation), especially in the situation where the sources of competitive advantages on both sides of the border are different.

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Editor's note:

Unless otherwise stated, the sources of tables and figures are the authors, on the basis of their own research.

Appendix 1. Rotated components description for Polish and German regions in 2002 and 2008³

A) Rotated components description for Polish regions in 2002

The name of component	Variables	Correlation co-efficient	% of the common variance
Level of economic development and innovation economy	- GDP per inhabitant according to PPP (purchasing power parity), - share of the gross added value in sections J and K, - expenditure for R&D per employee, - number of patents per one million inhabitants, - net migration indicator.	0.950 0.908 0.887 0.842 0.776	27.3
Situation on the labour market	- the total employment rate of the population over 15 years old, - unemployment rate among women over 15 years old, - unemployment rate among people aged 15-24, - economic activity indicator for the population aged 55-64, - indicator of activity of people above the age of 15, - long-term unemployment rate.	0.984 -0.941 0.855 0.835 0.797 -0.791	23.4
Non-industry activity	- share of the gross added value from sector II, - number of people killed in car accidents per one million inhabitants, - employment in services/industry, - share of gross added value from sector I.	-0.802 0.782 0.723 0.678	13.7
Demographic structures	- birth rate indicator, - demographic dependency ratio, - share of people of pre-working age.	0.959 -0.766 0.762	12.8
Tourist functions	- number of bed spaces in collective tourist accommodation establishments per 1,000 inhabitants, - share of the gross added valued from the service sector market.	0.748 0.696	7.9

Source: own study on the basis of data from Eurostat

B) Rotated components description for German regions in 2002

The name of component	Variables	Correlation co-efficient	% of the common variance
Situation on the labour market	- unemployment rate among people aged 15-24, - unemployment rate among women over 15 years old, - total employment rate of the population over 15 years old, - share of people of pre-working age, - total employment rate of the population over 15 years old, - share of gross added value from the non-market services sector.	-0.950 -0.941 -0.882 0.817 0.781 -0.779	27.7
Level of development of the innovation economy and traffic congestion	- share of gross added value from sector I, - number of people killed in car accidents per one million inhabitants, - share of the employed in the high-tech sector, - expenditure on R&D per inhabitant.	-0.918 -0.829 0.676 0.647	20.0
Level of service sector development	- the share of gross added valued from the non-market service sector, - employed in services/industry, - share of gross added value from sector II.	0.869 0.832 -0.807	15.3
Economic activity level	- economic activity indicator of people over 15 years old, - economic activity indicator of people aged 55-64.	0.875 0.813	10.8
Demographic structures	- demographic dependency ratio, - birth rate indicator.	-0.892 0.691	9.9

Source: own study on the basis of data from Eurostat

³ Explanations (according to NACE Rev 1.1 codes):

- sector I - includes sections A, B,
- sector II (industry) - includes sections C, D, E, F,
- sector III (services) - includes sections G-Q,
- section J - Financial intermediation, section K - Real estate, renting and business activities,
- non market service sector - includes sections L-Q,
- high-tech sector - codes: 24.2, 30, 32, 33, 35.3.

C) Rotated components description for Polish regions in 2008

The name of component	Variables	Correlation co-efficient	% of the common variance
Level of economic development and the innovation economy	- GDP per inhabitant according to PPP (purchasing power parity), - share of gross added value in sections J and K, - share of employed in the high-tech sector, - expenditure for R&D per employee, - net migration indicator.	0.914 0.917 0.869 0.839 0.833	25,9
Demographic structures	- birth rate indicator, - share of population of pre-working age, - demographic dependency ratio.	0.922 0.916 -0.789	13,9
Economic activity and level of employment of population	- indicator of activity of people over 15 years old, - the total employment rate of the population over 15 years old, - economic activity indicator for the population aged 55-64.	0.771 0.717 0.666	13,7
The level of non-market services development	- those employed in services/industry, - share of gross added value from sector II, - share of gross added value from the non-market services sector.	0.868 -0.849 0.714	13,4
Unemployment level	- unemployment rate among women over 15 years old, - long-term unemployment rate, - unemployment rate among people aged 15-24.	0.888 0.809 0.796	11,7

Source: own study on the basis of data from Eurostat

D) Rotated components description for German regions in 2008

Name of component	Variables	Correlation co-efficient	% of common variance
Situation on the labour market	- unemployment rate among women over 15 years old, - long-term unemployment rate, - share of people of pre-working age, - total unemployment rate, - total employment rate, - demographic dependency ratio.	-0.960 -0.954 0.930 -0.867 0.724 -0.750	27.6
Level of development of the innovation economy and traffic congestion	- share of gross added value from sector I - share of employed in the high-tech sector, - expenditure on R&D per inhabitant, - number of people killed in car accidents per one million inhabitants.	-0.862 0.791 0.741 -0.721	22.4
Level of service sector development	- share of gross added value from sector II, - the employed in services/industry, - the share of gross added valued from the non-market service sector.	-0.896 0.885 0.767	16.5
Economic activity level	- economic activity indicator of people over 15 years old, - economic activity indicator of the people aged 55-64.	0.934 0.829	13.7

Source: own study on the basis of data from Eurostat

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