ECONOMIC ACTIVITY IN PERIPHERAL REGIONS – A CASE OF POLAND

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ABSTRACT

The Author discussed, explored, evaluated and diagnosed the disparities of economic activity on regional level. The study embraced five peripheral regions of Poland, namely five Eastern provinces (voivodships), i.e. Lublin Province, Podlasie Province, Subcarpathia Province, Świętokrzyskie Province and Warmia-Masuria Province. The aforementioned five voivodships were compared to Poland and Poland's central region, i.e. Masovia Province. The following elements were taken into consideration: employment rate and employment by sectors, unemployment rate, GDP per capita, number of economic entities and number of natural persons conducting economic activity, investment outlays and gross expenditure on R&D activity, as well as net internal and external migration for permanent residence. In order to observe the possible changes over the time the situation in 2005 and 2017 was studied. Additionally, the total value of projects co-financed by the European Union through Structural Funds and Cohesion Fund within 2007–2013 period and 2014–2020 perspective was presented and analyzed. The research tools used in the article included literature studies, critical thinking, descriptive analysis and comparative analysis, in that the selected statistical method of multivariate comparative analysis, i.e. Hellwig's taxonomic measure of development. Statistical material provided by Central Statistical Office (Warsaw, Poland) and taken from Statistical Yearbooks of the Regions 2006, 2007, 2017 and 2018 was used for the analysis. The obtained results indicate the persistence of huge regional disparities of economic activity, economic potential and socioeconomic development despite the implementation of EU Policy of Social, Economic and Territorial Cohesion. Hence, it was possible to positively verify the research hypotheses: both the first hypothesis assuming that the gap between the studied peripheral regions and the rest of Poland was not reduced and the second hypothesis assuming that the participation in the processes of regional economic integration, and in particular in EU Policy of Economic, Social and Territorial Cohesion, had only limited impact on the reduction of disparities between Poland's regions.

KEYWORDS: *economic activity, economic potential, development, Poland, peripheral region.*

JEL CODES: R11, R12, O10, O18

Introduction

Considerable territorial disparities in economic activity are observed in market economies. Interregional disparities are permanent in their character. They result in a clear division of central and peripheral regions in spatial structure of a national economy. Persisting differences in economic potential of development remain one of crucial problems of contemporary economies. Such disparities counteract the process of sustainable socioeconomic development. Relatively low economic potential and low intensity of economic activity are characteristic for peripheral regions. The need for more dynamic economic activity, as well as the necessity to promote smart, sustainable and inclusive growth have been stressed and in the Europe 2020 Strategy. Hence, the EU focused its Economic, Social and Territorial Cohesion Policy 2014–2020 on the priorities of the Europe 2020 Strategy (Borowiec, 2011; Pawlas, 2014).

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Problem: The main problem of this article is the exploration, evaluation and diagnosis of economic activity and economic potential of Poland's peripheral regions against the background of Poland and its central region.

Purpose: The article aims at presenting economic activity of peripheral regions and to identify and evaluate selected elements of the disparities between the center and the peripheral regions of Poland. The additional objective is to make a hierarchy of the studied Poland's peripheral regions, its central region and Poland as a whole according to the synthetic index measuring economic activity. Moreover, an attempt has been made to assess the possible significance of European Union Structural Funds and Cohesion Fund for the reduction of disparities between the central region and the peripheral ones and to make a list of recommendations for more effective future implementation of EU Policy of Economic, Social and Territorial Cohesion in Poland.

Object: Peripheral regions of Poland, namely 5 Eastern provinces (voivodships), i.e. Lublin Province, Podlasie Province, Subcarpathia Province, Świętokrzyskie Province and Warmia-Masuria Province lied in the center of research. They were compared to Poland's central region i.e. Masovia Province and to Poland as a whole. Research was conducted for the years 2005 and 2017.

Tasks: 1 – To select diagnostic variables. 2 – To evaluate disparities in economic potential and economic activity. 3 – To analyze crucial barriers. 4 – To assess the role of EU Structural Funds and Cohesion Fund in the process of development of peripheral regions.

Methods: The research tools used in the article included literature studies, descriptive analysis and comparative analysis, as well as critical thinking. Due to the complexity of the category of economic activity, the selected method of multivariate comparative analysis was adopted, namely Hellwig's taxonomic measure of development. Statistical information provided by Central Statistical Office (Warsaw, Poland) and taken from Statistical Yearbooks of the Regions 2006, 2007, 2017 and 2018 was used for the analysis.

1. Literature review

There have been numerous studies focusing on peripheral regions, their problems and limitations. Problems with insufficient transport infrastructure and inadequate transport services as a barrier for development of peripheral regions were stressed by Jacobsen and Kristiansen (1992), Laurino, Beria, Debernardi and Ferrara (2017), Merkert (2012), Fageda, Suárez-Alemán, Serebrisky and Fioravanti (2018), as well as Pojani and Stead (2018). Preston (1995) assessed the challenges and implications of competition in the area of telecommunications infrastructures in the European peripheral regions. Greenberg, Farja and Gimmon (2018) pointed out to the distance-related obstacles of the location of peripheral regions and suggested that participation of entrepreneurs in local and regional networks, alongside with extra-regional and national networks could help reduce the negative effects of peripheral location. A relatively low level of urbanization is characteristic for peripheral regions; Gatrell (1999) described peripheral non-urban regions as "branch plant" economies and "back office" economies, while possibilities, directions and effects of urbanization of peripheral rural regions of Sweden were studied by Persson (1990). Coronado, Acosta and Fernández (2008) analyzed internal and external factors determining attitudes towards innovation of companies located in peripheral regions. Insufficient R&D expenditure in peripheral regions is often seen as considerable barrier for their further development; Hewitt-Dundas and Roper (2011) indicated that the establishment of publicly funded research centers in peripheral regions significantly increased their regional competitive advantage. Moreover, De Noni, Orsi and Belussi (2018) suggested that collaborations of peripheral regions with highly innovative and knowledge-intensive regions could positively affect the innovation performances of peripheral lagging-behind regions. Cost-oriented agile innovation in peripheral regions was also identified by Shala, Hajrizi, Hoxha and Stapleton (2015). Martinez Sanchez and Pastor Tejedor (1995) highlighted the importance of creating and strengthening university-industry links in peripheral regions as exemplified by Spanish peripheral regions, while Miguélez and Moreno (2015) indicated the significance of knowledge flows and the absorptive capacity of regions for the possibility of promoting the development of peripheral

regions. Komninos and Sefertzi (1998) concentrated on neo-industrialization as exemplified by peripheral regions of Northern Greece. Landesmann and Stöllinger (2019) made an attempt to indicate the proper industrial policy for peripheral regions and economies, the policy which could result in necessary structural changes and creation of stronger and more effective trade and global production networks. The possible participation of peripheral regions in complex processes of sustainability transitions on the example of a selected peripheral mountain region of Austria was studied by Kratzer (2018). McDonald, Buckley, Voss, Cross and Chen (2018), as well as Villaverde and Maza (2015) carried out research focusing on locational determinants of inflow of capital in the form of foreign direct investment into peripheral regions of emerging economies and pointed out to the significance of considering interactions between place and space. Hitchens (1999) studied and evaluated the possible implications of environmental regulations for competitiveness of EU peripheral regions. Meleddu and Pulina (2018) assessed impact of public spending on renewable energy in Italian regions. Adams Quark (2008) indicated the contradictions of uneven development for both companies and governments and stressed the capital and state rescaling strategies in peripheral regions. Factors enabling and stimulating internationalization of companies from peripheral regions and the significance of the process of their trans-nationalization for promoting the development of the peripheral region were studied by Dubois (2016). Dubois undertaken case studied of selected companies in peripheral region of Northern Sweden. Meijers and van der Wouw (2019) focused on the analysis of specific problems of rural peripheral regions. Mikhaylov, Mikhaylova and Kuznetsova (2018) concentrated on coastal-border regions in their research; they tried to assess coastalization effect and spatial divergence. Medeiros (2019) studied the specific problems of border peripheral regions in the context of cross-border transport and cross-border mobility. Di Benedetto, Germanà and Trapani undertook comparative analysis of central and peripheral regions with focus on how they provide for safety, sustainability, and welfare and how they are connected with the sense of identity and belonging. Grumo and Ivona (2005) evaluated the development of tourism in peripheral regions on the example of Italy. The issue of tourism in peripheral Finnish cities was undertaken in research by Tiitu (2018). The problem of net emigration from peripheral regions was studied by Rauhut and Littke (2016) (they showed the example of Swedish peripheral regions). Moreover, Vining and Pallone (1982) made an attempt to explain migration flows between core and peripheral regions. The European Union is usually called the union of regions. Scott (2009) stressed the significance of balanced development of regions and (still huge) regional disparities in the European Union. Dusek, Lukács and Rác (2014) studied development differences among the Hungarian regions. Leszczewska (2010) studied economic activity in Poland's peripheral regions in 2001 and 2008.

2. Theoretical background

The term of economic activity embraces "actions that involve the production, distribution and consumption of goods and services at all levels within a society" (Business Dictionary, 2019; Milewski & Kwiatkowski, 2017: 7).

Economic activity constitutes a vital element of economic potential. Economic potential, however, is a wider economic category. Economic potential of an economy consists of its citizens' economic activity, accompanied by the level of income, labor market situation and entrepreneurship. Moreover, inflow of foreign capital and condition of natural environment should be taken into consideration.

According to Routledge Dictionary of Economics development can be defined as "the movement of an economy from agricultural activities using simple technology to the production of industrial products and a range of services using modern technology", but also as "the cumulative growth of per capita income, accompanied by structural and institutional changes" (Rutherford, 2002: 139). The Princeton Encyclopedia of the World Economy underlines the necessity to take into consideration several elements while assessing economic development, namely: development of a country's economic system (structural changes, in that urbanization, the rise of firms' size, relative decline of agricultural sector in employment and output with

simultaneous expansion of manufacturing and services), reduction of poverty (wider distribution of gains from economic development within society) and sustainability of development (Davis, 2009).

Encyclopedia Britannica defines region (in the social sciences) as "a cohesive area that is homogeneous in selected defining criteria and is distinguished from neighboring areas or regions by those criteria. It is an intellectual construct created by the selection of features relevant to a particular problem and the disregard of other features considered to be irrelevant" (Encyclopedia Britannica, 2019). In the undertaken research the category of region in administrative sense was adopted; the research focused on selected Polish regions on NUTS 2 level, i.e. voivodships – provinces (Central Statistical Office, 2018a).

Regional disparities in economic development are strongly related to regional activity, which in turn relates to regional economic potential. Economists and politicians determine central and peripheral regions. Central regions usually take advantages from their geopolitical location, technical infrastructure conditions, access to well-educated labor, preferential access to capital and technology, relatively high level of investment attractiveness and – therefore – comparatively big inflow of foreign capital. Moreover, central regions are usually closer to the centers of administrative decisions. On the contrary, peripheral regions are featured by unfavorable geopolitical location, poor access to well-educated workers, limited access to capital and modern technology, low investment attractiveness resulting in limited possibility to attract foreign capital. Moreover, poor infrastructure and huge distance from administrative, industrial and political centers should be mentioned here (Leszczewska, 1010).

When it comes to the sectoral structure of economy, peripheral regions are mostly featured by overemployment in agriculture and traditional industry with simultaneous underemployment in services sector. Moreover, intensity of research and development activity in peripheral regions is low, which results in limited innovation activity and innovativeness of peripheral regions.

Net emigration of population constitutes another important barrier for economic activity and economic development of peripheral regions. Population of peripheral regions is attracted by better labor market situation and higher standard of living offered by central regions.

According to neoclassical theory market mechanism should result in gradual reduction of regional disparities in development. There is however strong evidence from EU Member States showing that the reality is just the opposite. Regional disparities grow over time despite the market economy and its forces including market mechanism. Moreover, the integration process implemented by the European Communities and, later, European Union, resulted in further growth of the level of regional divergence. Therefore, the European Communities decided to introduce Common Regional Policy in the late 1980s (1988). The abovementioned policy evolved over time and currently it is implemented as EU Policy of Economic, Social and Territorial Cohesion. Policy of regional development aims at reducing economic, social and territorial disparities experienced by both EU Member States and by individual regions in EU economies. EU Policy of Economic, Social and Territorial Cohesion, using structural funds, i.e. European Regional Development Fund and European Social Fund, and Cohesion Fund, should be viewed as an important element of the promotion of economic development of poor regions of the EU, including peripheral ones (Moussis, 2015; Grosse, ed., 2017).

3. Material and methods

The main aim of research was to study, explore and evaluate economic activity in peripheral regions of Poland. The parallel objective was to diagnose the disparities in economic activity between Poland's peripheral regions and the rest of Poland with special focus given to distance to the center of Poland, i.e. Masovia Province. As a result of undertaken operationalization, the decision was taken to take into consideration the following indices in the research process:

- employment rate (%);
- employment by sectors (%);
- unemployment rate (%);
- GDP per capita (PLN);

- number of economic entities per 10 thousand population;
- number of natural persons conducting economic activity per 10 thousand population;
- investment outlays per capita (PLN);
- gross expenditure on R&D activity per capita (PLN);
- net internal and external migration for permanent residence per 1000 population.

Statistical information provided by Central Statistical Office (Warsaw, Poland) and taken from Statistical Yearbook of the Regions 2018, Statistical Yearbook of the Regions 2017, Statistical Yearbook of the Regions 2007 and Statistical Yearbook of the Regions 2006 was used. Tables 1-7 present the respective statistical material.

The research methods included literature studies, descriptive analysis, comparative analysis and critical thinking. Due to the complexity of the category of economic activity, the selected method of multivariate comparative analysis was adopted, namely Hellwig's taxonomic measure of development. Hellwig's method of multivariate comparative analysis made it possible to make a hierarchy of the analyzed subjects, i.e. Poland's peripheral provinces, Poland's central region and Poland as a whole in terms of economic activity measured by the synthetic index. For the purpose of taxonomic analysis, the following ten diagnostic variables were used: employment rate (%), share of employment in services sector (%), share of employment in agriculture sector (%), unemployment rate (%), number of economic entities per 10 thousand population, number of natural persons conducting economic activity per 10 thousand population, investment outlays per capita, gross expenditure on R&D activity per capita, GDP per capita, as well as net internal and external migration for permanent residence per 1000 population. After selecting the set of diagnostic variables, the character of each of the variables was determined. The majority of variables were considered stimulants. The following two variables were treated as de-stimulants: unemployment rate and share of employment in agriculture sector. Variables were standardized and development model was constructed – a model unit, where diagnostic variables were determined according to the rule, where: $z_{0j} = \max_i (z_{ij})$ for stimulants or $z_{0j} = \min_i (z_{ij})$ for de-stimulants. The distance of *i*-unit from the development model was calculated using Euclid's measure:

$$d_{oi} = \sqrt{\sum_{j=1}^{m} (z_{ij} - z_{oj})^2} \ .$$

Finally, taxonomic measure of development (TMD) was calculated according to the formula (Hellwig, 1968; Pluta, 1986; Nowak, 1990; Pawlas, 2017):

$$\text{TMD}i = 1 - \frac{d_{oi}}{d_o}, \ i = 1, 2, ..., n \ ,$$

where: $d_0 = \overline{d}_o + 2S_0$, and:

$$\overline{d}_0 = \frac{1}{n} \sum_{i=1}^{n} d_{oi} \ , \ S_0 = \sqrt{\frac{1}{n} \sum_{i=1}^{n} (d_{oi} - \overline{d}_o)^2} \ ,$$

while: TMD$i \in$ [0; 1], for i=1,2,...,n.

The last stage of the taxonomic research was to arrange the analyzed subjects in order according to the level of economic activity expressed by synthetic index TMD.

The main research hypothesis that was put forward was the statement that regional disparities between the peripheral regions and the rest of Poland and its central region were not significantly reduced in the analyzed period of time. Another research hypothesis was the statement that the participation in the processes of regional economic integration, and in particular in EU Policy of Economic, Social and Territorial Cohesion, had very limited impact on the reduction of disparities between Poland's regions (provinces, voivodships).

4. Research results

Before the multivariate comparative analysis was adopted, the situation in peripheral regions of Poland in regard to each and every element (variable) one by one was compared to the situation in its central region (Masovia Province) and to Poland in general.

The overall situation on the market of labor reflects the economic activity. On the other hand, the economic activity is reflected in the situation on labor market. Table 1 presents number of employed persons per 1000 population and unemployment rate in five peripheral regions of Poland, in Masovia Province as Poland's central region, as well as in Poland as a whole. Intensity of employment in Poland increased significantly from 2005 to 2017. The number of employed persons per 1000 population rose from 329.6 in 2005 to 400 in 2017. Naturally, Masovia Province represented a much higher intensity of employment in the analyzed period of time: 400.7 employed persons per 1000 population in 2005 and 486 employed persons per 1000 population in 2017. On the other hand, as anticipated, the intensity of employment was much lower in the peripheral regions. In 2005 the number of employed persons per 1000 population in five peripheral provinces ranged from 277.8 in Warmia-Masuria Province (84.3% of Poland's average and 69.3% of Masovia Province's index) to 338.4 in Świętokrzyskie Province (i.e. 102.7% of Poland's average employment rate and 84.5% of employment rate observed in Masovia Province). The average for five studied peripheral regions amounted to 315.8 (i.e. 95.8% of Poland's average employment rate and 78.8% of employment rate observed in Masovia). In 2017 the number of employed persons per 1000 population in the analyzed peripheral regions of Poland ranged from 316 in Warmia-Masuria Province (79% of Poland's average and 65% of Masovia Province's index) to 400 in Subcarpathia Province (100% of Poland's average and 82% of Masovia Province's index) and the average number of employed persons per 1000 population in the peripheral Poland's provinces amounted to 372.6 (i.e. 93.1% of Poland's average and 76.7% of Masovia Province's index).

Table 1. Employment and unemployment – peripheral regions vs. Poland and Masovia Province

Specification	Employed persons per 1000 population		Unemployment rate (%)	
	2005	2017	2005	2017
Lubelskie	334.7	396.0	17.0	7.2
Podkarpackie	304.6	400.0	18.5	8.4
Podlaskie	323.4	365.0	15.6	4.7
Świętokrzyskie	338.4	386.0	20.6	7.0
Warmińsko-Mazurskie	277.8	316.0	27.2	7.2
Poland	329.6	400.0	17.6	4.9
Mazowieckie	400.7	486.0	13.8	4.8

Legend: Lubelskie – Lublin Province; Mazowieckie – Masovia Province; Podlaskie – Podlasie Province; Podkarpackie – Subcarpathia Province; Świętokrzyskie – Świętokrzyskie Province; Warmińsko-Mazurskie – Warmia-Masuria Province.

Source: Central Statistical Office, 2019; Central Statistical Office, 2007.

Unemployment constituted huge problem for the Polish economy and all its regions in 2005. Unemployment rate equaled 17.6% then, and even in Masovia Province it amounted to 13.8%. The problem of unemployment was much more intense in Poland's peripheral regions. Only in the case of Podlasie Province unemployment rate in 2005 was lower than on average in Poland – it equaled 15.6%. In 2005 Warmia-

Mazuria Province noted 27.2% unemployment rate (i.e. 154.5% of Poland's average employment rate and 197% of employment rate observed in Masovia Province) and the average for five studied peripheral regions amounted to 19.8% (i.e. 112.5% of Poland's average employment rate and 143% of employment rate observed in Masovia Province). The problem of unemployment was gradually and significantly reduced in Poland and all its regions between 2005 and 2017. Regional disparities, however, remained. In 2017 average unemployment rate in Poland amounted to 4.9%, while in five analyzed peripheral regions it ranged from 4.7% in Podlasie Province) to 8.4% in Subcarpathia Province. Average unemployment rate for the peripheral regions of Poland in 2017 equaled 6.9% (i.e. 140% of Poland's average unemployment rate and 143% of unemployment rate noted in Masovia Province). In the case of Subcarpathia unemployment rate constituted 171.4% of Poland's average and 175% of Masovia Province's rate of unemployment.

Table 2. Employment by main sectors – peripheral regions vs. Poland and Masovia Province

Specification	2005			2017		
	Agriculture, Forestry & Fishing	Industry & Construction	Services	Agriculture, Forestry & Fishing	Industry & Construction	Services
Lubelskie	38.2	17.9	43.9	36.6	17.9	45.5
Podkarpackie	24.9	27.8	47.3	30.5	25.3	44.2
Podlaskie	36.0	18.5	45.5	29.4	21.2	49.4
Świętokrzyskie	33.1	22.3	44.6	31.1	22.6	46.3
Warmińsko-Mazurskie	17.0	28.9	54.1	15.7	29.7	54.6
Poland	17.1	27.9	55.0	15.6	26.6	57.8
Mazowieckie	15.5	21.4	63.1	11.6	19.0	69.4

Source: Central Statistical Office, 2019; Central Statistical Office, 2007.

It is believed that the process of socioeconomic development of a national economy results in gradual decrease of employment in agriculture. For some time, the share of industry in employment should indicate an upward tendency, while in the case of postindustrial stage of economic development, it should no longer be observed: the share of industry in employment should be constant or even decreasing a bit, while a significant and continuous rise of the importance of services sector in employment should be noted. Table 2 presents employment by main sectors in the analyzed five peripheral regions of Poland versus Poland and Masovia Province as its central region. The gap is considerable and easily visible in the case of four out of five peripheral regions of Poland, namely: Lublin Province, Subcarpathia Province, Podlasie Province and Świętokrzyskie Province, where the share of employment in agriculture, forestry and fishing amounted to over 33% on average in 2005 and to 31.9% in 2016, while for Poland it amounted to 17.1% in 2005 and 15.6% in 2016. When it comes to Warmia-Masuria Province the situation was much better: the share of agriculture, forestry and fishing in employment in this province equaled 17% in 2005 and 15.7% in 2016, which means it was practically the same as for Poland as a whole. On the other hand, employment in agriculture, forestry and fishing in Masovia province amounted to 15.5% in 2005 and it was reduced by almost 4% points from 2005 to 2016 when it equaled 11.6%. The biggest overemployment in agriculture, forestry and fishing was observed in Lublin Province (38.2% in 2005 and 36.6% in 2016), i.e. the distance between Lublin Province and Masovia Province amounted to almost 23% points in 2005 and it rose up to 25% points in 2016. The share of services sector in employment in Poland amounted to 55% in 2005 and it increased up to 57.8% in 2016. Masovia Province noted a 6.3% points increase in the share of services sector in employment from over 63% in 2005 to 69.4% in 2016. The situation in Warmia-Masuria was similar to Poland's average in 2005: the share of services sector in employment in Warmia-Masuria amounted to 54.1%, i.e. the gap was less than 1% point. In 2016 the gap amounted to over 3% points (the share of employment in services sector in Warmia-Masuria amounted to 54.6%). In the case of other four peripheral regions underdevelopment of the services sector was much bigger: the share of employment in services sector in those regions amounted to 45% on average

in 2005 and to 46.4% in 2016. In 2005 the lowest share of services sector in employment was characteristic for Lublin Province (less than 44%), while in 2016 the worst situation was noted in Subcarpathia province (44.2%). It is worth stressing here that Subcarpathia Province was the only one region which noted a drop in the share of services sector in employment in the analyzed period of time.

Table 3. GDP per capita – peripheral regions vs. Poland and Masovia Province

Specification	GDP per capita (PLN)		GDP per capita (%)	
	2005	2016	2005	2016
Lubelskie	17591	33371	68.3	68.9
Podkarpackie	17789	34120	69.0	70.4
Podlaskie	19075	34299	74.0	70.8
Świętokrzyskie	19274	34633	74.8	71.5
Warmińsko-Mazurskie	19709	34514	76.5	71.3
Poland	25757	48432	100.0	100.0
Mazowieckie	40817	77359	158.4	159.7

Source: Central Statistical Office, 2019; Central Statistical Office, 2008.

GDP per capita is often used as a complex measure of economic development (though not a perfect one). The higher the level of economic development, the higher the GDP per capita. Table 3 presents GDP per capita for five peripheral regions of Poland versus Masovia Province and Poland as a whole. GDP per capita in 2005 ranged from PLN 17591 in Lublin province (i.e. 68.3% GDP per capita in Poland) to PLN 19709 in Warmia-Masuria province (i.e. 76.5% GDP per capita in Poland), while the average GDP per capita for five peripheral regions of Poland amounted to PLN 18688 (i.e. 72.5% GDP per capita in Poland). At the same time, GDP per capita in Masovia Province accounted for over 158% GDP in Poland. The poorest peripheral region slightly reduced its distance to the average GDP per capita in Poland in 2017: GDP per capita in Lublin province represented 68.9% GDP per capita in Poland. A similar tendency was observed also in the case of Subcarpathia Province (GDP per capita increased from 69% to 70.4% GDP per capita in Poland). Unfortunately, the remaining three peripheral regions noted a downward tendency regarding the relative value of GDP per capita, e.g. GDP per capita in Warmia-Masuria Province stood for 76.5% GDP per capita in Poland in 2005, while in 2017 it represented only 71.3% GDP per capita in Poland. The average GDP per capita for five peripheral regions of Poland in 2017 amounted to PLN 34187 (i.e. 70.6% GDP per capita in Poland). Masovia Province's advantage in relation to GDP per capita became even greater: 158.4 % GDP per capita in Poland and 159.7% GDP per capita in Poland in 2017. Unfortunately, the gap between the five peripheral Polish regions and the rest of Poland in terms of GDP per capita widened over time.

The bigger the number of economic entities per 10 thousand population as well as the number of natural persons conducting economic activity per 10 thousand population, the more intense the economic activity. Table 4 presents respective statistical information. The number of economic entities per 10 thousand population in Poland amounted to 948 in 2005 and it increased to 1121 in 2017. In five studied peripheral regions of Poland the number of economic entities per 10 thousand population in 2005 ranged from 663 in Subcarpathia Province (69.9% of the average for Poland and 56.8% of Masovia Province's index) to 813 in Świętokrzyskie province (85.7% of the average for Poland and 69.7% of Masovia Province's index). The average number of economic entities per 10 thousand population in the analyzed peripheral Polish regions in 2005 equaled 734.4, i.e. 77.4% of Poland's average and only 62.9% of Masovia Province's index. In 2017 the number of economic entities per 10 thousand population in five peripheral regions of Poland ranged from 803 Subcarpathia Province (71.6% of the average for Poland and 53.4% of Masovia Province's index) to 900 in Świętokrzyskie Province (80.3% of the average for Poland and 59.9% of Masovia Province's index). The average number of economic entities per 10 thousand population in five studied Poland's regions in 2017 equaled 853, i.e. 76.1% of Poland's average and only 56.7% of Masovia Province's index.

Table 4. Economic activity – peripheral regions vs. Poland and Masovia Province

Specification	Economic entities per 10 thousand population		Natural persons conducting economic activity per 10 thousand population	
	2005	2017	2005	2017
Lubelskie	684	834	531	616
Podkarpackie	663	803	517	590
Podlaskie	741	854	601	648
Świętokrzyskie	813	900	656	680
Warmińsko-Mazurskie	771	874	577	609
Poland	948	1121	728	781
Mazowieckie	1167	1503	858	955

Source: Central Statistical Office, 2019; Central Statistical Office, 2007.

When it comes to the number of natural persons conducting economic activity per 10 thousand population the situation was as follows: in the year 2005 it ranged from 517 in Subcarpathia Province to 656 in Świętokrzyskie Province, while in Masovia Province it amounted to 858 and the average for Poland equaled 728; in 2017 it ranged from 590 in Subcarpathia Province to 680 in Świętokrzyskie Province, while in Masovia Province it amounted to 955 and the average for Poland equaled 781. As far as the average for five peripheral regions is concerned it increased from 576.4 in 2005 (79.1% of Poland's average and 67.2% of Masovia Province's index) in 2005 to 628.6 in 2017 (80.5% of Poland's average and 65.8% of Masovia Province's index). Again, the gap between the peripheral regions and the rest of Poland did not shrink and the gap between the peripheral regions and the center of Poland even widened.

The overall socioeconomic situation is reflected in internal and international migration flows. The better the situation in a region (or a national economy) the higher the positive net internal and international migration of population for permanent residence; on the other hand, however, the worse the situation in a region (or a national economy) the bigger the negative net internal and international migration of population for permanent residence. Statistical data reflecting migration tendencies expressed by net internal and international migration of population for permanent residence per 1000 population for five analyzed peripheral Poland's regions, Poland and Masovia as its center region are presented in table 5.

Table 5. Net internal and international migration of population for permanent residence per 1000 population – peripheral regions vs. Poland and Masovia Province

Specification	2005	2017
Lubelskie	-2.2	-2.2
Podkarpackie	-1.1	-0.8
Podlaskie	-1.6	-1.4
Świętokrzyskie	-1.7	-1.8
Warmińsko-Mazurskie	-2.2	-1.9
Poland	-0.3	0.0
Mazowieckie	2.9	2.5

Source: Central Statistical Office, 2019; Central Statistical Office, 2007.

All five studied peripheral regions of Poland noted net emigration both in 2005 and 2017. Net internal and international migration for permanent residence in 2005 ranged from minus 2.2 per 1000 population in Lublin Province and Warmia-Masuria Province to minus 1.1 per 1000 population in Subcarpathia Province, while in Poland it amounted to minus 0.3 per 1000 population and in the case of Masovia province it equaled plus 2.9 per 1000 population. In 2017 the situation was quite similar: one could observe continued considerable outflow of population from the analyzed peripheral regions: net internal and international migration ranged from minus 2.2 per 1000 population to minus 0.8 per 1000 population in Subcarpathia Province, while for Poland it amounted to zero and in the case of Poland's central region – Masovia Province net internal and international migration per 1000 population equaled plus 2.5. Undoubtedly, net emigration

should be considered a barrier for strengthening economic activity of the studied peripheral regions of Poland.

Investment outlays constituted another important element of the comparative analysis. Table 6 shows investment outlays per capita in Poland, Poland's five peripheral regions and its central region. In 2005 investment outlays per capita ranged from less than PLN 2000 in Lublin Province to about PLN 2700 in Podlasie Province and Warmia-Masuria province, the average for five studied peripheral regions of Poland investment outlays per capita amounted to PLN 2442, while the average for Poland was PLN 3430 and investment outlays per capita in Masovia Province reached PLN 5634. Therefore, average investment outlays per capita in the analyzed five peripheral regions of Poland constituted only 71.2% of investment outlays per capita in Poland and just 43.3% of investment outlays per capita in Masovia Province. In the case of Lublin Province investment outlays per capita represented just 58% of Poland's average and 35% of investment outlays per capita in Masovia province. Investment outlays per capita in 2017 ranged from PLN 3883 in Świętokrzyskie Province to over PLN 5380 in Podlasie Province. The average investment outlays per capita for five studied peripheral regions of Poland in 2017 amounted to PLN 4724, while the average for Poland equaled PLN 6712 and investment outlays per capita in Masovia Province exceeded 10800 PLN. Hence, average investment outlays per capita in the analyzed five peripheral regions of Poland constituted only 70.4% of investment outlays per capita in Poland and just 43% of investment outlays per capita in Masovia Province. In the case of Świętokrzyskie Province investment outlays per capita in 2017 represented only 57.8% of Poland's average and just 35.9% of investment outlays per capita in Masovia province.

Table 6. Investment outlays and gross expenditure on R&D activity – peripheral regions vs. Poland and Masovia Province (PLN)

Specification	Investment outlays per capita		Gross expenditure on R&D activity per capita	
	2005	2017	2005	2017
Lubelskie	1992	4145	96	314
Podkarpackie	2440	5136	67	372
Podlaskie	2720	5381	69	221
Świętokrzyskie	2322	3883	17	115
Warmińsko-Mazurskie	2735	5075	57	184
Poland	3434	6712	178	536
Mazowieckie	5634	10802	561	1483

Source: Central Statistical Office, 2019; Central Statistical Office, 2007.

Moreover, the situation in regard to the intensity of R&D activity was studied. Table 6 presents gross expenditure on R&D activity in five peripheral regions against the background of both Poland and Masovia Province. Disparities between the studied peripheral regions of Poland and the rest of Poland was even greater in regard to research and development activity measured by gross expenditure on R&D activity per capita. The lowest level of gross expenditure on R&D activity per capita was characteristic for Świętokrzyskie Province both in 2005 and 2017. In 2005 gross expenditure on R&D per capita in Świętokrzyskie Province represented 9.5% of Poland's average and just 3% of gross expenditure on R&D activity in Masovia Province. In 2017 the distance between Świętokrzyskie Province and the rest of Poland was smaller: gross expenditure on R&D per capita in Świętokrzyskie Province constituted 21.4% of Poland's average and 7.7% of gross expenditure on R&D activity in Masovia Province. When it comes to the average for all five studied peripheral regions of Poland, the situation looked as follows: in 2005 average gross expenditure on R&D activity per capita amounted to PLN 61.2 which represented 31.4% of Poland's average and 10.9% of gross expenditure on R&D in Masovia Province, while in 2017 average gross expenditure on R&D for the five peripheral regions of Poland equaled 241.2 PLN, i.e. 45% of Poland's average and 16.3% of gross expenditure on R&D in Masovia Province. Hence, a slight reduction of the distance was noted.

The above analysis regarding individual indices indicates the persistence of considerable regional disparities in economic activity and socioeconomic development. Moreover, with respect to most aspects the gap became even more significant.

Due to the abovementioned complexity of the category of economic activity, statistical research with the adoption of the selected method of multivariate comparative analysis was conducted. It made it possible to identify and evaluate the disparities among the studied regions not only separately in terms of each element (variable), but also altogether in regard to all the considered aspects. The achieved results of research with the implementation of Hellwig's taxonomic measure of development are presented in tables 7 and 8.

Table 7. Economic activity in the light of taxonomic research - peripheral regions vs. Poland and Masovia Province in 2005

Position	Economy	TMD	TMD (Poland=100)
1	Mazowieckie	1.000	157.98
2	Poland	0.633	100.00
3	Warmińsko-mazurskie	0.457	72.20
4	Podlaskie	0.445	70.30
5	Świętokrzyskie	0.445	70.30
6	Podkarpackie	0.418	66.03
7	Lubelskie	0.388	61.29

Source: Author's own calculations.

Table 8. Economic activity in the light of taxonomic research – peripheral regions vs. Poland and Masovia Province in 2017

Position	Economy	TMD	TMD (Poland = 100)
1	Mazowieckie	0.995	152.61
2	Poland	0.652	100.00
3	Podlaskie	0.461	70.71
4	Warmińsko-mazurskie	0.427	65.49
5	Świętokrzyskie	0.427	65.49
6	Podkarpackie	0.423	64.88
7	Lubelskie	0.402	61.66

Source: Author's own calculations.

In 2005 the lowest level of the synthetic index of economic activity was observed in Lublin Province (0.388). In Subcarpathia Province it amounted to 0.418 and in the remaining three peripheral Polish regions the synthetic index of economic activity ranged from 0.445 to 0.457. At the same time Masovia Province noted the synthetic index of economic activity as high as 1.00 and Poland as whole – 0.633. The achieved results of multivariate comparative analysis with the adoption of Hellwig's taxonomic measure of development indicate that economic activity in the peripheral Poland's regions represented 61.29% to 72.20% of Poland's average, while economic activity in Masovia Province it amounted to 157.98% of Poland's average. In 2017 the lowest level of the synthetic index of economic activity was noted in Lublin Province again (0.402). In Subcarpathia Province, Świętokrzyskie Province and Warmia-Masutria province it was a bit over 0.42, while in Podlasie Province it amounted to 0.461. In the case of Masovia Province the synthetic index of economic activity equaled 0.995 and in the case of Poland it was 0.652. The achieved results of the taxonomic analysis indicate that economic activity in Poland's peripheral regions represented 61.66% to 70.71% of Poland's average, while economic activity in Masovia Province stood for 152.61% of the average for Poland. Therefore, we may talk about slight reduction of the disparities in economic activity beetwen the poorest regions and the wealthiest one (Masovia Province) measured by the synthetic index.

Because of the fact that Poland joined the European Union in May 2004 as a relatively poor Member State and as a collection of sixteen poor regions (provinces, voivodships), it has received considerable financial assistance from both Structural Funds and Cohesion Fund since then. The participation in EU Policy of Economic, Social and Territorial Cohesion should and could be seen as a possible stimulus for stronger promotion of economic activity, socioeconomic development and – possibly – the reduction of development gap. The question is, however, to what extent Structural Funds and Cohesion Fund can help reduce the disparities among the Polish regions. Table 9 presents European Union financing from Structural Funds and Cohesion Fund during 2007-2013 period (as of 31st December, 2016) and during 2014–2020 perspective (as of 31st December, 2017). The data indicate that from 2007 to 2013 all five peripheral regions of Poland received PLN 111.29 billion (i.e. 22% of total assistance from EU Structural Funds and Cohesion Fund for Poland) while Masovia Province alone absorbed PLN 76.84 billion (i.e. 15.2% of total assistance from EU Structural Funds and Cohesion Fund for Poland). Surprisingly, financial assistance per capita in Masovia Province accounted for 108.9% of the average per capita assistance for Poland, while e.g. in the case of Lublin Province it stood for only 89.7% of the average per capita assistance in Poland. In 2014–2020 total value of EU financing from EU Structural Funds and Cohesion Fund for the studied five peripheral regions of Poland amounted to PLN 37.4 billion (21.7% of total assistance from EU Structural Funds and Cohesion Fund for Poland), while Masovia Province absorbed PLN 22.6 billion (i.e. 13.1% of total assistance from EU Structural Funds and Cohesion Fund in Poland) (as of 31st December 2017). Therefore, one can assume that EU Structural Funds and Cohesion fund did help promote socioeconomic development of Poland. On the other hand, however, the conducted research indicated that much higher assistance for peripheral regions would be necessary in order to achieve the target of regional disparities reduction.

The question arises, why has Masovia Province received such a considerably high financial assistance from both EU Structural Funds and Cohesion Fund as compared to the studied five peripheral Poland's regions? What were the reasons for such decisions? Were there mistakes made? It must be underlined here that there were no mistakes made in regard to the division of EU funds among Poland's regions. Both in the period 2004–2006 and 2007–2013, all sixteen Poland's provinces were the convergence regions of the EU with GDP per capita below 75% of the EU average. Therefore, the same principles were used no matter whether a potential beneficiary was from Masovia Province or any other Poland's voivodship in regard to the maximum level of the EU assistance. Moreover, during the multiannual financial perspective 2007–2013 the five studied peripheral regions achieved additional financial sources due to the introduction of OP Eastern Poland. When it comes to the multiannual period 2014–2020 the situation changed considerably: Masovia Province has been treated as a more developed region of the EU, while other fifteen Poland's regions still have had status of underdeveloped regions. Therefore, the maximum co-financing form the EU in Masovia Province was reduced to 50%, while for other Poland's provinces (including all five studied peripheral regions) it could reach 85%. Such a change may result in better prospects for using the EU funds as a stimulus for promoting the development of the underdeveloped regions of Poland rather than sending the funds to Masovia Province. There is, still, one more possible explanation. Usually, peripheral regions which lack the potential and attractiveness of the center, are not able to use all the opportunities. On the other hand, the central regions, do attract both internal and international investors and in this way, they do maintain their advantages in regard to economic potential, economic activity, socioeconomic development, and – finally – competitiveness.

Table 9. European Union financing from Structural Funds and Cohesion Fund – 2007–2013 (as of 31.12.2016) and 2014–2020 (as of 31.12.2017)

Specification	Within Cohesion Policy 2007-2013				Within Cohesion Policy 2014-2020			
	Total (Million PLN)	Total (%)	Per capita (Million PLN)	Per capita (Poland = 100)	Total (Million PLN)	Total (%)	Per capita (Million PLN)	Per capita (Poland = 100)
Lubelskie	25164.9	5.0	11796.0	89.7	10283.4	6.0	4806.0	107.20
Podkarpackie	32703.4	6.5	15371.0	116.9	8822.0	5.1	4146.0	92.4
Podlaskie	16304.9	3.2	13741.0	104.5	5312.5	3.1	4469.0	99.6
Świętokrzyskie	15058.1	3.0	12019.0	91.4	4665.6	2.7	3711.0	82.7
Warmińsko-Mazurskie	22060.4	4.4	15358.0	116.8	8336.7	4.8	5791.0	129.1
Poland	505224.2	100.0	13146.0	100.0	172391.0	100.0	4485.0	100.0
Mazowieckie	76836.3	15.2	14319.0	108.9	22605.1	13.1	4226.0	94.2

Source: Central Statistical Office, 2018b; Central Statistical Office, 2019.

Conclusions

The conducted research proved the persistence of huge development disparities among the Polish regions on the level of provinces (voivodships), i.e. NUTS 2 level. It stems from the carried out descriptive and comparative analysis (including multivariate comparative analysis) that economic activity in Lublin Province, Podlasie Province, Subcarpathia Province, Świętokrzyskie Province and Warmia-Masuria Province was low as compared to Poland average and the gap was huge in comparison to Masovia Province. Much lower economic activity was expressed (among others) in lower investment outlays per capita and lower gross expenditure on R&D per capita. It resulted from fewer economic entities per 10 thousand population and fewer natural persons conducting economic activity per 10 thousand population. It was strongly correlated with much worse situation on the market of labor both in regard to employment rate (much lower in the peripheral regions) and unemployment rate (much higher in the peripheral regions). Moreover, it resulted in much lower GDP per capita in the five studied Eastern provinces of Poland. Huge net internal and international emigration for permanent residence from the peripheral Polish regions was another effect. Although the peripheral provinces of Poland could participate in EU Policy of Economic, Social and Territorial Cohesion and they did so, the financial assistance from European Regional Development Fund, European Social Fund and Cohesion Fund was not enough to reduce the disparities and to limit the gap.

Limitations of the research relate to the period of time taken into consideration as well as the scope of research (both in regard to indices taken into consideration and number of regions to which the situation in peripheral regions of Poland was compared). Further research could and should include additional elements relating to economic activity, economic potential and economic development. Moreover, economic activity in Poland's peripheral regions could and should be compared to selected regions in other EU Member States.

Practical recommendations resulting from the research focus on the urgent need to use EU funds more intensely in the peripheral regions in order to reduce the still huge distance observed between them and the rest of Poland, especially the central regions. There is vital importance and significance to:

- increase the role of the local government, especially during the planning phase and operational programs' creation;
- focus the funds on limited number of priorities, which should include entrepreneurship, education, research & development activity, innovation activity and infrastructure;
- increase the allocation for regional operational programs in the next multiannual financial perspective;

- differentiate regional allocation of funds in regard to specific needs of individual provinces;
- increase competencies of regional government on each and every phase of the implementation of EU Policy of Economic, Social and Territorial Cohesion in Poland.

Moreover, in order to increase the role of EU Structural Funds and Cohesion Fund in the development of Poland's regions, the recommendations are as follows:

- supporting projects embracing several units, e.g. several communes or districts;
- supporting local and regional production systems;
- offering substantive and organizational support for local entities (both enterprises and non-governmental organizations;
- linking public investment with the needs of economic entities (e.g. in the field of infrastructure);
- initiating strong interregional cooperation in the field of partner projects;
- promoting stronger cooperation between enterprises and scientific and research units in regard to the introduction of common local projects;
- creating a sort of local forum of EU Policy of Economic, Social and Territorial Cohesion which should focus on strategic projects for local communities;
- monitoring the implementation of projects in order to increase their effects.

Undoubtedly, a lot will depend on the construction of the Multiannual Financial Framework 2021–2027, the ability of the EU leaders to adopt a stable and ambitious EU budgets for the coming years and to implement the necessary reform of the financing system.

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EKONOMINĖ VEIKLA PERIFERINIUOSE REGIONUOSE – LENKIJOS ATVEJIS

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Santrauka

Regioniniai skirtumai yra rimta daugelio nacionalinių ekonomikų problema. Periferiniams regionams paprastai būdingos menkesnės ekonominės galimybės ir daug mažesnis ekonominio aktyvumo intensyvumas, todėl ekonominis vystymasis yra lėtesnis. Atlikti moksliniai ekonominės veiklos vertinimo tyrimai penkiuose periferiniuose Lenkijos regionuose: Liublino, Palenkės, Pakarpatės, Šventojo kryžiaus ir Varmijos-Mozūrijos vaivadijose, jie palyginti su Lenkija ir Mazovijos vaivadija, kaip centriniu Lenkijos regionu. Mokslinių tyrimų operacionalizacija lėmė šių rodiklių identifikavimą: užimtumo lygis; užimtumas pagal sektorius; nedarbo lygis; BVP vienam gyventojui; ūkio subjektų skaičius 10 tūkst. gyventojų; fizinių asmenų, vykdančių ekonominę veiklą, skaičius 10 tūkst. gyventojų; investicinės išlaidos, tenkančios vienam gyventojui; išlaidos, susijusios su MTTP veikla vienam gyventojui, taip pat grynoji vidaus ir išorės migracija, skirta nuolatiniam gyvenimui 1000 gyventojų. Siekiant stebėti galimus pokyčius per tam tikrą laiką, situacija tirta 2005 ir 2017 metais. Be to, pateikta ir analizuota bendra Europos Sąjungos iš struktūrinių fondų bei Sanglaudos fondo finansuojamų projektų vertė 2007–2013 m. ir 2014–2020 m. perspektyvoje.

Straipsnyje taikomi mokslinių tyrimų metodai: literatūros studijos, kritinis mąstymas, aprašomoji ir lyginamoji analizė (taigi pasirinktas daugiamatės lyginamosios analizės metodas). Atliekant analizę remtasi Centrinės statistikos tarnybos (Varšuva, Lenkija) pateikta statistine medžiaga iš Regionų statistikos metraščių 2006, 2007, 2017 ir 2018 m.

Tyrimo rezultatai atskleidė: net įgyvendinus ES socialinės, ekonominės ir teritorinės sanglaudos politiką, išlieka dideli regioniniai ekonominės veiklos, ekonominio potencialo ir socialinio bei ekonominio vystymosi skirtumai. Tyrimu patvirtinta hipotezė, leidžianti daryti prielaidą, kad atotrūkis tarp nagrinėtų periferinių regionų ir likusios Lenkijos dalies sumažėjo. Vis dėlto kai kuriais atvejais atstumas tarp Lenkijos periferinių regionų ir likusios Lenkijos dalies dar padidėjo. Patvirtinta ir kita hipotezė, leidžianti daryti prielaidą, kad dalyvavimas regioninės ekonominės integracijos procesuose, ypač ES ekonominės, socialinės ir teritorinės sanglaudos politikoje, tik šiek tiek sumažino skirtumus tarp Lenkijos regionų.

Tyrimo apribojimai susiję su tyrimo laikotarpiu ir mokslinių tyrimų apimtimi (tiek indeksų, į kuriuos buvo atsižvelgiama, tiek į regionų, kurių padėtis lyginta, skaičiumi). Tolesni tyrimai galėtų ir turėtų apimti papildomus su ekonomine veikla susijusius elementus. Be to, Lenkijos periferinių regionų ekonominė veikla galėtų ir turėtų būti palyginta su pasirinktais kitų ES valstybių narių regionais. Iš praktinių rekomendacijų, kurios parengtos atlikus tyrimą, labiausia akcentuojamas poreikis išnaudoti ES skiriamas lėšas periferiniuose regionuose, siekiant sumažinti atotrūkį tarp jų ir centrinių regionų.

PAGRINDINIAI ŽODŽIAI: *ekonominė veikla, ekonominė plėtra, Lenkija, periferinis regionas.*

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