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The diversity of socioeconomic development of rural areas in Poland in The Western Borderland and the problem of post-state farm localities

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Keywords: *local development; peripheral areas; rural areas; post-state farm localities; the western borderland;*

Abstract

Research background: Rural areas in Poland occupy more than 93% of the country's area. This high share somehow automatically becomes a source of causes and effects of differences both at the regional and local level. Development disproportions in rural areas become vividly visible in the places of accumulation of developmental barriers, which derive from the effect of social, economic, environmental and historical factors. The arguments which refer to the place-based policy stress the fact that making use of the unused potential of intermediate and poorly developed territories may actually influence the local and national level of development (Farole *et al*., 2011). Rural areas, especially peripheral areas, are undoubtedly the territories of unused potential.

Purpose of the article: The aim of the research is to measure the socioeconomic development, including the spatial diversification leading to the development of rural peripheral areas.

Methods: Development is a multidimensional phenomenon. There-fore, its level will be determined by means of the synthetic feature. The synthetic feature will be used as the starting point for identification of peripheral areas and their delimitation. The Jenks method was applied to group entities into classes characterised by similar levels of development (Jenks Natural Breaks Classifica-tion, Jenks, 1967). The spatial scope of the research com-

prises rural areas in Poland in the western borderland, i.e. West Pomeranian, Lubuskie and Lower Silesian Voivodeships. The research subject were rural and rural-urban communes of the regions under investigation. The empirical material were obtained from the following sources: the Local Data Bank of the Central Statistical Office, unpublished data of the Agricultural Property Agency. Measurements referred to 2015.The object of the study was the development of rural areas in the western borderland, which was identified by comparison of the synthetic features of the following factors: location rent, technical infrastructure, social infrastructure, human capital, social capital and local finance.

Findings & Value added: The results of the analysis showed significant differences level of socioeconomic development of rural areas in the western borderland. The research findings did not show a simple dependence between rural development and the share of former state-owned farms in the communes. Areas with a high share of former state-owned farms could be found both in the group of best- and least-developed communes. Due to the range of research, it is illegitimate to make other than intuitive inferences. Thus, we can intuitively indicate that the following group of factors triggered the process of development and helped to break the barriers resulting from the liquidation of state-owned farms: location in an urban agglomeration, natural and tourist values as well as the activity of local authorities. The research should be continued in order to identify the factors and pathways of development in individual areas under analysis.

Introduction

Development is a complex concept with multiple interpretations due to the multitude of the aims of development and the diversity of actions which affect it (Wojtasiewicz,1996, p. 100). Socioeconomic development is a complex of changes whose aim is to increasingly satisfy the collective and individual needs of inhabitants in a local community (Rosner & Stanny, 2014, p. 33). In order to conduct an empirical analysis of development, it is necessary to make some simplifying assumptions, including a conceptual assumption that development is the resultant of changes interrelated by substitution and complementarity (Bagdziński *et al.*, 1995, p. 39).

One of the major dilemmas of regional policy is the answer to the question whether the growth should be concentrated at the core, or if there is growth and development potential in each territory (Barca *et al.*, 2012, p. 149). The arguments which refer to the place-based policy stress the fact that making use of the unused potential of intermediate and poorly developed territories may actually influence the local and national level of development (Farole *et al*., 2011). Rural areas, especially peripheral areas, are undoubtedly the territories of unused potential.

In view of the facts mentioned above, it is justified to pose the following research questions:

1. Which areas can be defined as rural peripheral areas?
2. What is the spatial distribution of rural peripheral areas according to the level of their socioeconomic development?

The aim of the study is to measure socioeconomic development, including spatial diversification leading to the emergence of peripheral rural areas. Additionally, the study is an attempt to identify the significance of former state-owned farms to the process of peripheralisation of rural areas.

According to the aim of the study, this article includes: an overview of the definitions of periphery, a characterisation of rural areas in the western borderland, the research methodology, results, conclusions and a proposal to continue the study.

Definitions of periphery

The concept of peripheral areas is present in social and economic sciences. In both sciences it evokes pejorative connotations and in consequence, the concept is perceived in a different way and dimension. We can distinguish two groups of definitions of peripheries. The first group of definitions refers to distant areas, which stand out spatially (geographically) from the centres of socioeconomic life. The other group of definitions refers to the economic situation of a particular area, where its economic structures, demographic situation or specific developmental problems cause the area to be perceived as economically weak (economic criteria) (Olechnicka, 2004; Grosse, 2007; Stanny, 2013).

If the GDP per capita measured for the region is lower than 75% of the average value for the EU countries, it is a peripherality criterion in the EU cohesion policy. There could be a marginal zone in a region. Thus, it is possible to distinguish intraregional (local) peripheral zones (Zagożdżon, 1980, pp. 816–819). The common assumption of the geographical and economic approach is that each region (area, territory) consists of the centre and peripheries.

Thus, peripheral areas may be perceived as a special category of problematic areas, i.e. the areas with certain ‘developmental anomalies’ or ‘area abnormality’(Zagożdżon, 1989; Więckowicz, 1989), ‘low effectiveness of structures’(Ciok, 1994), ‘resources used to a small extent’(Winiarski, 1965), ‘low development potential’(Rosner *et al*., 1998), ‘worse developed areas’(Stasiak, 1985). Bański (1999) presented an overview of the concepts, terminology and criteria of delimitation of problematic areas.

Regional studies which deal specifically with the periphery problem, suggest that there are four different conceptual approaches: periphery as distance (Dunn, 1954; Loesch, 1954; Isard, 1956); periphery as dependency (Perroux, 1950; Myrdal, 1957; Boudeville, 1961; Friedmann, 1966); periphery as distinctiveness (Friedmann & Weaver, 1979; Sthor & Taylor,

1981; Massey, 1984; Cooke, 1986) and, finally, periphery as discourse (Short, 1992; Massey & Jess, 1995; Keating, 1998).”This four-dimensional view of periphery helps to understand its effects in a wide-ranging way. Distance and dependency are mainly associated with factors which hinder development in general, and economic prosperity in particular. By contrast, distinctiveness and discourse are factors which attract people and investment, and for this reason may contribute significantly to bringing about an improvement in economic conditions” (*The future of Europe's rural periphery*... (2003), pp. 70–75).

Characterisation of rural areas in the western borderland

Due to its peripheral location, the western borderland is treated as an area with developmental problems, which needs to be activated. Developmental deficit has been observed for a long time and the area was thought to be underprivileged, especially in comparison with the other regions of the German Reich. There were radical changes when the border on the Oder and Lusatian Neisse was established. The transformations were particularly painful to the structure of the settlement network and they resulted from: the decrease in the importance of towns due to the population drop (Zgorzelec — by 94%), the ravages of war in towns and rural infrastructure, including agricultural infrastructure, and from the division of the existing settlement systems. Thus, the interconnections changed radically from open to peripheral ones. The transformations were accompanied by almost complete change of the population, because the areas were settled by newcomers. Thus, the settlement network was redeveloping (Ciok, 2000, pp. 92–93).

There was considerable shortage observed in the facilities of municipal, road and rail transport infrastructure, which was situated on the German side. The historical conditions and the strong influence of the border caused the areas to be different from other regions of Poland in terms of the socio-economic and spatial structures (Ciok, 2000, p. 95).

The local systems of rural areas in the western borderland underwent considerable changes due to the transformation in the political system. The liquidation of State Agricultural Farms, which were the main employer and provider of technical and social infrastructure in the rural areas, caused employment in agriculture to drop by nearly ten times. The simultaneous absence of non-agricultural jobs caused very high unemployment and resulted in poverty in the families of workers employed on state agricultural farms. On the other hand, the opening of borders gave an opportunity to

those regions and caused the economic boom. Although it took place, most rural areas did not benefit from it. Besides, this situation triggered economic migrations, especially to Germany, which additionally weakened the poor structure of rural communities in the borderland. The situation resulted in the development of a specific rural space, unique in Poland, which is expressed with the inhabitants' personal traits, such as the feeling of lack of opportunities and unwillingness to make changes, the absence of adaptive skills and enterprise, which Wilkin (1998) defines as the 'social helplessness' syndrome. In consequence, those areas are the place where unsolved developmental problems grow.

Research method

The spatial scope of the research comprises rural areas of the western borderland, i.e. West Pomeranian, Lubuskie and Lower Silesian Voivodeships. The research subject were rural and rural-urban communes of the regions under investigation. The empirical material were obtained from the following sources: the Local Data Bank of the Central Statistical Office, unpublished data of the Agricultural Property Agency. Measurements referred to 2015.

The object of the study was the development of rural areas in the western borderland, which was identified by comparison of the synthetic features of the following factors: location rent, technical infrastructure, social infrastructure, human capital, social capital and local finance (Table 1).

Development is a multidimensional phenomenon. Therefore, its level was determined by means of the synthetic feature (see more: Bański & Mazur, 2016). The construction of the synthetic feature was made according to the methodology suggested by Wysocki & Lira (2005). The selection of simple features was made according to the formal, substantive and statistical criteria, which are the determinants of development. The data was checked for their completeness, measurability and availability. The variability coefficient and Pearson's correlation coefficient were made the basis for assessment of statistical premises. The former was to enable elimination of the variables with low information value from the set, whereas the latter was to assess the strength of correlation between the variables. The analysis was also comprised of the diagonal elements of inverse matrix to correlation matrix R in order to check the correctness of the condition numbers of the matrices.

The next step was to involve normalisation of the values of simple features (unitization is proposed), which consists in unification of the character

and making the feature values comparable by removing their nominals and unification of the lines of values. Normalisation of simple features means converting them according to the following formula:

stimulants:

$$z_{ij} = \frac{x_{ij} - \min_i\{x_{ij}\}}{\max_i\{x_{ij}\} - \min_i\{x_{ij}\}} \left(i = 1, 2 \ldots n\right);\ \left(j = 1, 2 \ldots m\right)$$

destimunlants:

$$z_{ij} = \frac{max_i\{x_{ij}\} - x_{ij}}{max_i\{x_{ij}\} - min_i\{x_{ij}\}} \left(i = 1, 2 \ldots n\right);\ \left(j = 1, 2 \ldots m\right)$$

The synthetic feature values was determined by means of the non-model method, which boils down to averaging the normalised values of simple features. Then, on the basis of the synthetic measure value, the Jenks method was applied to group entities into classes characterised by similar levels of development (Jenks Natural Breaks Classification) (Jenks, 1967; see more: Balcerzak, 2016; Balcerzak &Pietrzak, 2017).

Results

The development of rural areas in the western borderland was identified by comparison of the synthetic features of the following factors: location rent, technical infrastructure, social infrastructure, human capital, social capital and local finance. No weights were assigned to individual components. Socioeconomic development was determined by applying a synthetic measure and a non-model method. Then, the Jenks method was applied to group entities into classes characterised by similar levels of deveopment (Jenks, 1967).

The classification enabled identification of three groups of communes with diversified levels of development, i.e. favourable (1), average (2) and unfavourable (3). The spatial distribution of the grouping is shown in Figure 1.

34 entities clustered in Class 1 made the group of communes characterised by favourable (high) level of development. They are located within the agglomerations of the cities of Wrocław and Szczecin and along the coast. Other entities are irregularly located in the regions.

The entities in Class 1 are characterised by higher than average development of all the components under analysis. They were included in the class mainly due to the favourable location rent, resulting from the situation within the zone of impact of large regional cities. This strength was not observed in the cities of Zielona Góra or Gorzów Wielkopolski. It may have been caused by the fact that these cities have a smaller economic base. As far as coastal communes are concerned, their tourist function is very well developed and it results in high development of rural areas. The entities which are rich in mineral deposits (Lubin, Głogów) made another subgroup.

The rural areas in Class 1 are characterised by higher population density — 72 inhabitants/km2 (average population density — 40 inhabitants/km2). They are attractive places for settlers, which is proved by the high positive net migration rate (12 persons per 1,000 inhabitants). In comparison with the other regions, Class 1 is characterised by favourable population structure in terms of age and sex. This fact is confirmed by the birth rate (10 births per 1,000 inhabitants).

As far as the human and social capital are concerned, the inhabitants are characterised by high entrepreneurship (133 business entities per 1,000 inhabitants). However, the social engagement is not higher than average, as can be seen by the voter turnout and the number of active societies and foundations. It may be caused by the urban lifestyle of new inhabitants of rural areas. Despite the highest expenditures on culture, physical culture and sports, the inhabitants do not exhibit greater social activity.

Class 1 is characterised by very good social and technical infrastructure. It is distinguished by good access to nursery schools (7 per 100 km2), primary schools and upper primary schools as well as health care centres and pharmacies. The areas are characterised by high density of the water supply network (96.7 km) and sewerage system (80.4 km), which are respectively two and four times denser than in the lowest class. The rate of coverage of the rural areas by the sewerage system is also favourable, because as much as 73% of the inhabitants are served by sewage treatment plants. Expenditures on public roads in the communes in Class 1 show that roads are repaired and constructed.

The situation of the local finance is favourable. There was high total income (4,537 zlotys per capita), where the communes' own income amounted to 63.6%. It shows high financial independence of the entities. The local authorities frequently used the EU funds (6,668 zlotys per capita), as the share of investment expenditures in total expenditures amounted to 23.3%.

Class 2 consisted of 138 communes characterised by average level of development. The communes were mostly located on the coast, around the

towns of Zielona Góra and Gorzów Wielkopolski and in the second ring of the cities of Szczecin and Wrocław.

All the components under analysis reached average values, except the location rent, whose value was slightly above average. The greatest disproportion between Class 2 and 1 was noted in the technical infrastructure density, which was caused by the higher forestation rate, lower population density and different settlement network. Although the net migration rate in these areas is positive, the population is not increasing. The birth rate is favourable.

Local governments in Class 2 gained lower income (3,664 zlotys per capita) and they were less active in acquiring funds from the European Union (2,933 zlotys per capita). Budget limitations resulted in smaller expenditures on culture and sports.

The last class consisted of the entities whose situation was considered to be unfavourable. The group consisted of 137 communes, mostly located in Lower Silesian Voivodeship (61). As far as the spatial distribution is concerned, these communes are located both on the outskirts and in the centre of geographically important regions.

The areas are characterised by an unfavourable location rent. There is a high forestation rate and high limitations to economic freedom, as well as worse transport access to cities and towns (capitals of voivodeships and counties). As a result, those areas are attractive to tourists, but not enough to observe a well-developed tourist function.

Due to natural barriers, there is much lesser density of social infrastructure (schools, nursery schools) and technical infrastructure. It is caused by low population density (32 inhabitants/km2). The areas are becoming depopulated (negative net migration rate — 4 persons per 1,000 inhabitants).

The communes in Class 3 are characterised by lower total income per inhabitant (3,467 zlotys) and low financial independence (45.6%). The local authorities used the EU funds less frequently (1,839 zlotys per inhabitant) and made fewer investments (the share of investment expenditures in total expenditures amounted to 12.8%).

There were also noticeable budget limitations in expenditures on culture and sports. Although their value was close to average, in view of the small population potential, the expenditures were minimal.

It is noteworthy that the inhabitants were socially active. The measures of participation (the voter turnout and the number of societies) reached the same level as in Class 1.

In order to recognise the significance of former state-owned farms to the development of rural and peripheral areas, we measured the area of land taken over by the Agricultural Property Agency of the State Treasury as of

1 January 1991 (current name: the Agricultural Property Agency) (see more: Marks-Bielska, 2013).

Figure 2 shows the spatial distribution of the area of former state-owned farms in the communes under study. According to the data, only in 2 out of 309 communes under analysis was there no land belonging to former state-owned farms. Thus, we can assume that the entire area of the western borderland is covered by land belonging to former state-owned farms. There is significant diversification in the intensity of occurrence of these areas. On average the area of former state-owned farms amounted to 4,556 ha per commune. In individual regions it amounted to 7,156 ha (West Pomeranian Voivodeship), 4126 ha (Lubusz Voivodeship) and 3,010 ha in Lower Silesian Voivodeship. There are also noticeable differences in the number of plots and the average plot area (Table 2).

It was the territorial character of development rather than the sectorial approach to rural development that made the premise to verify the dependence between the area of former state-owned farms. Therefore, we assumed there was dependence between the level of rural development and the intensity of occurrence of state property (measured with the farm area). This criterion was assumed upon analysis of reference publications and the results of studies conducted so far. In order to verify the assumptions a regression model was built. The first step involved using the Pearson linear correlation coefficient to investigate the links between the area of former state-owned farms, the share of the area of former state-owned farms in the farmland area and the level of development and its components. The correlation coefficient values confirmed the absence of strong relations between the variables under analysis. For this reason, further modelling was abandoned[1].

Conclusions

Rural development in the western borderland is significantly diversified. The areas whose level of development is favourable can be found around big cities, i.e. Wrocław and Szczecin. It proves the significance of cities to the development of socioeconomic structures in their nearest neighbourhood. On the one hand, it is the effect of spreading development processes. On the other hand, it is the result of urban functions being performed in the area surrounding cities. As could be observed in coastal communes and

[1] Simultaneously, we made an analogic test for peripheral communes. There were no premises to apply the proposed method in this group.

those rich in mineral deposits, high development of rural areas is coupled with a favourable location rent and environmental conditions.

Peripheral areas and areas threatened by peripheralisation were clustered in the group of communes characterised by an unfavourable level of development. This group made 44% of the total number of communes under study. This means that a considerable percentage of rural areas has minimal contribution or does not participate in development processes at all. Due to their deficits, it may result in even greater disproportions in development. These areas are characterised by negligence resulting from their unfavourable location, low concentration of technical and social infrastructure as well as depopulation processes. Additionally, the state of local finance makes it impossible to trigger a grassroots development mechanism. The aforementioned factors interact with different strengths and directions.

The research findings did not show a simple dependence between rural development and the share of former state-owned farms in the communes. Areas with a high share of former state-owned farms could be found both in the group of best and least-developed communes. Due to the range of research, it is illegitimate to make other than intuitive inferences. Thus, we can intuitively indicate that the following group of factors triggered the process of development and helped to break the barriers resulting from the liquidation of state-owned farms: location in an urban agglomeration, natural and tourist values as well as the activity of local authorities. The research should be continued in order to identify the factors and pathways of development in individual areas under analysis.

In order to identify the significance of former state-owned farms to the formation of peripheral rural areas, we suggest dynamic measurement of development, because it will enable identification of the rate and trend of changes. The next step should involve the identification of factors (e.g. by means of factor analysis) so as to select a group of traits that are decisive to the economic success. This research procedure will indicate the potentials that should be developed by territorially-oriented investments.

Apart from that, it is advisable to conduct parallel research on rural areas in Poland so as to compare the areas of former state-owned farms with other areas. It is recommended to make an attempt to build a regression model in order to continue the search for dependences between development and the areas of former state-owned farms.

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Annex

Table 1. Indicators for socioeconomic development of rural areas in the western borderland

Factor	Indicator
Location rent**	The soil quality indicator (points)
	Restrictions in preservation areas (points)*
	The indicator of road junction location (points)
	The indicator of town location (points)
	Areas of special nature value under legal protection (in %of total area)
	Forest cover in %
Social infrastructure	Nursery schools per 100 km^2
	Primary schools per 100 km^2
	Lower secondary schools per 100 km2
	Public libraries per 1000 population
	Out-patient departments per 1000 population
	Number of population per pharmacy
Technical infrastructure	Water –line distribution network in km/100 km^2
	Sewerage distribution network in km/100 km^2
	Relations between connections leading water supply/sewage
	Gas-line distribution network in km/100 km^2
	Expenditures on public roads in total expenditures amounted (in %)
Human capital	Population per 1km2
	Relation children-oldest
	Live births per 1000 women in 15-49 years
	Natural increase per 1000 population
	Migration per 1000 population
	Females per 100 males (25-29 years)
	Tertiary education (in %)
Social capital	Entities of the national economy in the REGON register per 1000 population
	Associations and other social organizations per 1000 population
	Voter turnout (in %)
	Expenditures on culture per capita (zl)
	Expenditures on physical culture and sports per capita(zl)
Local finance	Total income zloty per capita (zl)
	EU funds zloty per capita (zl)
	Investment expenditures in total expenditures amounted (in %)
	Own income in total income amounted (in %)

Note:

* Destimulant. Other indicators are stimulants. See more about indicators Bartkowiak & Poczta 2012, Bartkowiak-Bakun 2015.

** Own calculations based on results Ossowska (2012). See more about rent location: Bartowiak & Ossowska (2010), Bartkowiak & Poczta (2012), Bański & Janicki (2011), Bartkowiak-Bakun & Ossowska (2017).

Table 2. Indicators for former state-owned farms in the western borderland

Specification	Average plot size	Average number of parcels	Average farm size in the municipality in ha
Lower Silesian	8,0	370	2943
Lubuskie	11,3	364	4123
West Pomeranian	10,7	648	6947

Figure 1. Spatial diversification of socioeconomic development of rural areas in the western borderland

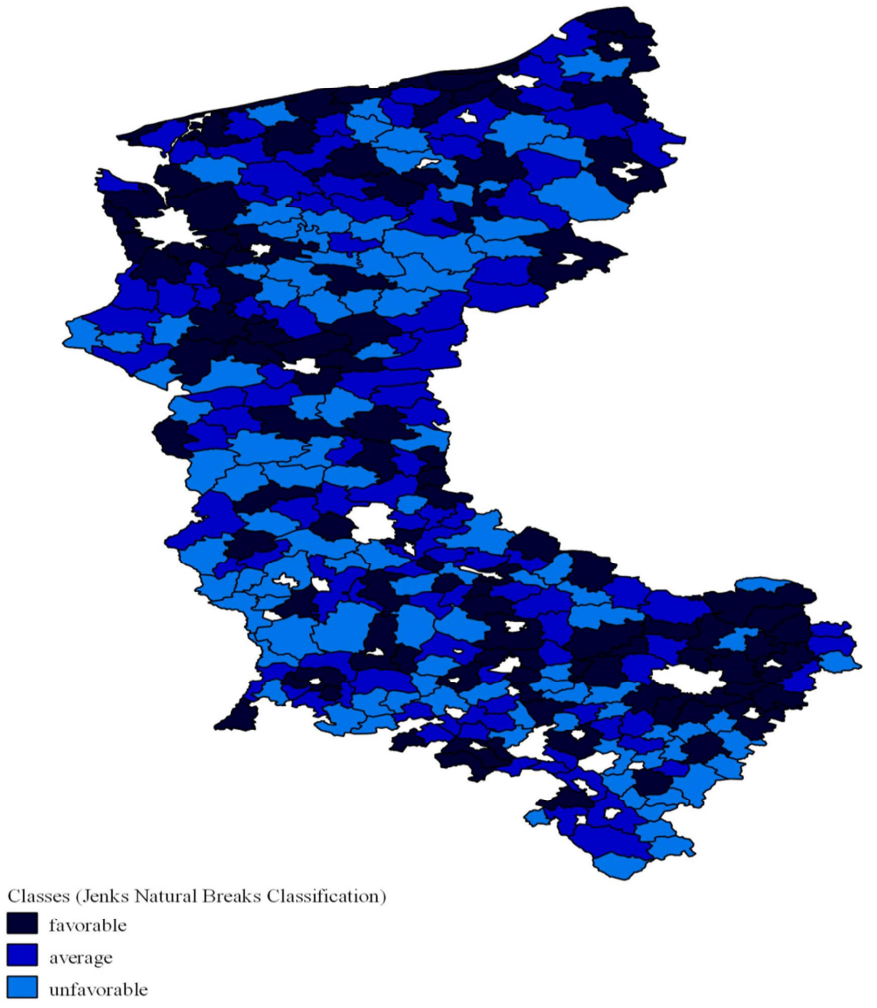

Figure 2. Spatial diversification of former state-owned farms in the western borderland