

## **CHANGES IN THE LEVEL OF DEVELOPMENT OF RURAL AREAS IN POLAND AFTER ITS ACCESSION TO THE EUROPEAN UNION – RESULTS OF COMMUNE CATEGORISATION**

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### **ABSTRACT**

The aim of the paper was to present the analysis and evaluation of economic development in rural areas in Poland within a 10-year span between 2003 and 2012, i.e. in conditions of deepening integration process, when the Cohesion Policy was being implemented after accession to the European Union. The paper presents the results of research conducted by the authors across the entire country at the level of communes that employed Regional Data Banks (RDBs) of the Central Statistical Office (GUS) and GIS techniques. Allowing for comparable criteria covering eight analysed factors, relative level of development in individual communes – high, medium or low (category A, B or C, respectively) – was determined independently for four years (2003, 2008, 2010, and 2012). Then it was used as a basis for delimitation (on the national and provincial level) of areas varying in terms of the level of development (A, B and C) independent for each of these four years, and as a basis for identifying alterations in the area and population ranges in areas belonging to particular categories and their locations within the studied 10-year period.

**Key words:** Polish economy, rural areas, territorial variation in economic development, dynamic approach, local and regional level of analysis

### **INTRODUCTION**

Divergent prerequisites (historical, social, economic and natural) of territorial development foster differentiation of the speed of growth and the level of economic development in space. Numerous studies [Rokicki 2004, Geodecki 2006, Miazga 2007, Adamczyk-Łojewska 2007 and 2016] confirm the observed tendency to concentrate activity in areas that have already been economically developed, particularly including development centres consisting of large urban agglomerations and their immediate vicinity [Markowski and Marszał 2006, Gaczek 2015]. In such centres with well-developed service and production functions, despite increased costs of obtaining

resources, positive externalities (arising from the agglomeration, including the development of technology, knowledge, and information as well as from the ability to imitate various entrepreneurial behaviours in the environment) generally provide higher productivity of production factors, and this attracts capital and qualified workforce.

Business activity concentrated in development centres can have a beneficial effect on the development of distant regional background, including rural areas. This is the case when there are centrifugal processes of development propagation and innovation diffusion, e.g. as a result of establishing cooperation ties of various kinds within a network organisation or as a result of business delocalisation. This is fostered by

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technical progress, including the development of new information technologies, and advantages of external costs of agglomerations decreasing with intensifying concentration. The positive impact of development centres on the regional background can also be a result of the process of migration and commuting, where, as a result of the outflow of workers from overcrowded agriculture, labour productivity and income in the neighbouring areas increase [Kusideł 2010, Gaczek 2011, Adamczyk-Łojewska 2016].

With large delays in the process of structural changes and the monofunctional character of development in the regional background as well as the absence of broader intraregional cooperation ties, negative processes of excessive economic divergence and territorial polarisation of the economy can intensify as well [Adamczyk-Łojewska 2016]. For as the strength and significance of connections between large centres increases (also on a global scale), the weakening of traditional economic relations between large cities and their more distant regional background is progressing, which is characteristic for the metropolisation processes [Smętkowski 2001, Jewtuchowicz 2005]. This can lead to island-type (enclave-type) development and a specific duality – the development of two speeds. When this type of diversity becomes excessively deep and the problematic areas cover a large part of the country area and population, this may lead to macroeconomic waste of significant resources (e.g. labour), reduced management efficiency and limited rate of growth [Adamczyk-Łojewska 2007].

In areas that have not reached a certain threshold level of development in structural changes, disadvantageous conditions of development may compound. Reduction of the developmental differences in such areas is possible but it is a difficult task. It requires long-term investment expenditures aimed at accelerating beneficial structural transformations, e.g. the development of human and social capital as well as socio-economic, technical and institutional infrastructure [Siwiński 2005, Tokarski 2007], and at improving endogenous preconditions for multifunctional economic development.

In many countries, especially within the EU, efforts are made to counteract excessive territorial

divergence. Within the EU, structural policy, including regional policy, is implemented and significant financial resources are allocated for achieving the objective related to real economic convergence [Klamut 2008, Kudelko et al. 2011, Dorożyński 2012]. The need to ensure an effective economic and social policy as well as intervention activities undertaken at various levels of territorial organisation – at the national level and at individual local government levels – require good identification of spatially varied and temporally fluent development prerequisites. The diagnosis resulting from the analysis of aggregated, and hence average, regional data is generally insufficient to reveal the existing differences and development problems. To identify this type of problem areas, it is important to undertake research at the level of local territorial units.

The aim of this paper was to present the results of research conducted by the authors at the local level in Poland and taking the years 2003–2012 into account, where an attempt was made to analyse and evaluate economic development of rural areas in the country in conditions of deepening integration process when the Cohesion Policy was being implemented after accession to the EU. This research was specifically aimed at determining:

- the extent to which the territorial scope of rural areas having a relatively high as well as medium and low level of development changed, and the number of citizens in such areas;
- the course of the analysed changes during the favourable economic climate of 2003–2008 and the slowdown in growth after 2008;
- whether there were differences in the course of developmental processes at the intraregional and interregional territorial level.

## RESEARCH METHOD AND DATA SOURCE

As indicated in literature on the subject [Stanny 2013], the general notion of rural area development is complex, interdisciplinary, and unambiguous, whereas the more narrow concept of economic development, which is the subject analysed in this paper, is generally understood as the entirety of quantitative changes

related to production volume (goods and services) and qualitative changes in the structure of economy<sup>1</sup>.

In case of research on economic development at the local level (communes or districts), the basic limitation is the absence of relevant statistical data (such as e.g. gross domestic product or gross value added) characterising changes in production volume at this level. The level of economic development and its variation can only be investigated as approximations by analysing a number of factors indirectly characterising the advancement of economic development at the same

time. This approach was adopted in the present study, where a multifactorial method of assessing the level of development in communes was used (the table). Data necessary for this type of multifactorial analysis was provided by computer Regional Data Banks (RDBs) published by the Central Statistical Office for individual years, while using GISs (geographic information systems) enabled problem maps to be created.

In the beginning, the multifactorial method of assessing the level of development in communes had been used by the authors for analyses statistically

**Table.** List of studied features and value ranges of these features in group I (high level of development) and group II (medium level of development)

Feature	Feature value ranges in group		
	I	II	
Persons working mainly in non-agricultural enterprises per 100 citizens in 2003, 2008, 2010 and 2012	> 35	30–35	
Business entities of natural persons (registered in the REGON system) per 100 citizens in 2003, 2008, 2010 and 2012	> 8	6–8	
Commune income from the share in taxes that constituted government budget income (PLN per citizen) <sup>a</sup>	in 2003	> 200	175–200
	in 2008, 2010 and 2012	> 480	420–480
The unemployed registered in communes per 100 citizens in 2003, 2008, 2010 and 2012	< 6	6–10	
Migration balance (internal migration and migration abroad) per 1,000 citizens <sup>b</sup>	between 1999–2003, 2004–2008	> +20	0 to +20
	between 2009–2010, 2011–2012	> +8	0 to +8
Percentage of working age population in the general population in 2003, 2008, 2010 and 2012	> 58	56–58	
Percentage of persons (aged 15 years or above) working at independent farms in the rural population in 2003, 2008, 2010 and 2012	< 10	10–15	
Population density per 1 km <sup>2</sup> of rural areas in 2003, 2008, 2010 and 2012	> 80	60–80	

<sup>a</sup> Value ranges for commune income from the share in taxes (that constituted government budget income) were different for 2003 than they were for other years due to statutory amendments introduced at the beginning of 2004 concerning the financing of local government units. In 2003, the percentage contribution of the commune to receipts from the income tax, paid by natural persons residing in the area of a given commune, was 16%, and in case of legal persons – 5%, whereas from 2004 these were equal to 39.34 and 6.71%, respectively. Corresponding (ca. 2.4-fold) increases in value ranges for the given feature compared to ranges from 2003 were estimated allowing for the extent of implemented changes and proportions of receipts from both taxes mentioned above.

<sup>b</sup> Value ranges for migration balance per 1,000 citizens were similarly differentiated, this time depending on the number of years taken into account, for which the total index was calculated. Value ranges covering five-year periods – 1993–2003 and 2004–2008 – are correspondingly greater, whereas the ranges used for analysing the two-year periods – 2009–2010 and 2011–2012 – are proportionally smaller.

<sup>1</sup> Wide overview of interpretations of this concept in literature and of factors taken into account was presented e.g. by Siudek and Vashchik [2014].

characterising territorial variations in development; it was only at a later stage when the method was adjusted for the purposes of dynamic approaches as well – it was used to monitor changes in time. This required the same factors to be allowed for in analyses referring to different periods and comparable assessment criteria to be adopted, including, but not limited to, value ranges for individual features. A significant hindrance in this respect were the changes occurring across data sets published in Regional Data Banks (RDBs), e.g. those working in non-agricultural and agricultural enterprises, which necessitated adoption of simplified criteria<sup>2</sup>.

Eight factors, shown in the table, were used to analyse the level of development in individual territorial units (rural communes and rural areas in rural/urban communes). Their selection was a result of a compromise between the desire to take into account significant features indirectly and approximately characterising the level of economic development and the ability to obtain comparable data for the entire 10-year period.

By setting two value ranges for each of the eight studied features: I for the higher level of development and II – for the medium level (the table) as well as by developing uniform principles of area classification, three categories of rural areas were identified: category A, where the level of development was relatively high and at least six features met the requirements of group I or II, including at least three features meeting the requirements of group I; category B, where the level of development was relatively average and at least four features met the requirements of group I or II; and category C where the level of development was relatively low and requirements for category A or B were not met.

Determination of the categories for all communes with rural areas across the four aforementioned years

became the basis for delimitation (on the national and provincial level) of areas varying in terms of the level of development (categories A, B, and C) independent for each of these four years and a basis for identifying alterations in the area and population ranges in areas belonging to particular categories and their locations within the studied 10-year period.

## RESULTS AND DISCUSSION

The categorisation of communes (rural communes and rural areas in urban/rural communes), performed independently for each of the four years (2003, 2008, 2010, and 2012) and allowing for comparable criteria within the eight studied factors, showed that in 72% of such territorial units (i.e. in 1,564 communes) the transformations that were taking place between 2003 and 2012 in the realm of the studied factors were not significant enough to affect the category (A, B or C) illustrating the level of commune development, according to the criteria applied. Category shift attested in the study for 2012 (compared to 2003) took place in case of only 28% of the territorial units with rural areas (i.e. in 607 communes). In the overwhelming majority of these communes (535, i.e. in 24% of such units in total), the shift was positive and signified improvement in the level of development measured by a shift in category: from C to B (in 350 communes), from B to A (in 163 communes), and from category C to A (in 22 communes). However, in a number of communes (72, i.e. in 3.3% of communes in total) the shift was detrimental and associated with reverting level of development in the studied years: from category B to C (in 59 communes) and from A to B (in 13 communes).

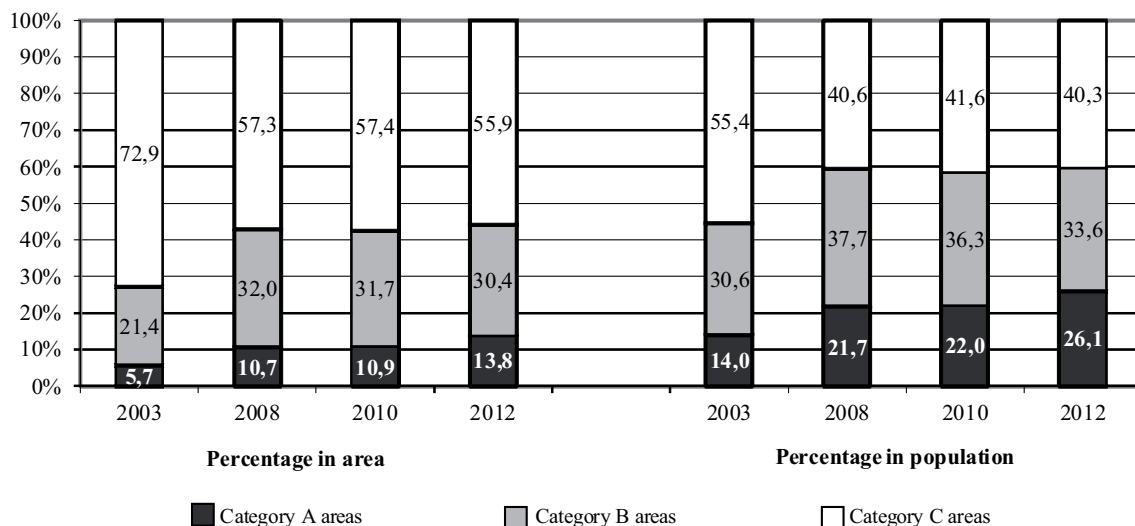
Delimitation of areas varying in terms of the level of development carried out across the entire country at the level of communes for the four years revealed that the total number of communes with rural areas fulfill-

<sup>2</sup> Initially (until 2003), data published for the employed covered communes, later it covered districts only. This necessitated reanalysis and commune categorisation for 2003 taking into account new criteria, modified (simplified) for the employed – the same for all years covered in the study. Data for the number of the employed was averaged in analysis at the district level. Workplaces located within districts were treated as places with employment potential for the general population of citizens of a given district. This solution provides a reasonable justification for the rising mobility of citizens, including rural citizens, in Poland as a result of developments in the automotive industry and broadened range of commuting [GUS 2014].

ing the criteria of relatively high level of development (i.e. category A) increased in balance terms in the studied 10-year period by 172 territorial units (from 203 to 375). At the national level, the surface area of such category A rural areas increased in each subsequent studied period and the increase across the entire decade (2003–2012) reached ca. 140% (from 16,700 to 40,000 km<sup>2</sup>), while its share in rural areas in total rose from 5.7 to 13.8%. The population in these areas was on the rise as well and it expanded by 93% (i.e. from 2.1 to 4 million people) during the entire analysed period, whereas its share in the general population living in rural areas rose from 14 to 26% (Fig. 1)<sup>3</sup>.

The total number of communes with rural areas classified as category B communes – medium level of development – in the country increased in balance terms in the years 2003–2012 by 142 territorial units (from 536 to 678). The surface area of rural areas falling within category B expanded by 41.8% (from

62,400 to 88,500 km<sup>2</sup>) and its share in rural areas in total rose from 21.4 to 30.4% during the entire decade studied (i.e. in 2012 relative to 2003). As opposed to category A areas, the total surface area of category B areas was subject to variation during the studied period. It substantially increased (by 49.5%) in the period of favourable economic climate in 2003–2008, then it saw a slight decrease during the period influenced by worldwide financial and economic crisis, and slowdown in growth (by 1% in 2009–2010 and by 4.2% in 2011–2012). The population of category B rural areas underwent similar changes – it expanded significantly in the first five years studied (by 1.1 million people) but was on the decrease in subsequent years studied. In consequence, the population in areas classified as averagely developed (Cat. B) rose in the entire 10-year period by about 14% (i.e. by 0.6 million people) only, and its share in total population living in rural areas increased from 30.6 to 33.6% (Fig. 1).



**Fig. 1.** The share of rural areas with high (category A), medium (category B), and low (category C) level of development in the total surface area of rural areas and in the rural population of the country in the years 2003–2012

Source: Own work based on the performed commune categorisation and delimitation of areas varying in the level of development.

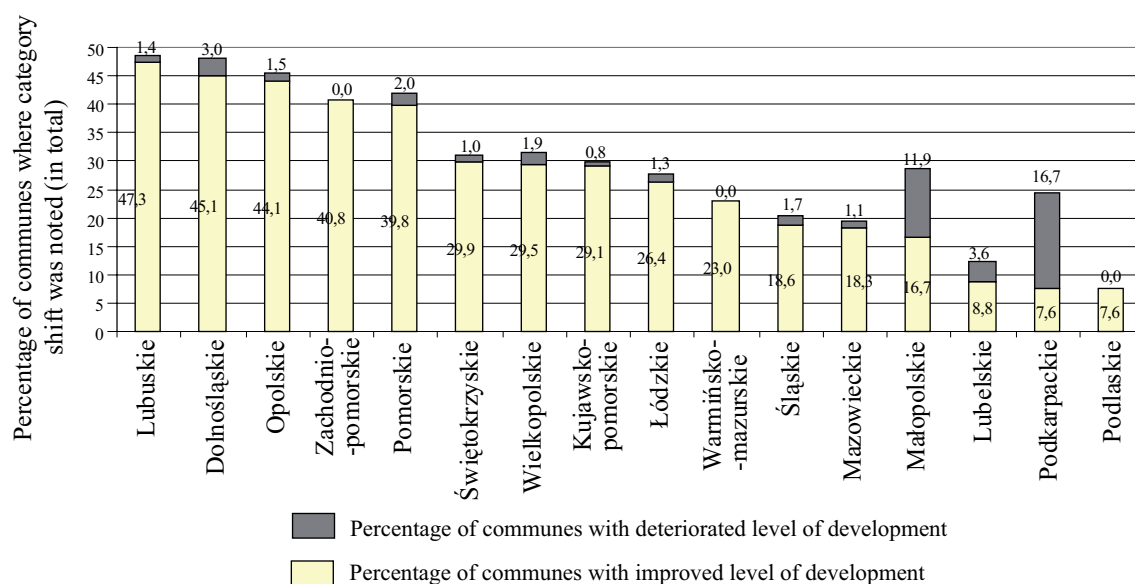
<sup>3</sup> The much higher reported share of category A areas in population than in surface area evidences relatively high population density of such highly developed areas. In addition, the difference in the discussed percentages (for both area and population) declining across the studied period indicates that the extent of category A areas was expanding to include territories with ever smaller population density.



As the percentage of rural areas with a high and medium level of development (categories A and B) was increasing in respect of area and population, the percentage of areas lagging behind in development – category C areas – was decreasing correspondingly in the studied period. The surface area of category C rural areas in the country dropped by 23.4% (from 212,400 to 162,600 km<sup>2</sup>) during the entire 10-year period (2003–2012), while the population of these areas dropped by 24.8% (2 million people). The share of category C areas in the total surface area of rural areas dropped down from slightly less than 73 to 56% between 2003 and 2012, whereas the share of people living in such areas lagging behind in development in the general rural population dropped from 55.4 to 40.3% (Fig. 1). The group of territorial units (rural communes and rural areas in urban/rural communes) classified as

category C units shrank in balance terms by 312 (from 1,432 to 1,120) in the entire studied period.

Although the communes (with rural areas) where the level of development improved in 2012 in comparison to 2003 (as measured by a shift in category) were located in all provinces, their territorial distribution was highly varied. At the provincial level, the share of communes with improved level of development (better category) in the general number of territorial units with rural areas was found to be the highest in the western, south-western, and north-western part of the country (in the Lubuskie, Śląskie, Opolskie, Zachodniopomorskie and Kujawsko-Pomorskie Voivodships), somewhat lower in central Poland (in the Wielkopolskie, Kujawsko-Pomorskie, Łódzkie and Mazowieckie Voivodships), and the lowest in eastern and south-eastern voivodships<sup>4</sup> (Fig. 2).



**Fig. 2.** The share of communes with improved and deteriorated level of development (as measured by category shift in 2012 relative to 2003) in the total number of communes with rural areas

Source: Own work based on the performed commune categorisation and delimitation of rural areas.

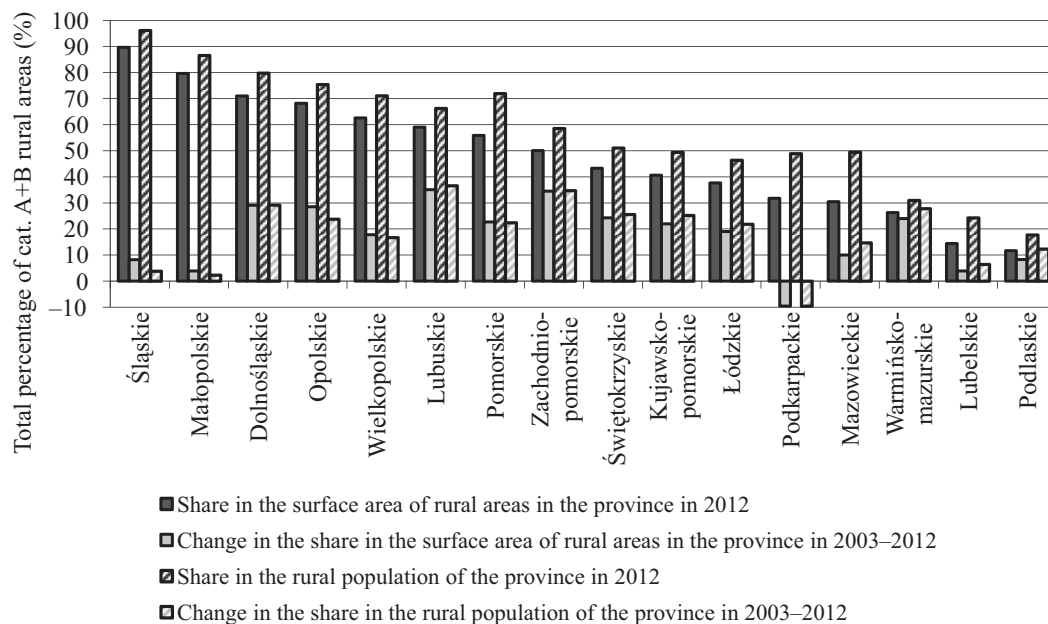
<sup>4</sup> The number of communes where the level of development (category) improved during the studied decade, which is partially a derivative of province size, was the largest in the Wielkopolskie (61 communes), Dolnośląskie (60) and Mazowieckie Voivodships (51), and the lowest in the Podlaskie (8), Podkarpackie (11) and the Lubelskie Voivodships (17) [Adamczyk-Łojewska 2016].

On the other hand, the communes where the level of development deteriorated (as measured by a shift in category) were located predominantly (70%) in three voivodships – Podkarpackie (24 communes that constituted 16.7% of communes with rural areas in total), Małopolskie (20, i.e. about 11.9% of the communes, respectively) and Lubelskie (7, i.e. 3.6% of the communes). The only province in the country where the number of communes with deteriorated level of development (13 of them) prevailed over the number of communes where the level had improved was the Podkarpackie Voivodship (Fig. 2).

In the first five years covered by the study (2003–2008), the percentage of rural areas classified as category A and B areas as a whole increased in all provinces, with the largest increase seen in western provinces. However, after 2008, during the period influenced by worldwide financial and economic crisis and slowdown in growth, increase in the percentage of such rural areas was much lower and did not occur in each province. In two provinces (Podkarpackie

and Małopolskie Voivodships), the percentage of category A+B areas in respect of surface area and population decreased in 2012 relative to 2008. While in the Małopolskie Voivodship in 2012 the discussed percentage remained relatively high, it plummeted (by 9.6%) below the value noted in 2003 in the Podkarpackie Voivodship (Fig. 3).

The process of business agglomeration around the largest cities, and, to a lesser extent, around other big and medium-sized cities as well, was clearly progressing in the studied decade. The extent of influence of the mentioned cities widened in 2012 relative to 2003. The ring of rural communes undergoing urbanisation in the close vicinity of these cities that met the criteria for category A, and later for category B, expanded. Centres of intensive concentration of such areas have formed around Olsztyn, Toruń, Gorzów Wielkopolski, Zielona Góra, Legnica, Opole and Częstochowa, as well as in the more distant regional background areas around large agglomerations, mainly in the Wielko-



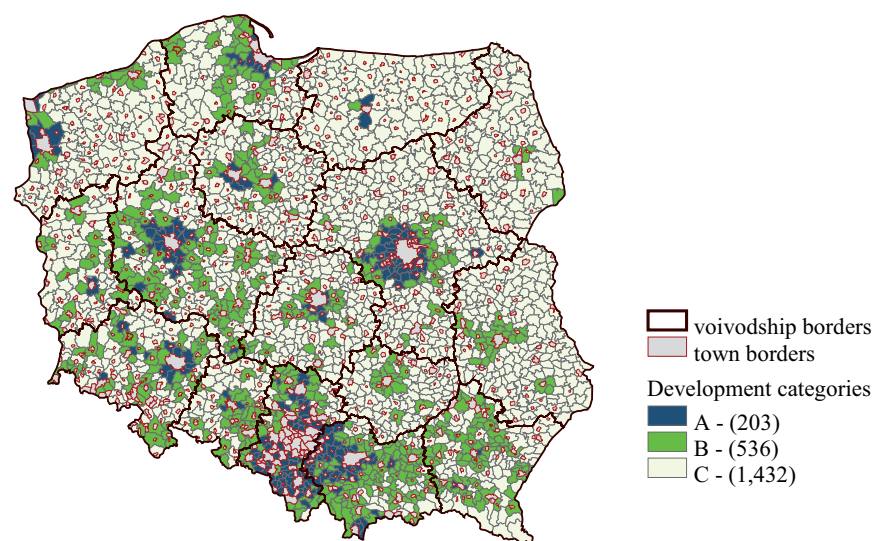
**Fig. 3.** The share of areas classified as category A+B areas in the total rural area surface and population of individual voivodships in 2012 and changes in the shares in years 2003–2012 (the voivodships are presented in descending order according to the share of category A+B areas in the surface area in 2012)

Source: Own work based on the commune categorisation and delimitation of rural areas performed on the national level.

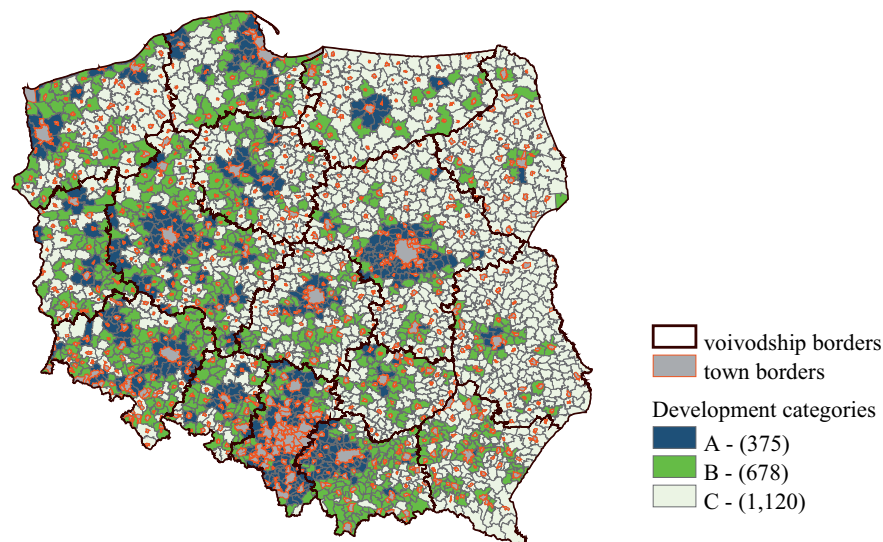
polskie Voivodship and other western voivodships, and in the coastal belt.

In 2012, rural areas with low level of development (classified as category C areas) were found mainly in places whose location was peripheral in relation to the cities (especially large cities), most of them lying in eastern and north-eastern Poland, and, to a lesser

extent, in central Poland. In 2012, the Podlaskie, Lubelskie and Warmińsko-Mazurskie Voivodships were still characterised by a very large (70–80%) percentage of rural areas with low level of development (category C); on the other hand, in the Łódzkie, Podkarpackie and Mazowieckie Voivodships this percentage was in the 60–70% value range (Figs. 3 and 4).



Rural area categories classified to the level of development in 2003



Rural area categories classified to the level of development in 2012

**Fig. 4.** Rural areas with various levels of development (categories A, B and C), in Poland in 2003 and 2012, determined on the basis of the executed categorization of communes for these years (in brackets the number of municipalities in a given category)

Source: Own work.



The presented research results suggest that economic development of rural areas is polarised in two dimensions, at the intraregional level (where a centre of development and peripheral areas can be distinguished) and, in particular, at the interregional level (the regions of western vs. eastern Poland). It should also be noted that the revealed results converge to an extremely large extent with results of a similar study on variation in socio-economic development, which was conducted at the level of communes and employed as much as 47 empirical indicators [Rosner and Stanny 2014].

## CONCLUSIONS

The foregoing experiment of the authors, employing a multifactorial method used to evaluate the level of development of all communes in the country, including rural areas and using data from RDBs of the CSC, suggests that it is possible to monitor developmental changes in such local territorial units across time and to identify problem areas. These possibilities are indispensable in adoption of an effective economic policy at various levels of territorial organisation. The study, covering a 10-year period (2003–2012) and including the same eight factors and comparable assessment criteria, facilitated characterisation of a relative level of development in all territorial units with rural areas (i.e. rural communes and rural areas in urban/rural communes) and their classification (according to the applied principles) in one of the three categories (reflecting a relatively high, medium, or low level of development, i.e. category A, B or C, respectively). Commune categorisation of this kind performed independently for four years (2003, 2008, 2010 and 2012) was used as a basis for delimitation (on the national and provincial level) of areas varying in terms of the level of development (categories A, B and C) independent for each of aforementioned years, which gave way to the following conclusions:

- In the studied decade (2003–2012), the share of rural areas classified as highly and averagely developed areas (categories A and B) in the total rural area and population increased at the national level. As a result, the share of areas with low level of development (category C) in the total rural area and rural population decreased accordingly (from 73 to 56% and from 55 to 40%, respectively).
- While the percentage of category A areas rose in each of the four analysed periods, the percentage of category B areas rose in the years 2003–2008 and then slightly dropped compared to 2008 in conditions of unfavourable economic climate.
- Rural areas were found in all provinces; their level of development (as measured by a shift in category) improved in 2012 relative to 2003. However, improvement processes varied significantly in terms of location. The percentage of communes with category shift noted in 2012 relative to 2003 was the largest in the western, south-western, and north-western part of the country (the improvement affected 47–40% of the total number of communes in individual voivodships), somewhat lower in central Poland (within ca. 30–18%), and the lowest in eastern and south-eastern voivodships (less than 10%).
- Communes where the level of development deteriorated in the years 2003–2012 (which was measured by a shift in category) were located in 13 voivodships, usually with a few such communes (1–4) per voivodship. The number of regressive communes was significant in three provinces only (Podkarpackie, Wielkopolskie, and Lubelskie Voivodships).
- In the studied decade, the process of business agglomeration around cities, predominantly large cities, was progressing. The territorial extent of influence of such cities on the rural areas surrounding them widened significantly. Centres of intensive concentration of rural areas with high and medium level of development have formed in the more distant background areas around large urban agglomerations, mainly in Wielkopolskie Voivodship and other western voivodships as well as in the coastal belt.
- Rural areas classified in 2012 as category C areas (low level of development) were generally located in peripheral regions relative to large cities, chiefly in eastern, north-eastern, and south-eastern Poland, and partially in central Poland. In consequence, the differences between the western and the eastern parts of the country became more pronounced.

## ACKNOWLEDGEMENTS

The views and opinions expressed in this paper are those of the authors and do not necessarily reflect the views and opinions of the National Bank of Poland.

The project entitled *Discussion Forum – Measurement and Evaluation of Economic and Social Phenomena (MASEP)* is implemented in cooperation with the National Bank of Poland within the framework of economic education.

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## ZMIANY POZIOMU ROZWOJU OBSZARÓW WIEJSKICH W POLSCE PO AKCESJI DO UNII EUROPEJSKIEJ – WYNIKI KATEGORYZACJI GMIN

### STRESZCZENIE

Celem artykułu jest przedstawienie analizy i oceny rozwoju gospodarczego obszarów wiejskich w Polsce w dziesięcioletnim okresie 2003–2012, tj. w warunkach pogłębiającego się procesu integracyjnego i realizowania polityki spójności po akcesji do Unii Europejskiej. W opracowaniu przedstawiono wyniki badań przeprowadzonych przez autorów w skali całego kraju w przekroju gmin, w których wykorzystano banki danych regionalnych (BDR) GUS i techniki GIS. Ze względu na brak syntetycznych mierników (PKB czy WDB) w odniesieniu do gmin, zastosowano wieloczynnikową metodę oceny poziomu rozwoju. Uwzględniając porównywalne kryteria w zakresie ośmiu analizowanych czynników, określono oddzielnie dla czterech lat (2003, 2008, 2010 i 2012) relatywny poziom rozwoju poszczególnych gmin: wysoki, średni lub niski (odpowiednio kategorii A, B lub C). Stało się to podstawą dla przeprowadzenia (w skali kraju, a także województw) czterech odrębnych delimitacji obszarów różniących się poziomem rozwoju (A, B i C) w badanych latach, a także określenia w badanym dziesięcioleciu zmian w zakresie powierzchni i liczby mieszkańców obszarów poszczególnych kategorii oraz ich lokalizacji.

**Słowa kluczowe:** gospodarka Polski, obszary wiejskie, terytorialne zróżnicowanie rozwoju gospodarczego, ujęcie dynamiczne, lokalny i regionalny wymiar analizy