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**Iwona Pomianek**

*Warsaw University of Life Sciences – SGGW, Poland*

## **ASSESSMENT OF THE DEVELOPMENT LEVEL IN BORDER RURAL AREAS OF WESTERN POLAND**

### *OCENA POZIOMU ROZWOJU WIEJSKICH OBSZARÓW PRZYGRANICZNYCH W ZACHODNIEJ POLSCE*

**Key words:** local development, border communes, Hellwig's measure, western Poland

*Słowa kluczowe:* rozwój lokalny, gminy przygraniczne, miernik Hellwiga, Polska zachodnia

**Abstract.** The paper presents characteristics of the development level in rural and urban-rural communes, situated in border areas of three Voivodeships in western Poland (Zachodniopomorskie, Lubuskie and Dolnośląskie). In order to classify and compare rural areas, Hellwig's synthetic measure was used. The analysis showed that communes with a high level of development are concentrated mainly in the Zachodniopomorskie Voivodeship, including Szczecin's suburban area as well as the Baltic coastal zone.

### **Introduction**

The subject of rural development is willingly undertaken by researchers of such scientific fields as economics, sociology, geography, statistics, etc. Moreover, the issue of border location is not only geographically important, but primarily of political and economic significance. Rural border areas combine the specificity of both of these issues. Numerous studies have shown that rural areas remote from urban centres are characterized by lower levels of development [Rosner 1999, Brodziński 2011]. Border areas are usually situated peripherally to regional economic centres. Hence, the following phenomena specific to peripheral areas may exist there: an unfavourable demographic structure, depopulation, high unemployment, low levels of entrepreneurship, underdeveloped technical and social infrastructure etc. Nevertheless, the specific location of the communes enables cross-border cooperation with neighbouring areas in Germany and the Czech Republic (also within Euroregions). Such cooperation involves carrying out activities within sustainable development, environmental protection or reducing unemployment etc.

### **Material and methods**

The paper aims to outline differences in the level of development of rural areas in the border zones of three Voivodeships in western Poland: Zachodniopomorskie, Lubuskie and Dolnośląskie. It was accepted that rural areas cover rural and semi-rural territories, including small towns which are the seats of urban-rural communes, strictly (functionally and spatially) related to surrounding rural areas [Kłodziński 2006, Dijkstra and Poelman 2014]. The analysis includes 95 entities referred to in the Regulation of the Minister of Interior and Administration of August 29, 2005, regarding a list of territorial units located in the border zone (Regulation of the Minister of Internal Affairs and Administration of 29 August 2005) [Dz.U. no. 188, 2005, pos. 1580]. The Voivodeships directly border eastern German lands, while the Dolnośląskie Voivodeship also borders northern regions of the Czech Republic. However, these are economically the weakest lands with negative demographic indicators [see: Dijkstra et al. 2011]. The combination of developmental problems of foreign neighborhoods is not an appropriate stimulus for the development of national communes. Therefore, they may mostly rely on their internal development potential. Using the method of Hellwig's measure [Hellwig 1968], a development rank has been constructed. The

choice of variables was preceded by studies of literature and previous research conducted by the author. Variables had to be measurable, available at LAU-2 (communes), complete and represent the most important socio-economic aspects. The data were derived from the Local Data Bank and the Central Statistical Office (31.12.2012). The following diagnostic variables have been accepted:

- X1 – population per 1 square kilometre,
- X2 – balance of births and deaths per 1,000 population,
- X3 – population of post working-age per 100 population of working-age,
- X4 – proportion of registered unemployed in the working-age population;
- X5 – total balance of migration,
- X6 – proportion of children aged 3-5 participating in preschool education,
- X7 – proportion of councillors with university degrees,
- X8 – proportion of councillors with high professional qualifications,
- X9 – foundations, associations and social organizations per 10000 population,
- X10 – national economy entities registered in REGON per 10000 population,
- X11 – natural person running economic activity per 100 working-age population,
- X12 – newly registered entities per 10000 working-age population,
- X13 – the commune's own income per capita,
- X14 – the commune's income for the EU projects realization per capita,
- X15 – the commune's property investment expenditure per capita,
- X16 – proportion of population with water supply connection,
- X17 – proportion of population with sewerage connection.

Hellwig's synthetic measure of development groups information from a set of diagnostic features assigning a single (aggregate) measure. The measure is calculated as a synthetic indicator of taxonomic distance of the object from the theoretical pattern of development. The method organizes a set of objects (communes), each of them described in a set of diagnostic features: stimulants or destimulants. The variables are normalized and then a transformation matrix of standardized values is used to determine the pattern of development – a hypothetical object (commune) with the best values of the observed variables. Then, the distance from the pattern for each object (commune) is determined (for a more detailed description please see: [Pomianek 2010, 2014]). The taxonomic measure ( $d_i$ ) takes values from the interval  $[0, 1]$ . The more the characteristics of a commune are similar to the pattern, the higher the level of its development. The classification of communes according to the level of development uses two parameters: the arithmetic mean and standard deviation. A division into the following class intervals is made as follows:

- class 1 (high level of development)  $d_i > \bar{d}_i + s_{d_i}$ , grouping communes whose distances from the pattern exceed the value of  $\bar{d}_i + s_{d_i}$ ,
- class 2 (medium level of development)  $\bar{d}_i - s_{d_i} < d_i \leq \bar{d}_i + s_{d_i}$ , grouping communes whose distances from the pattern ranges in  $(\bar{d}_{i_{d_i}} - s_{d_i}, \bar{d}_i + s_{d_i}]$ ,
- class 3 (low level of development)  $d_i \leq \bar{d}_i - s_{d_i}$ , grouping communes whose distances from the pattern do not exceed the value of  $\bar{d}_i - s_{d_i}$ ,  
where:  
 $d_i$  – Hellwig's synthetic measure value;  $\bar{d}_i$  – arithmetic mean of  $d_i$ ;  $s_{d_i}$  – standard deviation of  $d_i$ .

## Research results

Grouping the communes by Hellwig's measure distinguishes three classes of development: high, medium and low. As many as 35 communes have been found in the class of high development level – Class 1 (Tab. 1, Fig. 1). They are mainly situated in the Zachodniopomorskie Voivodeship – in a close zone along the German border (Nowe Warpno, Dobra Szczecińska, Kołbaskowo) and in the coastal area (Rewal, Ustronie Morskie, Mielno, Dziwnów, Kołobrzeg,

Table 1. Ranking of the top ten and bottom ten communes according to Hellwig's measure  
*Tabela 1. Ranking dziesięciu najlepszych i dziesięciu najslabszych gmin wg miernika Hellwiga*

Rank/ <i>Miejsce</i>	Voivodship/ <i>Województwo</i>	Commune/ <i>Gmina</i>	Measure value/ <i>Wartość miernika</i>	Class/ <i>Klasa</i>
1	Zachodnio-pomorskie	Nowe Warpno (u-r)	0.3670	1
2		Dobra (Szczecińska) (r)	0.3134	1
3		Rewal (r)	0.3041	1
4		Ustronie Morskie (r)	0.2537	1
5		Mielno (r)	0.2526	1
6		Międzyzdroje (u-r)	0.2435	1
7		Kołbaskowo (r)	0.2433	1
8		Dziwnów (u-r)	0.2320	1
9		Kołobrzeg (r)	0.2167	1
10		Stepnica (r)	0.2125	1
...				
86	Lubuskie	Wymiarki (r)	0.0704	2
87		Gubin (r)	0.0657	3
88	Dolnośląskie	Mirsk (u-r)	0.0648	3
89	Zachodnio-pomorskie	Brojce (r)	0.0638	3
90	Dolnośląskie	Bystrzyca Kłodzka (u-r)	0.0631	3
91		Międzylesie (u-r)	0.0593	3
92		Nowa Ruda (r)	0.0477	3
93	Lubuskie	Tuplice (r)	0.0462	3
94		Maszewo (r)	0.0434	3
95		Trzebiel (r)	0.0347	3

(r) – rural commune/*gmina wiejska*; (u-r) – urban-rural commune/*gmina miejsko-wiejska*

Source: own study based on the LDB CSO data

*Źródło: obliczenia własne na podstawie danych BDL GUS*

Międzyzdroje). Communes of a low level of development (Class 3) are found in the Lubuskie Voivodship (Gubin, Tuplice, Maszewo, Trzebiel) and in the Dolnośląskie Voivodship (Mirsk, Bystrzyca Kłodzka, Międzyzlesie, Nowa Ruda). Brojce is the only “weak” commune in the Zachodniopomorskie Voivodship. On the background of other entities, these are drawn as communes with some developmental problems.

These communes, where the accumulation of negative values of several different variables has been observed, remain in a particularly difficult situation. In Trzebiel, ranked in last place, a low activeness of inhabitants and local government has been observed. It has been reflected by reluctant representation of the community in the local council (by the highly educated – X7 or those having professional qualifications – X8), by social work (small number of foundations or associations – X9) as well as by passivity of local authorities (in obtaining external funds for projects – X14 and investment expenditure – X15). Similarly, other variables' values represent low levels. In Bystrzyca Kłodzka (a commune situated next to highly-developed Stronie Śląskie) there has been a negative birth rate (X2), eight times lower than the mean for border communes. Moreover, a relatively high proportion of population of post working-age per 100 population of working-age (X3) has been observed. The greatest problem in Gubin and Maszewo concerns the lowest values of population density (14 and 17 people per square kilometre, in comparison to an average of 62 people in the border communes). Consequently, there have been particularly low values of entrepreneurship indicators (X10 and X11) as well as of infrastructural indicator X17.

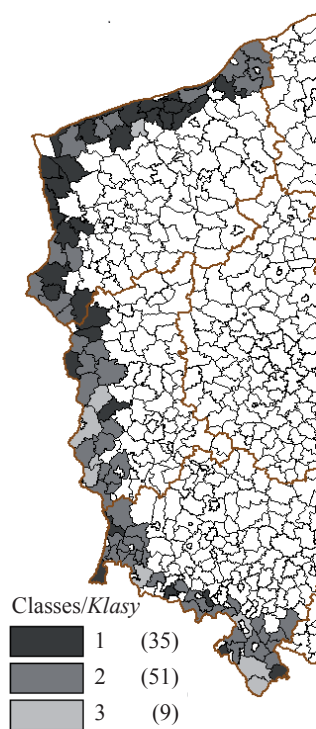


Figure 1. Socio-economic development level of the border communes

Rysunek 1. Poziom rozwoju społeczno-gospodarczego gmin ze strefy nadgranicznej

Source: own study based on the LDB CSO data

Źródło: obliczenia własne na podstawie danych BDL GUS

Attractive natural conditions for tourism development and a typically nucleated settlement network contribute positively to economic conditions in the Zachodniopomorskie Voivodeship (Tab. 2). The compact settlement enables easy access to technical and social infrastructure and its development. Besides, high economic activity of the population is reflected in a very large number of small businesses based on tourism, especially in the coastal zone. This results in an increase in local budget revenues and a larger autonomy of expenditure. On the other hand, in some communes, self-governments must face relatively high unemployment as well as a negative migration balance, especially amongst the young and educated.

The border communes in the Lubuskie Voivodeship have been lagging behind in terms of development, in relation to the other analysed regions. A low population density, small number of births and negative migration balance may be a result of a low level of local government investment.

Table 2. Average values of the variables

Tabela 2. Średnie wartości analizowanych zmiennych

Variable/ Zmienna	Class 1/ Klasa 1	Class 3/ Klasa 3	Voivodship/Województwo		
			Zachodniopomorskie	Lubuskie	Dolnośląskie
X1	73.6	42.7	56.9	40.9	78.1
X2	0.7	-2.0	1.0	0.2	-2.4
X3	22.6	24.8	21.8	22.6	25.2
X4	9.8	14.1	11.0	9.3	12.1
X5	16.1	-22.1	14.8	-15.7	-11.0
X6	62.4	49.4	57.3	56.1	55.2
X7	47.8	27.5	39.8	32.4	32.1
X8	38.2	20.8	29.9	26.4	29.6
X9	33.0	27.7	31.9	27.8	31.7
X10	1343.8	695.1	1235.4	787.7	853.6
X11	16.0	7.9	15.1	8.9	9.2
X12	201.4	116.2	178.3	131.5	140.2
X13	3172.4	1015.7	2909.1	1483.4	1383.4
X14	406.9	154.4	389.6	176.7	271.6
X15	1309.6	338.3	1212.2	428.5	583.5
X16	90.6	74.6	91.5	83.2	76.1
X17	68.2	20.0	62.3	33.8	37.4

Source: own study based on the LDB CSO data

Źródło: obliczenia własne na podstawie danych BDL GUS

## Conclusions

Numerous studies in the level of socio-economic development [Stanny 2013, Rosner 2007] indicate that there has been a contrast between underdeveloped Eastern Poland and relatively better developed western regions. However, as the analysis shows, the western areas are not equally developed. Border position and possible trans-border co-operation do not ensure favourable economic indicators and socio-demographic characteristics. The communes of a high level of development are concentrated in the Zachodniopomorskie Voivodeship, including Szczecin's suburban area as well as the coastal zone. Therefore, a high level of development is determined there mainly by environmental conditions, including the proximity of the Baltic Sea. In relation to the other analysed areas, most border communes in the Lubuskie Voivodeship have been lagging behind in terms of socio-economic development. Remedial actions conducted in these communes should be of a long-term and multidimensional character. Only a coherent set of actions undertaken by the local government, residents and entrepreneurs is a guarantee of success, i.e. improving the level of socio-economic development of the commune.

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## Streszczenie

Przedstawiono charakterystykę poziomu rozwoju gmin wiejskich i miejsko-wiejskich, położonych w strefie nadgranicznej trzech województw zachodniej Polski (zachodniopomorskiego, lubuskiego i dolnośląskiego) w roku 2012, przy zastosowaniu miary syntetycznej Hellwiga. Gminy o wysokim poziomie rozwoju były skoncentrowane głównie w województwie zachodniopomorskim, m.in. w strefie podmiejskiej Szczecina i w pasie nadmorskim.

Corresponding address  
dr inż. Iwona Pomianek

Warsaw University of Life Sciences – SGGW, Poland  
Faculty of Economic Sciences, Department of European Policy, Public Finance and Marketing  
Nowoursynowska St. 166, 02-787 Warsaw  
e-mail: iwona\_pomianek@sggw.pl