PROBLEM RURAL AREAS IN THE REGION OF WARMIA AND MAZURY

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Abstract
Rural areas in Poland are vastly differentiated in their level of social and economic development. Adverse natural, social, economic and technological processes contribute to the formation of problem areas. Negative phenomena can spread across several municipalities, contributing to the number and severity of problems. Rural municipalities characterized by a low level of social and technical development are not attractive sites for prospective investors or home buyers. Geographical location can also contribute to the formation of problem areas. The Region of Warmia and Mazury borders the Kaliningrad Region, and it is one of the least developed areas in Poland. Rural areas in Warmia and Mazury are characterized by significant disparities in the level of social and economic development. The aim of this paper was to identify problem rural areas in the Region of Warmia and Mazury based on indicators of social, demographic, economic and infrastructure development. Problem areas in the Region of Warmia and Mazury were identified using Hellwig’s taxonomic measure of development. The results of our analysis indicate that in rural areas in the Region of Warmia and Mazury, the most severe problems are observed in typically agricultural municipalities which have a peripheral location and where state-owned farms had acted as the main employer.

Key words: rural areas, problem areas, Region of Warmia and Mazury.

Introduction
Rural areas in Poland are vastly differentiated in their level of social and economic development due to endogenous and exogenous factors which affect a given region. The gap between the most developed areas and those that lag behind continues to grow, and it contributes to the formation of problem areas which are characterized by adverse environmental processes and developmental trends. Negative phenomena can spread across several municipalities, contributing to the number and severity of problems. Rural municipalities characterized by a low level of social and technical development are not attractive sites for prospective investors or home buyers. Geographical location can also contribute to the formation of problem areas. In line with the classical core-periphery model, suburban areas are characterized by much higher levels of development than areas situated in peripheral districts of a region or country (Wójcik, 2012; Pénes, 2013; Stanny, 2013). The Region of Warmia and Mazury borders the Kaliningrad Region, and it is one of the least developed areas in Poland. Rural areas in Warmia and Mazury are characterized by significant disparities in the level of social and economic development. This paper relies on Hellwig’s taxonomic measure of development to identify rural areas in the Region of Warmia and Mazury which face demographic, social, economic and infrastructure problems. According to J. Bański (1999), problem areas and the underlying causes of developmental gaps should be identified to minimize those negative phenomena.

Materials and Methods
Demographic, social, economic and infrastructure problems in rural areas in the Region of Warmia and Mazury

The Region of Warmia and Mazury has the lowest population density in Poland which is estimated at 25 persons km⁻² on average. Rural municipalities with the lowest population density (below 19 persons km⁻²) are situated mainly in the northern and eastern parts of the region. The highest population density (above 30 persons km⁻²) is reported in municipalities that directly neighbor the cities of Olsztyn and Elbląg and in the north-western parts of the region in the proximity of national roads No. 7 and 16. Demographic trends are also very important determinants of population growth. In rural areas of the Region of Warmia and Mazury, population growth in 2011 ranged from -4.8‰ (municipality of Stare Juchy) to 9.3‰ (municipality of Stawiguda). Spatial variations in demography indicate that population growth below 2‰ was noted predominantly in rural municipalities situated in northern and eastern parts of the region. Municipalities occupying central and western sections of the region were generally characterized by population growth higher than 5‰. Migration patterns strongly affect the local population, its structure and spatial distribution. The Region of Warmia and Mazury has been long characterized by a population outflow due to low levels of urban growth, lagging infrastructure development and high unemployment since the political transformations of 1989 (Frenkel, 2002; Stanny, 2013). The opening of selected EU labor markets to Polish citizens also contributed to migration, although the migration rate decreased after 2008 when Europe experienced an economic downturn. In rural municipalities of the region, the average migration rate reached -1.8‰ in 2011. The highest migration rates (above 10 ‰) were noted in municipalities neighboring Olsztyn, and the lowest (above -7.0‰) – in municipalities situated in...
the eastern part of the region. The changes in rural population resulting from increased migration and lower population growth contribute to population aging. In rural areas of the Region of Warmia and Mazury, the proportions of different age groups were as follows: young people – 23%, people of working age – 64%, retired – 13%. The most adverse trends were reported in rural municipalities in northern and eastern parts of the region which had the highest share of older citizens and the lowest percentage of young people. The above correlations are indicative of progressing aging of society. Unemployment poses a significant problem in the Region of Warmia and Mazury (Gajowiak, 2013). In 2011, registered unemployment reached 20.1%, and it was the highest in the country (the national average is 12.5%). Unemployment was particularly high in municipalities whose residents had been previously employed in state-owned farms. In rural areas of Warmia and Mazury, more than 15% of working-age people are registered as unemployed.

High levels of enterprise significantly contribute to economic development. In 2011, 31,720 businesses were registered in the REGON (Register of the National Economy) system in rural areas, accounting for 27.0% of the total number of enterprises in Warmia and Mazury. Enterprise concentrations are illustrated by the number of business registrations per 10,000 inhabitants which reached 537 in rural areas in 2011. The highest values of this indicator were noted in rural municipalities situated in the direct proximity of Olsztyn and Elbląg and in the central part of the region. In 2011, those municipalities also reported the highest number of newly registered businesses per 10,000 inhabitants. The lowest number of enterprises and newly registered businesses per 10,000 residents was noted in northern municipalities where employment had previously concentrated in state-owned farms. In those areas, the growth of enterprise is inhibited mainly by low levels of education of the local labor force, lagging infrastructure development, lack of capital and an unsupportive business environment (Gwiaździńska-Goraj, Sebastian Goraj, Magdalena Nowak).

The noted variations can be attributed to dispersed settlement as well as the presence of extensive forests and lakes in the region. Vast disproportions are also observed in the coverage of sewerage networks in rural areas. Sewers are more expensive to build than water supply pipelines, and some municipalities lack the required funding. The highest sewer coverage in excess of 55 km (100 km²)\(^1\) was reported in municipalities adjacent to Olsztyn (Gietrzwałd and Stawiguda), and the lowest – in municipalities situated in northern and western parts of the region.

Social infrastructure is yet another element that considerably influences social and economic development in rural areas. The majority of schools in rural municipalities are primary and middle schools, and the opportunities for secondary education are significantly limited (Gwiaździńska-Goraj, 2011). In 2010, there were a total of 379 primary schools and 132 middle schools in rural municipalities of Warmia and Mazury, with an average of 87.2 students per primary school and 120.2 students per middle school. Computer access in schools can help expand young people’s knowledge. In rural areas, there were an average of 7 primary school students (excluding special schools) and 9 middle school students (excluding special schools) per computer with Internet access. The above statistics are below the regional average. Libraries (around 200), community centers and clubs (around 90) also play an important role in the social change process. The quality of health care services in rural areas is visibly lower in comparison with urban centers. In 2011, rural municipalities operated 153 health care facilities which accounted for only 19% of the total number of health care centers in Warmia and Mazury. Many rural municipalities lack the funds to upgrade health care facilities and provide them with expensive equipment.

**Methods**

Problem areas have different definitions in literature. According to S. Ciok (1996), a problem area is a territory characterized by low efficiency of social, economic and spatial structures. R. Domaniński (1987) identifies problem areas as those parts of a region which are affected by particularly severe problems or problems that are difficult to solve. According to J. Bański (1999), a problem area is a spatial unit characterized by abnormality in one or more elements of space. All of the cited authors agree that adverse phenomena in certain areas of activity thwart social and economic development. The Region of Warmia and Mazury is characterized by a low level of social and economic development, high unemployment, low levels of enterprise and low levels of technical and social infrastructure. Those problems contribute to Warmia and Mazury’s status of a problem area on...
the national scale. The present problems are largely rooted in the region’s history and the post-war efforts to promote industrial development mainly in western regions of Poland. Before the political transformations of 1989, Warmia and Mazury was a largely agricultural region due to supporting natural conditions and a high share of state-owned land. The introduction of a free market economy further deepened social and economic inequalities between Polish regions. In Warmia and Mazury, the transformation process was particularly problematic on account of the prevalence of farmland that was owned by the socialist authorities. Structural unemployment, weakly developed technological and social infrastructure and deteriorating living standards contributed to the social divide among rural municipalities and the formation of areas experiencing particular problems in social, economic and infrastructural development. According to J. Bański, problem areas have many features in common, and areas of interference often have to face multiple challenges. In this study, problem rural areas in Warmia and Mazury were identified based on indicators of social, demographic, economic and infrastructure development.

Social and demographic indicators: population density, population growth per 1000 inhabitants, migration rate per 1000 inhabitants, share of working-age persons in total population, share of unemployed persons in the working-age population.

Economic indicators: number of businesses per 10,000 inhabitants, share of industrial and construction sector businesses in the total number of businesses, share of service providers in the total number of businesses, share of newly registered businesses in the total number of businesses, income per capita.

Indicators of technical and social infrastructure development: water supply coverage per 100 km², sewerage coverage per 100 km², percentage share of households with a bathroom in the total number of households, average usable floor area per person, number of students per computer with Internet access in primary schools (excluding special schools), number of library books per 1000 inhabitants, number of inhabitants per health care facility.

Problem areas in the Region of Warmia and Mazury were identified based on Hellwig’s taxonomic measure of development (Feltynowski and Nowakowska, 2009). The analyzed municipalities were classified into groups with the use of the following formula:

$$d_i = \frac{C_{ik}}{C_o}$$  \hspace{1cm} (1)$$

where:
- $d_i$ - measure development
- $C_{ik}$ - distance between point $X_{ik}$ and $X_{jk}$
- $C_o$ - model

The distance between point $X_a$ and $X_b$ is calculated with the below formula:

$$C_{ij} = \sqrt{\sum_{k=1}^{n} (X_{ik} - X_{jk})^2}$$  \hspace{1cm} (2)$$

$$C_o = \bar{C}_{ij} + 2S_o$$  \hspace{1cm} (3)$$

$$\bar{C}_{ij} = \frac{1}{n} \sum_{i=1}^{n} C_{ij}$$  \hspace{1cm} (4)$$

$$S_o = \left[ \frac{1}{n} \sum_{i=1}^{n} (C_{ij} - \bar{C}_{ij})^2 \right]^{1/2}$$  \hspace{1cm} (5)$$

where:
- $X_{ik}$ - standardized variable
- $X_{jk}$ - stimulant or destimulant for a given indicator
- $S_o$ - standard deviation of distance from model

Classes are identified on an interval scale of development indicators based on the arithmetic mean and standard deviation. The following principles were applied to identify six classes by use arithmetic average and standard deviation.

Results and Discussion

Based on the analyzed indicators, the analyzed municipalities were grouped into one of the six classes, ranging from class I characterized by the highest level of social and economic development to class VI marked by the lowest level of development. In the group of 100 analyzed municipalities, 4 were identified as belonging to class I, 9 – class II, 30 – class III, 43 – class IV, 14 – class V, and none were assigned to class VI, which is a positive symptom. Class V municipalities which are possible candidates for class VI were regarded as problem areas.

The spatial distribution of rural municipalities which lag behind in social, economic and infrastructure development indicates that the encountered problems are correlated with local conditions, the extent and rate of socio-economic changes. Municipalities characterized by high scenic beauty (Masurian Lakeland) have achieved a higher level of social and economic growth than areas characterized by a predominance of state-owned farms in the past where high unemployment is closely correlated with a low level of social and economic development. The most problematic municipalities are situated in the northern part of the region. Their demographic situation is unsatisfactory, and they scored below the average in most population metrics. Adverse demographic trends and high unemployment significantly detract from those municipalities’ attractiveness for investors. The average number of businesses per 10,000 inhabitants...
was not exceeded in any of the municipalities assigned to this class. The development of non-farming activities, which could improve the situation of the least developed municipalities, was also limited due to low levels of education and dilapidated technical infrastructure. Four out of 14 municipalities in class V failed to attain the average values of six indicators of technical and social infrastructure development (regional average for rural municipalities). Geographic location is also a robust determinant of local development. The majority of problem municipalities are situated along the Polish border which is also the EU’s eastern frontier.

A total of 14 rural municipalities were classified as problem areas based on the results of the analysis. The problems experienced by the municipalities of Bisztynek, Godkowo, Rychliki, Orneta, Kolno, Frombork, Pieniżno and Sępole resulted from several overlapping negative trends in social, economic and infrastructure development. The most common causes of lagging development in Warmia and Mazury include the former predominance of state-owned farms, low levels of involvement in non-farming activities (low level of functional diversification) and peripheral location. The correlations between the analyzed municipalities’ classification status and adverse developmental trends were examined.

Until the end of the 1980s, rural municipalities in the Region of Warmia and Mazury had the status of agricultural areas (Gwiaździńska-Goraj and Jezierska-Thole, 2013; Gwiaździńska-Goraj and Goraj, 2013). Political transformations initiated far-reaching social and economic changes whose pace and character differed subject to local conditions (Kluvankova-OHAVska, 2004). Those transitions further widened the developmental gap among rural municipalities in the region. Municipalities with a high share of state-owned farms, including class V municipalities, were most reluctant to adapt to the requirements of a free market economy. The share of state-owned farms in the area of 14 problem municipalities in 1988 ranged from 13% in Janowiec Kościelny to 50.3% in Rychliki. State-owned farms were particularly difficult to restructure, and their closure led to significant unemployment (Gajowiak, 2013). Many farm employees were low-skilled workers with very few chances of employment in other sectors of the economy. Low levels of education and lagging infrastructure development posed significant barriers to enterprise growth.

Low levels of enterprise can contribute to the formation of problem areas. Non-farming activities create new jobs, generate additional income for members of the local community and promote social and economic growth in rural areas (Pałka, 2010). According to J. Bański and W. Stola (2002), rural areas with a higher level of social and economic development are characterized by greater functional complexity, and the above observation was validated by the results of our study. The majority of rural municipalities identified as problem areas were monofunctional territorial units with predominantly agricultural economies (Fig. 3).
Figure 2. State-owned farms in the Region of Warmia and Mazury in 1988.

Figure 3. Functional classification of rural areas in the Region of Warmia and Mazury in 2009.
Geographic location can also contribute to developmental lags, and peripheral municipalities which are situated remotely from economic hubs are very often identified as problem areas (Jezierska-Thole and Gwiazdzinska-Goraj, 2013). Ten out of the 14 problem areas identified in this study are situated in the northern part of Warmia and Mazury which borders the Kaliningrad Oblast. Poland’s accession to the European Union and its inclusion in the Schengen area led to the further marginalization of areas located on both sides of the EU’s new eastern frontier (Kawałko, 2006; Bański, 2010; Gwiazdzinska-Goraj, 2011). Proximity to the border could have significantly contributed to the formation of problem areas in the analyzed region.

The results of our analysis indicate that the developmental gap among problem areas and the remaining municipalities in the Region of Warmia and Mazury could be attributed to several factors. In 10 out of the 14 identified problem municipalities, state-owned farms occupied more than 30% of the local territory. The analyzed areas were also characterized by low levels of non-farming activities. Eight out of 14 problem areas were monofunctional units with largely agricultural economies. In the group of 14 municipalities, 10 have a peripheral location along the border between Poland and the Kaliningrad Oblast. Adverse trends in social, economic and infrastructure development can spread across several municipalities, contributing to the number and severity of problems (Jezierska-Thole and Gwiazdzinska-Goraj, 2013). The identified problem areas should be included in special programs aiming to create a favorable environment for social and economic growth.

Conclusions

Problem areas are characterized by low levels of social and economic development and adverse consequences of post-socialist transformations, including high unemployment. In the Region of Warmia and Mazury, the most severe problems are observed in typically agricultural municipalities which have a peripheral location and where state-owned farms had acted as the main employer. In comparison with other municipalities in Warmia and Mazury, those areas are characterized by demographic collapse, high unemployment, low level of technical and social infrastructure development and low level of involvement in non-farming activities. The majority of problem areas are situated in the northern part of the region. The absence of measures aiming to eliminate the barriers to development can further marginalize those areas and deepen the observed social, economic and infrastructure inequalities.

References


