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SPATIAL DIVERSITY IN LIVING STANDARDS IN THE RURAL AREAS OF EASTERN POLAND

Abstract: The aim of this paper is to analyse spatial diversity in the population's living standards in rural areas of Eastern Poland. Research included all the rural communes (communes – pl. of *gmina* – the principal unit of territorial and administrative division in Poland – translator's note) and rural parts of urban-rural communes located in the area of five voivodeships, namely the Świętokrzyskie, Podkarpackie, Lubelskie, Podlaskie and Warmińsko-Mazurskie Voivodeships – that is, 639 communes. The conducted analysis revealed that the present living conditions in the rural areas of Eastern Poland are the result of the influence of many factors and show a high spatial diversity. Moreover, the conducted research showed that high living standards characterise spatial units located in the neighbourhood of the biggest urban centres, along the main routes and those with well-developed tourist functions.

Keywords: Eastern Poland, living standards, rural areas.

Introduction

Issues related to social and economic development as well as a region's competitiveness account nowadays for an essential subject of theoretical and practical deliberations in the European Union states. This issue is extremely important as excessive disparities in the level of development between particular regions constitute a barrier to common market functioning in the era of globalisation and integration. Thus, diminishing the spatial diversity in the level of social and economic development of particular regions is currently becoming the most significant aim of domestic and European regional policy.

To reduce the social and economic disparities between particular territories of the European Union, the *cohesion policy* has been designed, which is defined as “a group of activities whose objective is to reduce economic and social disparities between the member states, regions and social groups” [Rajkowska 2008]. These activities are a basic instrument in striving for cohesion within the whole European Union, expressed most often by the level of diversity in GDP *per capita*, unemploy-

ment rate and living standards in a broad sense. That is why the aim of the cohesion policy is first of all the improvement of the living conditions of the inhabitants, raising entrepreneurial activity level and increasing competitiveness as well as local and regional development in economic, social, infrastructural and environmental terms.

The cohesion policy is particularly important for the rural areas located in the peripheral regions, which Eastern Poland, treated as the European problematic area, belongs to [Miszczuk, Wesołowska 2012]. The region of Eastern Poland is one of the least developed areas of the European Union and includes five voivodeships with the lowest level of GDP *per capita*, namely the Świętokrzyskie, Podkarpackie, Lubelskie, Podlaskie and Warmińsko-Mazurskie Voivodeships. What is more, the majority of the rural areas of Eastern Poland are apparently depopulating, which may be proof of the population's low living conditions [Baran 2011; Celińska-Janowicz *et al.* 2010].

In light of the above remarks the aim of this paper is to analyse spatial diversity in the population's living standards in the rural areas of Eastern Poland. Living conditions are defined in this paper as the level to which material, cultural and spiritual needs of the society are satisfied by the stream of market goods and services. Luszniwicz [1983], Bywalec [1986], Liszewski [1995], Szymła [2004] presented such an approach in their works.

The research included all rural *communes* (pl. of *gmina* – the principal unit of territorial and administrative division in Poland – translator's note) and rural parts of urban-rural communes from the area of five voivodeships, namely Świętokrzyskie, Podkarpackie, Lubelskie, Podlaskie and Warmińsko-Mazurskie. 639 communes were included in the analysis, an area inhabited by 4180.4 thousand people, which accounted for 27.6% of the total rural population of the state.

1. Living standards – research carried out to date

A population's living standards are one of the most important research issues taken up by many authors. However, this issue in social sciences only developed significantly in the 1950s with the papers of The United Nations Research Institute for Social Development in Geneva being an inspiration for broaching issue in the world literature.

Publications concerning methodological problems of the research into the population's living conditions, taken up by *e.g.* Brousse [1969], Knox [1974], Wingo [1977], Kristensen [1978], Gillingham, Reece [1980], Cutter [1985], Pacione [1986], Coombes *et al.* [1989], are worth mentioning out of numerous foreign papers from that period. However, of more recent studies, those concerning living standards on a global scale, in particular from such authors as Groot [2000], Johansson [2002] and Schyns [2012], are worth attention.

Scientific activities and research “into the synthetic approach to investigating living standards with application of the initial version of the distance aggregation

method, *i.e.* the Genevan method, proposed for the first time by Drewnowski [1970], were conducted in Poland until the end of the 1960s. Studies on the national scale with the application of synthetic indicators were conducted by, among others: Bywalec [1986], Chojnicki, Czyż [1991], Lipieta *et al.* [2000] and Zeliaś [2000]. A similar method was also used in the publications of Berbeka [2006], Bywalec *et al.* [1993], Czermińska [2001] and Zeliaś [2004], who extended their studies across the European states.

Jażdżewska [2004] investigated diversity in living standards in urban areas by applying descriptive analysis of components of a population's living conditions and dividing them into external factors (*e.g.* geographical location, history of a city) and internal factors (character of buildings, availability of services and social facilities, demography). Muzioł [1983], Liszewski [1995], Parysek [2004] and Śleszyński [2004], among others, also raised the issue of diversity in living standards in cities. Rural areas were focussed on by Gulbicka, Niewęglowska [1995], Pięcek [2005] and Kopacz [2011], among others.

Nevertheless, research into the population's living standards very often has a regional and local character. Synthetic indexes served for investigating the population's living conditions in the Małopolskie Voivodeship: Berbeka [2002], Szymła [2004] and Płaziak [2004], in the Opolskie Voivodeship: Nytko-Wołoszczuk [2004] as well as in the Podkarpackie Voivodeship: Sobala-Gwosdz [2004].

2. Research methods and measures applied in the paper

Living standards in this paper were expressed by a synthetic index constructed by the standardised sums method (Perkal's index) with the application of 15 partial characteristics (Tab. 1). The method of standardised sums has a long tradition in Polish geographical and economic research; it gives good results and was applied by the following authors in their studies: Chojnicki, Czyż [1991], Zeliaś [2000], Rosner [2007] and Kamińska [2010a], among others.

Special attention was paid to the selection of the measures describing the living standards of the population of Eastern Poland, so that the characteristics selected describe in the most comprehensive way possible the population's living standards in the analysed units and so that they are relatively highly spatially diverse. Moreover, they should be based on the commonly available statistical information, comparable both in time and space.

Although at first 28 measures were selected, the initial statistical analysis (correlation coefficient and coefficient of variation analysis, among others) allowed this number to be reduced to 15. Values of the coefficient of variation expressed in percentage for the selected characteristics oscillate between 27.5 and 131.4 with an average of 56.7. However, the correlation coefficients between the particular measures are included in the bracket from -0.51 to 0.47, which allows their adoption for further

analysis, accepting that the selected characteristics have both the appropriate spatial diversity and significant informative value. Standardised values of the partial measures which are destymulants (measures 1, 2, 3, 4, 6 and 15) were multiplied by (-1) in order to receive 15 standardised values directed in the same way for each spatial unit.

The measures were then divided into demographic and social ones, indexes of housing conditions and economic indexes. The first group, demographic and social measures, allows the assessment of the state of the population's health (mortality rate), availability of social and cultural services (number of people per pharmacy and number of people per library), quality of education and its prevalence (students per computer with access to the Internet, net enrolment ratio) as well as well-being of the society (number of people in households using local social assistance).

The next group – measures of housing conditions – informs about the condition and dynamism of the construction industry (floorage of flats per person), standard of flats (flats with bathrooms as a percentage of the total number of flats) and state of technical infrastructure (population using waste-water treatment plants and the water system as a percentage of the total number of people, distribution system of gas and sewage system per 100 km²). As Hydzik [2012] observes, “the state of the social and technical infrastructure is an important condition for the contemporary social and economic development”, and by the same token, a cause determining the population's living standards. It has to be stated with all due certainty that infrastructural deficits account for a barrier to development, especially for rural areas.

Table 1

Measures of living standards applied in the research

Measures	Specification
Demographic and social measures	1 Mortality rate per 1000 inhabitants in 2011
	2 Number of people per pharmacy in 2011
	3 Number of people per library in 2011
	4 Students per computer with access to the Internet for the student's use (primary and junior secondary schools) in 2011
	5 Net enrolment ratio in 2011
	6 Number of people in households which use local social assistance in relation to total number of people in 2011
Measures of housing conditions	7 Floorage of flats per person in m ² in 2010
	8 Flats with bathrooms as a percentage of the total number of flats in 2010
	9 Population using waste-water treatment plants as a percentage of the total population in 2011
	10 People using the water supply system as a percentage of the total population in 2011
	11 Sewage system per 100 km ² in 2011
	12 Gas distribution network per 100 km ² in 2011

Measures	Specification	
Economic measures	13	Expenditures in local government budgets per inhabitant in 2011
	14	Newly registered business entities in REGON (The Register of the National Economy) in 2011
	15	Percentage of the registered unemployed in the population of working age in 2011

Source: Own elaboration on the basis of www.stat.gov.pl.

In turn, economic measures reveal many interesting phenomena in the economy and labour market. They inform mostly about the investment activity and spatial units wealth (expenditures in local government budgets per inhabitant) and society's business activity (units newly registered in REGON per 10 000 people, proportion of the registered unemployed in the population of working age). It should be underlined that public investment is an important factor of economic development, thus of the improvement in the population's living standards [Swianiewicz 2005].

The above measures are commonly applied in the research into a population's living standards. Luszniwicz [1972], Piasny [1993], Berbeka [2002], Jażdżewska [2004], Nytko-Wołoszczuk [2004], Śleszyński [2004], Szymła [2004], Zeliaś [2000, 2004], Słaby [2007], Zagórski *et al.* [2009], Kopacz [2011] and many others applied them in their studies. However, one should be aware of the fact that various factors determine a population's living standards and it is impossible to consider all the variables in a given piece of research. Moreover, some of them are difficult or even impossible to analyse and that is why in studies into living standards it is usually those data and variables that are commonly available and comparable, both in time and in space, that are taken into account.

Data available in the Local Data Bank ("Bank Danych Lokalnych") of GUS (Central Statistical Office) by commune for 2010 and 2011 was applied when selecting measures for this research. The author's view is that the existing statistical data allows the determination of the population's living standards, or at least an image of the diversity in the level of some of the social needs satisfaction in rural areas of Eastern Poland [Kopacz 2011].

3. Living standards in the rural areas of Eastern Poland

Observation of the values of the synthetic index of living standards (Tab. 2) illuminates that there is a high spatial diversity in the living standards of the population (Fig. 1) in the rural areas of Eastern Poland. In 2011 the synthetic indexes of living standards oscillated in that area from -1.209 (Gmina Wola Mysłowska in the Lubelskie Voivodeship) to 1.312 (Gmina Krościenko Wyżne in the Podkarpackie Voivodeship), with an average of -0.002. Taking the values of the above index as a criterion, five classes of communes have been distinguished in the rural areas of Eastern Poland, with very low, low, medium, high and very high living standards.

Table 2

Synthetic index of living standards in the rural areas of Eastern Poland in 2011

Synthetic index	Number of		Structure of (%)	
	communes	inhabitants	communes	population
Very low (-0.271 or less)	104	675 450	16.3	16.2
Low (-0.270 - -0.003)	249	1 511 124	39.0	36.1
Medium (-0.002 – 0.265)	175	1 143 149	27.3	27.4
High (0.266 – 0.533)	76	515 819	11.9	12.3
Very high (0.534 or more)	35	334 857	5.5	8.0
Total	639	4 180 399	100.0	100.0

Source: Own elaboration on the basis of GUS data (stat.gov.pl).

The synthetic index did not exceed -0.271 in the communes with very low living standards. There were 104 units of this type – 16.2% of the rural population of Eastern Poland lived in these areas. These values were noted in the following communes: Wola Mysłowska (-1.209, Lubelskie Voivodeship), Stąporków (-0.860, Świętokrzyskie Voivodeship) and Miączyn (-0.737, Lubelskie Voivodeship). These communes are located peripherally in relation to the biggest urban centres and in relation to the main routes. As the research shows, these communes are poorly developed, have a high unemployment rate, small population and low human capital stock [Kamińska 2011].

What is more, these are mainly communes of an agricultural character, with the agriculture managed mostly in small-size and small-scale production family farms and a low level of agrarian culture [Kulinowski 2012]. In addition, these farms belong to a great extent to retirees and annuitants (one third of them in the Podkarpackie Voivodeship) which, together with the low educational attainment of the agricultural population, contributes to a very slow pace or lack of modernisation processes. Even in the areas with better developed agricultural management, *e.g.* in the belt from Łańcut to Przemyśl, the crops received do not fully reflect the quality of the production space [Bański 2002]. Activities aimed at raising qualifications and the activation of local societies should be adopted as quickly as possible.

These units were characterised by the lowest values in all analysed fields determining living standards. They are mostly characterised by a high percentage of unemployed people and people using social assistance, a low percentage of people using the water supply system, a low percentage of flats with bathrooms as well as a low percentage of newly registered business entities.

Communes with low living standards accounted for the biggest group, where the synthetic index was found in the brackets between -0.270 and -0.003. There were 249 units inhabited by 36.1% of the rural population of Eastern Poland. These were mainly communes located peripherally in relation to the big urban nodes, where the availability of higher-level services is very limited. Moreover, these units usually

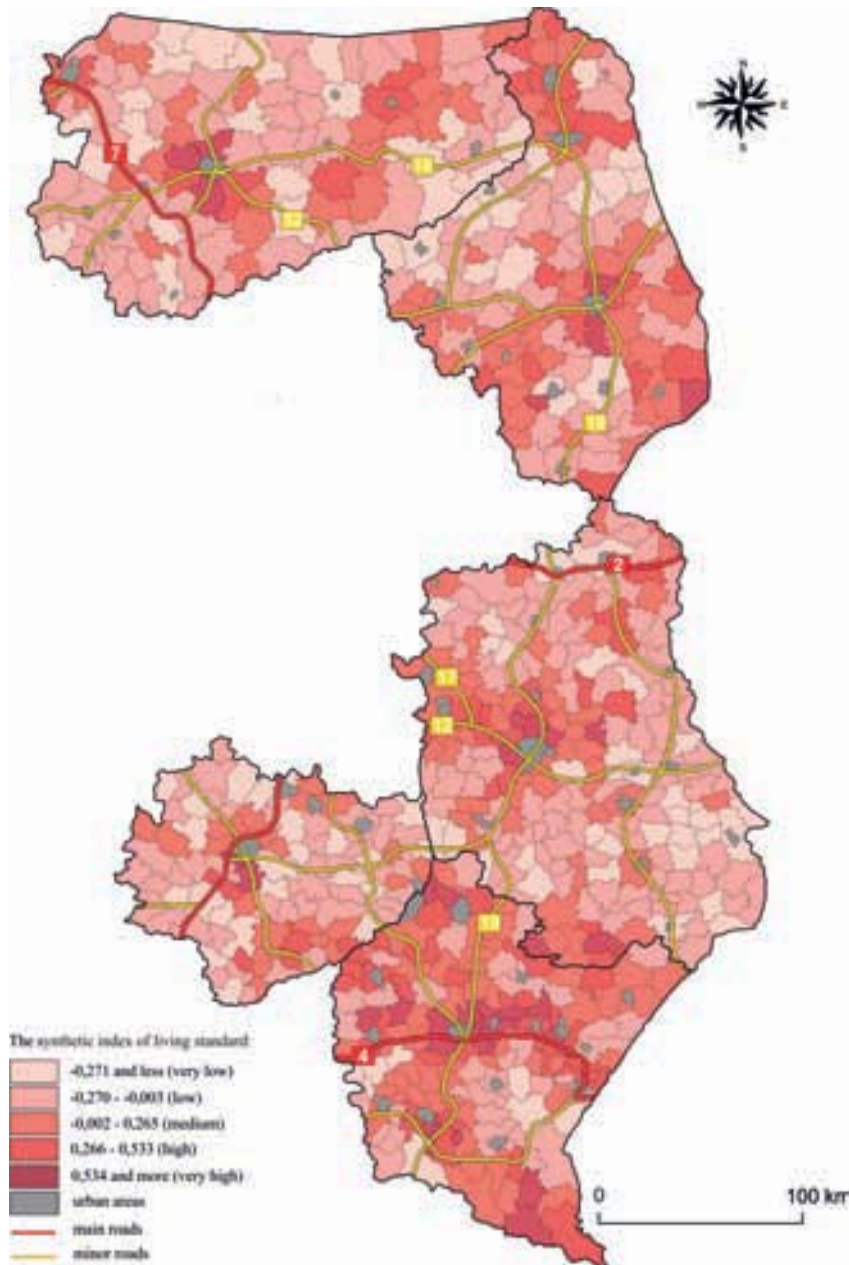


Figure 1. Spatial diversity in the synthetic index of living standards in the rural areas of Eastern Poland
 Source: Own elaboration on the basis of www.stat.gov.pl.

have an agricultural character and well-developed, strong civil relationships, which may indicate a high level of social capital [Kamińska 2010b]. One should also bear

in mind that the pace of social and economic transformation of the rural areas has the greatest influence on the quality of human capital, which is determined by the population's educational attainment level [Janc, Czapiewski 2005; Heffner 2007, 2010, Kamińska 2008]. As the studies show, it is low level of educational attainment of the population that accounts for one of the basic social problems of the country [Kamińska, Heffner 2010; Kamińska 2011], as the less educated population is less likely to take the risk of running a business activity. They are also averse to the introduction of any technological novelties onto a farm due to fear of technological failure. Yet the lack of any private initiatives leads to very low budgetary revenues for a commune, resulting in the commune's low investment in social and technical infrastructure, which could attract investors. As Zalewski [2005] writes, social and technical infrastructure serves business activity, satisfies the basic livelihood needs of inhabitants and allows the natural resources to be used rationally. With the appropriate involvement of the local society, these units will head towards multifunctional development. Nevertheless, nowadays they are characterised by a low percentage of people using waste-water treatment plants, a low enrolment ratio, a low percentage of newly registered business entities and a high unemployment rate.

Communes with medium living standards, where the synthetic index oscillated between -0.002 and 0.265, included 175 communes, inhabited by 27.4% of the rural population of Eastern Poland. These units were located between the communes with high and low living standards, peripheral in relation to the biggest cities of the regions and "in the shadow" of small *powiat*-rank towns (*powiat* – secondary unit of administrative and territorial division in Poland). Quite a large proportion of these units was composed of the rural parts of urban-rural communes and those units located near the main routes. They were characterised by large-scale production agriculture [Kulikowski 2012], averagely-developed non-agricultural functions and average stock of human capital [Kamińska 2011]. Depending on the development tendencies and local society engagement, these units could in the near future become areas with high or low living standards. They are characterised by relatively high expenditure from local government budgets per inhabitant and a high percentage of newly registered business entities, whereas the remaining discussed characteristics oscillate around the average.

There were 76 communes with high living standards, inhabited by 12.3% of the total rural population of Eastern Poland, where the synthetic index was found in the bracket between 0.266 and 0.533. They are surrounded by communes with very high living standards and aspire to the group of the developed communes, mainly thanks to the intensive, large-scale of production agriculture [Kulikowski 2012] and well-developed non-agricultural functions [Kamińska 1996, 1997]. They are located along the main routes, around the biggest cities of the region (Rzeszów, Lublin, Białystok, Olsztyn) and in the vicinity of *powiat*-rank towns (Krosno, Dębica, Mielec, Jarosław, Przemyśl, Przeworsk, Stalowa Wola, Puławy, Suwałki, Augustów, Giżycko, Elbląg).

Besides many factories representing the automotive industry (Opel, Chevrolet, Volkswagen, Skoda, Renault), the Huta Szkła “Krosno” SA glassworks operates in Krosno, which until recently was one of the leaders of the world market in household glass. Rubber and chemical industries are strongly developed in Dębica (e.g. the “Dębica SA” tyre-production factory, the “Śnieżka” paint and varnish factory); in Mielec the “Aircraft Valley” is in operation, which comprises works related to the aircraft industry (e.g. Polskie Zakłady Lotnicze), and a Special Economic Zone – Euro Park Mielec – also functions there. In turn, the “Inglot” make-up factory, the “Fibris” fibre wood board factory and the “Pollena Astra” paint and teaching aids factory function in Przemyśl. In Puławy there is a mill, “Zakłady Azotowe Puławy” (Nitrogen Works Puławy) which is the biggest producer of artificial fertilisers in Poland. Moreover, these units have well-developed tourist functions [Bański, Stola 2002]. Giżycko is one of the inland ports on the sailing route of the Masurian Lake District, Augustów is a popular spa town, while Elbląg is mainly associated with the famous inclined planes of the Elbląg Canal. This is why communes located in the vicinity of the above mentioned towns are characterised by high living condition indexes, thanks to the benefits coming from the vicinity of urban markets, among other things. What is more, thanks to location a small distance from an urban centre, commuting to work in a town takes approximately 30-40 minutes on average. This is compliant with the thesis of Czapiewski [2011] that rural areas of success have a favourable availability of urban nodes. In these areas a lot of pressure is put on activation of the rural population – the local society should do everything in order to use the opportunity and make the high living standards an invitation for young and educated people to settle there. As Kłodziński and Dzun [2003] write, differences in using instruments supporting local development are not a result of the level of material resources which particular communes have at their disposal, but of engagement of the people, as they are the major determinant of success, with their entrepreneurship, capability to self-organise and cooperate. Nowadays, these units are characterised by a relatively low mortality rate, low unemployment rate, high percentage of flats with bathrooms and high percentage of people using the water supply system and waste-water treatment plants. Their characteristic location around communes with very high living standards allows the assumption that, in the near future, with favourable social and economic conditions, it is probable that they will be included in this group.

Thirty five communes, inhabited by 8.0% of the rural population of Eastern Poland, were included in the group with a very high level of living conditions, where the synthetic indicator was higher than 0.534. The highest values were observed in the communes of Krościenko Wyżne (1.312, Podkarpackie Voivodeship), Stawiguda (1.282, Warmińsko–Mazurskie Voivodeship) and Puchaczów (1.122, Lubelskie Voivodeship). These were mainly communes located in the suburban areas of the biggest cities of the region, namely Rzeszów, Lublin, Białystok, Olsztyn and Kielce – that is, in the areas with well-developed service and housing functions. Moreover, this

group includes also communes located along the major routes, industrialised communes and those units with tourist and spa function domination. It can be said that these are rural areas of economic success, characterised by the successful conduct of social and economic processes, which stimulate or strengthen the development of their spatial structures [Bański 2008]. This is the result of research by Swianiewicz [2005] that relative success is to a great extent the effect of soft factors such as presence of a leader, vision, appropriate level of optimism and activeness, from both the leaders and the whole local society. What is more, a conscious and consistent investment policy into human capital is conducted in these communes – research by Kamińska [2010b, 2011] confirmed that these are communes with high human capital stock, whose state has been determined by fast developing industrial functions and a communication network crucial for access to the urban nodes from particular communes. These areas were also characterised by a high percentage of newly registered business entities, very high expenditures from local government budgets per inhabitant, a low unemployment rate, low values of mortality rate and flats well supplied by the communal infrastructure.

Conclusion

The conducted research showed that there is a significant diversity in the living conditions of populations in the rural areas of Eastern Poland. The highest values of the synthetic index of living standards were observed in the rural areas of progress (economic success), located in the vicinity of the large urban nodes (Rzeszów, Lublin, Białystok, Olsztyn, Kielce) – that is, in the areas with well-developed industrial, service and housing functions. Rural areas of progress are usually characterised by a constant trend of economic growth, resulting from the successful execution of various social and economic enterprises [Bański 2008]. The effects of this are the multifunctionality of a commune, a well-developed technical infrastructure, a higher level of entrepreneurial and social activity of inhabitants as well as high effectiveness of economic entities [Heffner 2007].

Research conducted by Kamińska [2011] showed that these are highly urbanised communes with a high human capital stock, with only lack of formal civic rights distinguishing them from the neighbouring centres. Rural areas located around large cities are characterised by fast development, which is based mainly on the labour force and potential which colonises zones related to large urban centres [Heffner 2012]. In addition, units with well-developed tourist and spa functions as well as those located along the main routes, where availability of education facilities and employees is highest, belong to the group of communes with a high level of living conditions [Kamińska 2010a]. According to Bański [2008], an attractive location in terms of tourism plays a very important role in generating a commune's success. Location in mountainous and submountainous areas (Podkarpackie Voivodeship) and in the lake

district is actually the only asset of these units. Thus, the activity of the inhabitants and local authorities of these communes aims to enrich the offer for tourists, marketing and promotion. Moreover, some of the communes of this type have well-developed agricultural functions [Bański, Stola 2002], as the neighbouring city accounts for an absorptive market for farm products (mainly fruits and vegetables).

The lowest synthetic index values of living standards occurred in the areas located peripherally in relation to the largest urban nodes and the main routes. They correspond to the monofunctional agricultural areas, which are characterised by low quality of farm management, demographic (depopulation, emigration) and social problems (population ageing, feminisation) as well as a low level of investment in the country [Stanny 2009]. As the research shows, these communes are weakly developed, have a high unemployment rate, small population and low human capital stock [Kamińska 2011]. According to Bański [2008], the closer to the peripheries a commune is located, the more difficult it is for it to achieve economic success unrelated to agricultural activity. A farmer-entrepreneur willing to accept the risk of new investments would be a creator of economic success in the peripheral areas. Low activeness and lack of entrepreneurial spirit impede the chances for exiting the circle of poverty, while the low human and social capital stock may even deepen this poverty as it is conditioned by people's inclination to act as a community, ability to generate new relations, contacts and networks [Będzik 2008].

The high spatial diversity in living conditions of the population in the rural areas of Eastern Poland is a result of the general social and economic development of these areas. Such a situation was also influenced by the level of industrialisation, urbanisation of the rural areas and functioning of urban agglomerations [Zeliaś 2004; Kamińska 2010a]. However, one should be aware of the fact that living standards of a population are the result of many factors of various kinds, which fall outside the measures adopted in this paper. Thus, there is a need for conducting further detailed research in the communes of Eastern Poland.

Despite the intensively pursued cohesion policy, a dichotomy between cities and the countryside on the one hand and between suburban communes and peripheral communes on the other is still apparent in the rural areas of Eastern Poland. Local authorities as well as the central administration should take all possible actions aimed at equalling economic and social conditions in all the regions of the European Union. Unfortunately, only some of the communes in the rural areas of Eastern Poland are prone to social and economic development, while the majority require actions initiating activity. The support should be directed towards enterprises and programmes which activate rural areas by stimulating local initiatives and, by the same token, create social capital for the country [Heffner 2012]. Only intensive projects and a wisely pursued cohesion policy can create the conditions for the social and economic growth of the rural areas of Eastern Poland in the near future, successfully prevent degradation of the countryside and facilitate agriculture modernisation processes.

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