„Exposed versus peripheral" focused on rural regions in the South Bohemia

Renata Klufová, Ivana Faltová Leitmanová

Abstract - **There are two characteristics typical of municipalities of the region of South Bohemia (former NUTS5) - there are rural regions as border, peripheral regions or exposed, core regions. This delimitation is connected with many "handicaps" which are concentrated for instance in limited range and structure of economic activities. One of the possible solutions of this situation is commuting to work which is also determined by many other factors. The following paper is devoted to some of them - especially to the transport accessibility, the age and the qualification structure of the population.[1]**

INTRODUCTION

The ninties of the last century are in the Czech republic connected with so called transformation of society. One of very important manifestation of the changes in economy sphere is a dissimilar development of individual czech regions (Hampl, 1999) and also within them. There can be seen an increase of the differences among regions – the growth of the polarity between core and peripheral areas. The investigation of the polarity, core and peripheral areas, different distribution of natural and social features and activities in the space becomes more and more an important issue in many disciplines (Čermák, 2005). Different approaches to the research of peripheral areas can be seen in the practice, various authors also appreciate this term in a different way.

Theoretical approaches to regional problems enable to follow relatively isolated particular aspects of this structured socio-economic organization. Exact approaches are for participants of regional development applicable to a limited extent.

The contributions rather pragmatically aimed at the regional problems very often emphasize particular factors, primarily innovations, technical development, human capital on one side and their flows or mobility on the other side. Despite a relative diversity of conceptions of the role of space, Lagendijk (1999) presents considerations about a role of space as a necessary condition for innovative economic activities, whereas spatial clusters present a potential directing of the industry development and business in general. Further to an examination of relationships among cities and population distribution, Glaeser (1992) points out information and advantages of cities in the case of new ideas flows because he sees a crucial political problem of next periods in the necessity to eliminate[1] information barriers among city centers and ghettos – between core and peripheral areas.

Mion a Naticchioni (2005) used the model of spatial balance as a starting point for their analyses. In addition to, they consider the so called urban externalities based on the positive influence of the density on the performance of regional economy and the so called financial externalities originating from returns to scale, from transport costs and demand proximity. An investigation of relationships among transport costs, capital mobility and local public goods providing also offers a potential for an improvement of regional productivity (Ihara, 2008).

MATERIAL AND METHODS

The area of Soutbohemian region is investigated in the paper. Municipalities are used as the basic spatial units. The artifitially constructed "rate of periphery" has been calculated for all the 623 units. The method was partially copied from the work of Čermák (2005) and consequently slightly adjusted. The calculations were been realized in the environement of SW programes ArcGIS a GeoDa.

The "rate of periphery" has been constructed as a synthesis of the following characteristics: population density, "index of education", the so called "grey burden", migration balance and "index of the progresivity of the economic activity". Values of particular characteristics has been sorted according its relationship to the "periphery". They have been then recoded on the base of their range and quantiles in order to assign low values to present peripheral areas. The component characteristics has been constructed from the values of data of the Czech Statistical Office (Census 2001):

"Index of education" – Czech Statistical Office provide data in four categories of the highest reached education (elementary, secondary vocational, secondary technical a universities). Different wages (Čermák, 2005, pp. 101 – 106) were used in the construction of the index for the individual level of reached education:

I_v = (1* elementary + 1,5* secondary vocational + 2* secondary technical + 3,5* university

---

[1] Department of Applied Mathematics and Informatics, Faculty of Economy, University of South Bohemia in České Budějovice, Czech Republic

Department of Economics, Faculty of Economy, University of South Bohemia in České Budějovice, Czech Republic

education)/(elementary+ secondary vocational + secondary technical + university education),
the index was calculated for inhabitants above 15 years.

„ *Index of dependence II"*, or so called "grey burden" – one of the often used indices of the age structure of the populaton:
I_z^{II}=100*(number of inhabitants aged 60 and more)/(number of inhabitants in the age of 15 – 59)

"Index of the economic progresivity of municipalities" – number of economically active people in the sectors of national economy weighted by values 1, 2 and 3,5 in the order of sectors: primary, secondary, tertiary (Čermák, 2005, pp. 101 – 106). The resulting formula has the form:
IEPO = [1*agriculture + 2*(industry + building industry)   +   3,5*tertiary   sector]/(total   of economically active people).

RESULTS

The resulting values of the "rate of periphery" are partially shown in the figure No 1 which shows results of multivariate LISA (Local Indicators of Spatial Association) between the rate of unemployment and the „rate of periphery" (Anselin, 1995). There is evident a certain spatial pattern in the relationship between these two variables (red colour: high values associated with high values, blue colour: low with low). The both variables are also correlated with the transport accessibility. This hypothesis has been also tested.

Considering the results of the „periphery", it is suitable to regard as the peripheral areas only the areas which comprise several peripheral subregions. Solitary exceptions are usually caused by untypical characteristics. A similar approach should be used also in the delimitation more exposed areas. Potential existence of clusters, respectively exposed municipalities were tested by Getis – Ord Gi* statistics (Getis, Ord, 1996). A similar approach should be used also in the delimitation of more exposed areas.

CONCLUSION

There can be derived several results from the assessment mentioned above. They serve as an inspiration for further study of peripheral and exposed (core) area, for an assessment of regional potential:
• Most of chosen characteristics are suitable for an identification of peripheral/core areas, with good information capability. Another component characteristics should be incorporated into the assessment, with respect to available data on the given hierarchy level. An attention should be also paid to the fact, how individual characteristics participate in the resultant value of the "rate of periphery". In the case, when all the characteristics are considered to be equivalent, there logically appears some bias.
• Individual amounts of the „rates of periphery" should be evaluated connecting with transport accessibility (correlation analysis) and to express them in the manner which enables to formulate how they participate in the core/peripheral areas formation.
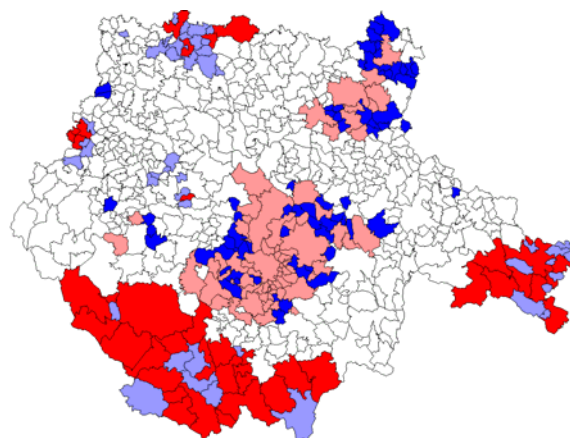

Figure 1: Spatial pattern in the relationship between the unemployment rate and the "rate of periphery" derived by LISA analysis.

• Modern methods of spatial data analysis with connection to Geographic Information Systems seem to be very useful for the study of the regional potential, especially tools for spatial autocorrelation analysis and cluster identification (hot spot analysis). Further research of peripheral areas in the study region should be among others aimed to a description of cause of the peripheral regions formation, a duality of their economic, cultural and social potential and its use in regional activities. Only in the case mentioned above, the results of the analysis could be primarily used by actors of the economic policy on the regional level.

REFERENCES

Anselin, L. (1995). Local Indicators of Spatial A*ssociation – LISA. Geogr. Annal* 27:93 – 115.

Čermák, L. (2005). An assessment of the relationship between transport accessibility and core-peripheral areas. In: M. Novotná (ed.) *Problems of peripheral areas.* Charles University in Prague, Faculty of Science, 184 pp. (in Czech).

Getis, A. und Ord, J. K. (1996). Local Spatial Statistics: An Overview. In: Longley, P., Batty, M.: *Spatial Analysis: modeling in a GIS environment, Cambridge: Geoinformation International,* pp: 261 – 277.

Glaeser, E. L., Kallal, H. D., Scheinkman, C. A. and Shleifer, A. (1992). ‚Growth in Cities', *Journal of Political Economy,* 100: 1126-1152.

Hampl, M. et al. (1999). *Geography of Societal Transformation in the Czech Republic.* Prague, Charles University in Prague, Faculty of Science, 242 pp.

Ihara, R. (2008). Transport costs, capital mobility and the provision of local public goods. *Regional Science and Urban Economics 38*: 70-80.

Lagendijk, A. (1999). 'Regional anchoring and modernization strategies in non-core regions: Evidence from the UK and Germany', *European Planning Studies,* 7:18 pp.

Mion,G. and Naticchioni, P. (2005). 'Urbanization Externalities, Market Potential and Spatial Sorting of Skills and Firms', *CEPR Discussion Papers* 5172.