

DISPARITIES OF ECONOMIC DEVELOPMENT IN CENTRAL AND EASTERN EUROPE BASED ON THE EXTENDED URBAN-RURAL TYPOLOGY

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Abstract: *In our paper we analyse the economic performances of urban and rural areas in Central and Eastern Europe depending on the accessibility of major cities. We assume that the more urban an area is and the closer it is to one of the major cities the more favourable (static and dynamic) economic performance it will have. Based on our results it can be said that the hypothesis has been verified. Different types of regions are interpreted as autonomous convergence clubs and characterized by unique growth paths. Although economic performance differs significantly from one region to another, growth factors do not do so. The explanation for this phenomenon is complex.*

Key words: *economic development, urban-rural, NUTS3, Central and Eastern Europe*

INTRODUCTION

Different aspects of development depending on the distance from cities and urban centres have been discussed by several authors [21], [15], [4], [12], [19]. Based on the new economic geography economic success of urban agglomerations is due to the fact that the increased size of such agglomerations enhances productivity which in turn attracts more people. Taking into account the cumulative causation theory this phenomenon leads to the further rise of productivity and economic activity, thus contributing to the ever increasing returns to scale as well as to maintaining the centre-periphery model. Specific costs of transportation and freedom of trade have fundamental effects on the extent of urban agglomeration [12], [19]. Nature of low-density rural economies can be interpreted alongside three dimensions that are clearly connected to (among other, transport geographic) peripherality [22], [23]. These dimensions are: large physical distance from main markets, lack of economic integration and the existence of specific (usually low-end) economic structure. Numerous authors [23], [5], [2] note that the proximity of not only large agglomerations but also small and medium-sized towns can support economic success and resilience of rural areas. Nevertheless, the improvement of accessibility and transport infrastructure as well as the decrease of transportation costs have mixed territorial impacts. It can contribute to the integration of peripheral and lagging behind areas, to the movement of goods and services [1], to the deindustrialisation of large industrial cities, to the relocation of industrial activities into rural areas and to the diminishing of regional imbalances [19]. At the same time, effect of the opposite direction can also emerge: additional concentration of urban areas [7], higher area-based and individual income disparities and efficiency issues related to the lower economic growth [19]. Several researchers [22], [5], [2], described the urban-rural typology supplemented by the distance of OECD cities regarding the EU, USA, Canada, Mexico and the OECD area. They highlighted the differences of regional (social and economic) performance based on the area types. Since the European Union is characterised by considerable spatial heterogeneity in both its urban and rural dimensions [9], it is justified to examine Central and Eastern Europe separately. Egri and Tánczos [8] elaborated the spatial structure map of Central and Eastern Europe in which they introduced, beside the diverse delineation of rural and urban area types, the strong connections of economic performance and accessibility to spatial characteristics. Lengyel [13] describes the context of competitive performance and development in the countries of the Visegrád Group at area – implicitly urban-rural – level.

We assume that urbanity and the accessibility of cities influence the economic development and growth of certain regions in Central and Eastern Europe beneficially. We would like to prove this hypothesis by our examinations. We point out the spatial differences of economic performance and growth taking into account urbanity and accessibility of cities. We also describe the differentiation of underlying factors that influence growth.

MATERIALS AND METHODS

NUTS3 level regions were the meso-level observation units in our study, while at macro level we examined the post-communist Central and Eastern Europe, i.e. Poland, the Czech Republic, Slovakia, Hungary, Romania and Bulgaria. The applied urban-rural typology that is based on the OECD methodology with the modification of including proximity is introduced by Dijkstra-Poelman [5], [6]. The examined NUTS3 regions were classified as predominantly urban regions (PUR), intermediate regions, close to a city (INC), predominantly rural regions, close to a city (PRC) or predominantly rural, remote regions (PRR).

Differences among the area types were examined by applying logarithmic weighted coefficient of variation [16] or, depending on the statistical attributes of basic data, by ANOVA or Kruskal-Wallis test supplemented by post-hoc tests [17], [18]. Differentiation of economic growth has been analysed by using the method of triadic division of economic development level [14]. Data were provided by Eurostat. Per capita GDP has been estimated, derived from national data, on 2010 prices. The observed period of the examination was 2000 to 2015.

RESEARCH RESULTS

Average values by area types indicates stable and durable connections regarding disparities in the examined Central and Easter European region (see Table 1). The more urban an area is and the closer the majority of inhabitants live to a large city, the higher the economic performance will be. Predominantly urban areas exceed average value and are able to increase their relative performance; intermediate regions, close to a city and predominantly rural regions, close to a city types stagnate; predominantly rural, remote regions show declining tendency. Each group can be defined as an independent, significant and homogeneous convergence club as it is proved by both logarithmic weighted coefficient of variation and ANOVA tests completed regarding the given area types.

Results of the triadic division as regards of the growth following the economic crisis (i.e. after 2010) showed very similar connections in each type (see Figure 1). Labour productivity (GDP/employed people) and employment had positive effect on enlarging GDP, while changes in age structure lead to a clear decrease in case of every type. The gradual nature of these attributes is definitely related to urbanity and the proximity of urban areas. This latter phenomenon is slightly different in intermediate regions, close to a city and in predominantly rural regions, close to a city types.

Table 1.
Per capita GDP in the selected years of the examined period (the average of the total area)

type of region	2000	2008	2010	2015
predominantly urban regions	172.6	184.1	187.9	186.4
intermediate regions, close to a city	97.9	98.0	97.5	97.0
predominantly rural regions, close to a city	91.9	88.8	88.9	90.0
predominantly rural, remote regions	66.9	64.8	62.8	62.6
Average of the examined area	100.0	100.0	100.0	100.0

Source: own calculation, 2018

Table 2 summarises the differentiation of important economic growth factors (human resources, possibility for economies of scale, innovation, accessibility, tradable sector, etc.) alongside the extended typology. Based on the average values in each case (with the one exception of productivity in the processing industry) incline can be observed as regards of urbanity and accessibility of cities. Peripherality of a wider European level can also be seen as far as accessibility indicators are concerned, particularly in dominantly rural areas. Analysis of covariance and Kruskal-Wallis test usually justified the significant distinction in every variable, although according to the post-hoc tests not all of the pairings result such well-distinguishable and reliable difference.

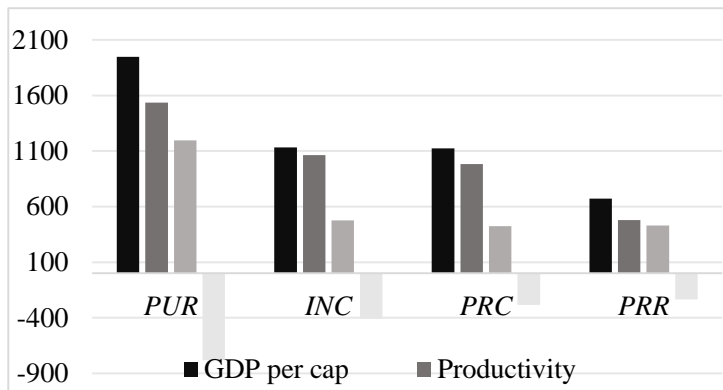


Figure 1. Per capita increase of GDP by area types between 2010 and 2015 (in Euro, 2010 prices)

Source: own calculation, 2018

Only the proxy of economies of scale (population density) has proven to be a significant differentiating factor for each and every region within the examined area. Global accessibility, proportion of the active age group and the favourable total dependency ratio are urban characteristics. Predominantly urban regions differ significantly from rural areas. However, no reliable alterations can be shown among the latter ones. Net migration shows insignificant imbalance in case of predominantly urban and intermediate regions, close to a city – in all other cases the distinction is reliable. High premature mortality rate is typical in these countries. In this sense no significant differences can be found among predominantly urban regions, intermediate regions, close to a city and predominantly rural regions, close to a city. The same can be told about the productivity of processing industry, road and rail access and the basic competitiveness index. The rate of applied trademarks indicating non-technological innovation abilities does not differ reliably only in case of predominantly rural regions.

Table 2.

Name	total	PUR	INC	PRC	PRR
Net migration (‰, 2010-2015)	-0.9	3.3	-0.5	-1.7	-3.2
Premature mortality (2014-15)	494.0	434.8	495.3	495.4	533.5
Proportion of active age groups (% , 2015)	68.0	69.3	68.0	67.9	66.9
Total dependency (% , 2015)	47.4	44.4	47.1	47.5	49.6
Population density (capita/km ² , 2015)	288.1	1442.9	163.1	81.9	58.2
Applied EU Trademarks (per million capita, 2015)	49.1	144.9	51.4	28.0	18.0
Productivity of Processing Industry (2015)	90.4	127.9	87.4	93.6	65.2
Road Accessibility (2011)	52.7	78.1	52.1	50.9	38.4
Railroad Accessibility (2011)	43.8	66.9	43.0	42.7	30.2
Global Accessibility Potential (2011)	53.6	87.9	53.2	47.8	41.5
Competitiveness Index (2015)	0.26	0.47	0.26	0.24	0.17

Note: base values of processing industry productivity and accessibility shall be read as an average of the examined area and as an average of ESPON, respectively. Competitive index equals to the average of per capita GDP, labour productivity and employment rate indices calculated by normalisation.

Source: own calculation, 2018

CONCLUSIONS

According to our analyses urban-rural typology extended by the accessibility of cities highlights important relations of economic disparities in Central and Eastern Europe. Based on the examination of per capita GDP between 2000 and 2015 the given area types can be interpreted as independent and homogeneous clusters (convergence clubs); thus, they follow different paths. Agglomeration advantages result stable and increasing economic performance in predominantly urban regions, while rural areas far from any large cities show relative exclusion. Rural regions, close to a city, depending on their rurality, indicate similar level and direction, but they do not reach the average per capita GDP value. Impact of accessing large cities on economic performance is remarkable in case of predominantly rural areas. 24 to 27% surplus was recorded in favour of the peri-urban type during the observed period.

Triadic analysis of economic growth regarding the period between 2010 and 2015 also highlighted the importance of agglomeration impacts that have strong and positive correlation with urbanity and the proximity of cities.

Although the static performance of economy differentiates significantly by area types, main factors and resources of growth do not always show reliable distinctions. This phenomenon is not typical as far as the economic growth of predominantly urban regions are concerned. External economic impacts originated from the agglomeration stay behind the success of the cluster. These impacts arise from the share of input markets and labour markets as well as from the knowledge spill-overs [20]. Main indicators of human resources, density of innovation performance and relatively favourable accessibility significantly induce these phenomena. Insignificant differentiation as regards of growth factors (accessibility, health conditions, productivity of processing industry and competitiveness) can be observed behind the reliable differences of economic performance among rural regions, close to a city. In our opinion the advantages of intermediate regions, close to a city can be partly attributed to the relatively higher urbanity and more efficient utilisation of resources. Kotosz and Lengyel [11] also refers to this trend: the authors describe the unidirectional connections between settlement networks and the success of convergence in case of Visegrád Group countries. Testing the effects of urban population accessible within the critical period in these area types can be another dimension of further researches from the aspect of economic development level and growth. Country-effects,

i.e. the relations of national level institutions (culture, macro-level policies, etc.) cannot be neglected [10], [11]. (According to our assessment, applied typology and national effects play equally important roles in the variance of per capita GDP). Economic performance and resources of growth indicate complex peripherality depending on the proximity of cities in Central and Eastern Europe. Facilitating and improving the proximity and accessibility represent a key challenge in these areas [23]. However, any kind of development brings remarkable results only in those regions where the economy performs otherwise adequately [3].

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