

University of Szeged
Faculty of Science and Informatics
Doctoral School of Geosciences
Department of Economic and Social Geography

RURAL RESTUCTURING IN THE VISEGRAD GROUP – SOME GEOGRAPHICAL ASPECTS

Theses of the Ph.D. dissertation

József Lennert

Supervisor
Dr. Bálint Csatári
Associate Professor

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I. Introduction

The processes of the rural areas gain significantly less attention than what they would deserve based on their share from total area and population. Moreover, this attention is mostly limited to one aspect of the rural space – agriculture. The traditional perception of rural areas is deeply embedded into the everyday thinking, however, its depiction of rural is outdated. Although changes in the economy and society started long before, this perception undoubtedly lost its validity in the developed world in the seventies, with the start of a thorough transition described as rural restructuring.

The concept of rural restructuring was first introduced by the new political economy. Cloke and Goodwin identified three dimensions of restructuring: economical, sociocultural and the changing role of the state. However, in many papers, rural restructuring appears from the very beginning as a loose narrative framework. According to Michael Woods, the differences between the past and contemporary processes are their speed and persistence, and their interconnectivity and universality. The Hungarian adaptation of the term is the merit of Imre Kovách.

This rapid transformation process is linked to the exhaustion of the fordist economic paradigm and the rise of the flexible production. This paradigm shift also had an impact on rural economy. Previously the emphasis was put solely on the output of the primary production, which was sold to the urban consumer, but now the process of production itself became part of the product. The restructuring rural areas nowadays fulfil a wide spectre of consumer demand (rural tourism, natural protection, preserving historical landscapes and traditions, migration destination for amenity migrants).

The unavoidable changes in the rural land use can undergo with the preservation and reinvention of the existing structures, but can also come together with changes in the land cover patterns. In Western Europe, however, the state- and European level regulatory institutes work against the drastic transformation of the land cover.

The new rural migratory movements played a crucial role in the recognition of the more and more multifunctional nature of the rural areas. Migration from urban to rural areas is not a new phenomenon, with

suburbanisation has already taken wings in the early twentieth century. However, the seventies marked the beginning of a new migration process: counterurbanisation. This new phenomenon involves the absolute deconcentration of the population where even remote rural areas and maintain a positive migration balance. This new process was identified almost at the same time in the US and Western Europe.

There are multiple driving forces behind this shift in trends. Besides the changes in the labour market (New Spatial Division of Labour), the personal lifestyle preferences, the desire for a higher quality of life in a location close to the nature also played a crucial role. These new motivations are described with the term amenity migration.

However, not every location became a destination for these new migratory movements. Even if remote rural areas in general can be characterised with positive migration balance, some areas will still continue to lose population.

The abovementioned processes lead to the differentiation of the restructuring rural space. Based on the degree in which the new “rural paradigm” replaced the traditional one, Marsden and his colleagues distinguished four types of rural space (preserved, contested, paternalistic, clientelist countryside).

The spatial differentiation of the rural restructuring processes appears not just within the same region or country, but also between different macroregions. My research also focuses on the rural restructuring processes of a distinct macroregion, the Visegrad group.

II. Research goals

The aim of my dissertation is to examine some selected geographical aspects of the socioeconomic change in the rural areas of the Visegrad Group after the political and economic transition. To achieve that, I will adopt the Anglo-Saxon theoretical approach of rural restructuring, and analyse the changes in the four countries with a common methodological framework. The results point out the common trends and unique elements in the spatial patterns of restructuring in country and regional level. In my research, I put a special emphasis on the similarities and differences between the commutable and remote rural areas.

In my dissertation, I posed three research questions and formulated three research hypotheses in connection to them:

Question 1: What is more observable in the contemporary rural spatial processes of the Visegrad Group – the similarities of the historical development or the unique post-socialist development paths?

Hypothesis 1: The main processes of rural restructuring are similar to each other, and the country- and region specific trends play only a secondary role.

Question 2: Are the processes of the commutable and remote rural areas are rather similar or different to each other?

Hypothesis 2: The processes of the commutable and remote rural areas are markedly different: the former is dominated with suburbanisation, while the latter is still characterised with rural depopulation.

Question 3: Do the rural restructuring processes identified in Western-Europe also appear in the Visegrad Group?

Hypothesis 3: The main elements of the Western European rural restructuring appear in the Visegrad Countries only in fragmented islands. The rural area of the Visegrad Group cannot be described with Western European type rural restructuring in its entirety; the productivist agrarian paradigm still dominates significant parts of the research area.

III. Applied methods

My intention was to analyse the rural restructuring processes of the Visegrad Countries as high resolution and as low territorial level as possible. The local municipalities (LAU 2) of the four countries served as the primary units of analysis, with some modifications. The most significant alteration is that I took the rural and urban part of the complex Polish municipalities called urban-rural gminas into account individually. These modifications resulted in 15 276 primary units of analysis.

These units of analysis were divided into three spatial categories with a two-step delimitation method. For the first step, I made a distinction between the rural and the urban municipalities. Unfortunately, because of the differences between the administrative system and the settlement network of the four countries (especially the Polish gmina-system and the

settlement network of the Hungarian Plain) the creation of a definition applicable for the whole Visegrad Group proved to be very difficult.

The applied definition takes both the existing national and international rural-urban typologies and the country-specific attributes into account. I consider every municipality (unit of analysis) rural, which do not have an administrative city or town status, and also those towns (urban gminas, urban part of the urban-rural gminas), where the number of inhabitants do not exceed 5000. In the second step, I made a further distinction between the commutable and remote rural areas. For delimiting the remote rural areas, I adapted a method used by the EU. Thus, I consider every rural unit of analysis remote rural, which is not accessible within a 45 minutes driving time from the nearest urban centre with at least 50 000 inhabitants (urban centres located in a different country were not taken into account).

In my analysis, I focused on two interconnecting processes, which have key importance in the rural restructuring after the political and economic transition: land cover change and migration. A mixture of practical and theoretical considerations led me to the selection of these two aspects of restructuring. The high spatial resolution and the shortage of the available data sources limit the number of potential aspects for analysis. However, these two characteristic spatial processes integrate a wide spectre of the elements of rural restructuring. This way, I also gain insights for the socioeconomic changes I cannot examine directly.

The source of the land cover data was the Corine Land Cover database, what is collected since 1985 and now managed by the European Environment Agency. For the Visegrad Group, maps are available for the reference years of 1990, 2000, 2006, 2012. I used the raster maps with a cell size of 100x100 m. From the 44 category distinguished at European level, 34 are present in the Visegrad Group. At this number, it is difficult to grasp the main trends, so I used the following aggregated categories for the analysis: artificial surfaces, arable land, vineyards and fruit cultivations, grasslands, heterogeneous agricultural areas, forests, wetlands and other natural areas, water bodies. Amongst them, the category of heterogeneous agricultural areas requires further explanation: this category aggregated from land principally occupied by agriculture with significant areas of natural vegetation, and complex cultivation patterns. Complex cultivation

patterns can include area with intense horticulture, garden zones and scattered farm areas, typical accessory settlements of the Hungarian market towns, and the sparsely settled Polish villages mixed with the surrounding agricultural areas. This caused unforeseen complications during the analysis. While in the map from 1990, these sparse villages with agricultural area appeared as complex cultivation patterns, they were later recategorised as discontinuous urban area. Because large-scale nominal changes were added to the real transitions, between 1990 and 2012, the artificial surfaces in Poland statistically grew by 70 percent, and the reasons not associated to rural restructuring could only be revealed with additional analysis. This case provides a great example for both the unexpected effects of the country-specific traits and the limitations of the used databases.

For the analysis of the migratory trends, demographic data from the statistical offices of each country was used (Központi Statisztikai Hivatal (HU), Główny Urząd Statystyczny (PL), Český Statistický Úřad (CZ) Štatistický úrad (SK)). In the case of Hungary, I used population census data, which is more reliable than the yearly data publications.

For the deeper analysis of the changes in the land cover and migration patterns, I also introduced other indices describing relative geographical location, socioeconomic and physical geographical conditions as explanatory variables (unemployment rate, elevation, share of protected areas and Natura2000 areas, temporal distance of capital cities, temporal distance of cities with more than thirty thousand, fifty thousand and one hundred thousand inhabitants).

I used the following software for the analysis: Microsoft Excel, ArcGIS, Terrset Land Change Modeler and SPSS. Besides the basic quantitative data analysis methods, I also used more complex approaches. I used the SimWeight machine-learning procedure available within the Terrset Land Change Modeler software to explore the environmental and socioeconomic driving forces behind land cover change. I also created a transition potential map for some selected land cover categories, which displays the probability of transition from one category to another in certain locations. I used the MLP neural network, which is also included in the Terrset Land Change Modeller software, to generate these transition potential maps. These two methods are useful for identifying the factors influencing land cover change, provide a detailed spatial display of the

transformations and can be used for making predictions about future land cover. I also prepared an additional, European-level analysis to compare the results from the Visegrad Group with the experiences of the other macroregions. To achieve this, I used the cluster analysis tool available in the SPSS. For the detailed analysis of the migratory trends, and to identify the underlying driving forces, I carried out correlation analysis and regression analysis.

IV. A short summary of the research results

Table 1.: The number and population of the urban, commutable rural and remote rural units of analysis, 2011

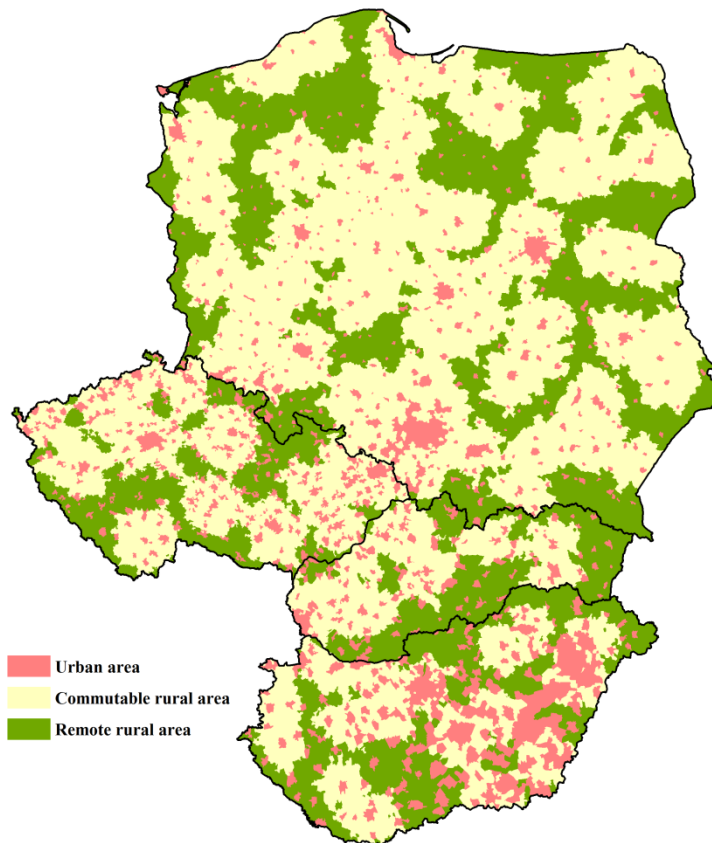
	Urban units of analysis		Commutable rural units of analysis		Remote rural units of analysis	
Poland	592	19,2%	1737	56,4%	752	24,4%
Czechia	269	4,3%	4213	67,4%	1771	28,3%
Slovakia	118	4,1%	1447	50,1%	1325	45,8%
Hungary	244	7,7%	1601	50,8%	1307	41,5%
Visegrad Group	1223	8,0%	8998	58,5%	5155	33,5%
	Urban units of analysis (population)		Commutable rural units of analysis (population)		Remote rural units of analysis (population)	
Poland	22 439 035	58,3%	11 881 581	30,9%	4 191 208	10,9%
Czechia	6 447 187	61,4%	3 058 959	29,1%	999 299	9,5%
Slovakia	2 864 794	53,0%	1 580 224	29,2%	959 304	17,8%
Hungary	6 615 568	66,6%	2 049 932	20,6%	1 271 274	12,8%
Visegrad Group	38 366 584	59,6%	18 570 696	28,9%	7 421 085	11,5%

Source: own elaboration based on the data from the KSH, GUS, ČSÚ, ŠÚ

1. According to the previously introduced definition, over 90% of the units of analysis turned out to be rural. However, the population of these municipalities gives only less than half of the total population (47% in Slovakia, 33,4% in Hungary). Moreover, between a quarter to half of the

units of analysis were delimited as remote rural, but their share is only 10 to 20 percent from the total number of inhabitants (Table 1., Figure 1.).

Figure 1.: Urban, commutable rural, and remote rural areas of the Visegrad Group (according to the definition used in the dissertation)



Source: own elaboration

2. The key changes of land cover proved to be quite similar in the four countries. These trends include the increase of artificial surfaces and forests, and the decrease of arable land. However, it is important to note that these

trends have already started in the Visegrad Group long before the political transition.

3. The regional traits and differences between the historical and socioeconomic development of the countries heavily influenced the post-socialist land cover change patterns. For example, despite the general trend of decrease, the expansion of the arable land is observable in the Eastern periphery of Poland. In these territories, the socialist transformation of the agriculture did not eradicate traditional small-scale family farming. After the transition, subsistence farming served as a safety network for those who lost their job during the industrial downsizing. On the other hand, in the Czech periphery, due to the expulsion of the original Sudeten German population after the Second World War, the local population did not have strong ties to the land at the end of the socialist era. Thus, in response to the changing market conditions and subsidies, largescale arable land abandonment and the expansion of grasslands occurred.

4. Similarly to land cover change, the most general post-socialist trends of migration are common for each country. After the political and economic transition, the migration balance turned to positive in the rural areas of each country of the Visegrad Group. This indicates that the early nineties indeed constitute as a turning point in the case of the migratory movements. However, this is not only the result of the changing socioeconomic circumstances, but also the consequence of the loosening planning and mobility regulations after the end of the central planning economy. However, the appearance of the positive migratory trends observable mostly in the commutable rural areas.

5. A more detailed spatial analysis revealed important differences between the migration patterns of the four countries. While in Poland, Slovakia and Czechia, the rural migration surplus increased for the second decade after the transition, in Hungary, it is significantly reduced. The correlation analysis of the migration rate and the distance of the urban centres in different size categories revealed, that the differences in the settlement network have a great impact on the post-socialist migration patterns. While in the monocentric Slovakia and Hungary, the correlation is the strongest

between the distance of the capital and the migration balance, in the polycentric Poland, its coefficient is close to zero. This indicates that the big regional centres (like Kraków, Gdańsk, Poznań, Wrocław) have a higher influence in the formation of the migratory patterns.

6. The limited success of the Simweight machine-learning procedure and the multiple linear regression models reveal that the migration and land cover change processes can only be explained with traditional socioeconomic and physical geographical factors to a certain degree. The R^2 of the linear regression models do not reach 0.5 in neither country. This means that the used variables are only able to explain less than half of the total variance. There are more possible explanations for this phenomenon: the regional differences reduce the explanatory power, the role of chance and soft factors in case of similar municipalities. However, the lack of properly explainable trends not necessarily originates from the differences between the countries, but also can be the consequence of the general complexity of the rural restructuring.

Figure 2.: The yearly average migration balance of the commutable and remote rural areas of the Visegrad Group



Source: own elaboration based on the data from the KSH, GUS, ČSÚ, ŠÚ

7. A sharp difference is observable between the commutable and remote rural areas, especially in the case of migration. The rural migration surplus appears mostly in the commutable rural areas, and is accompanied by the expanse of the artificial surfaces and other associated land cover changes (for example, the increase of grassland due to arable land abandonment in hopes of investment in the future) (Figure 2.).

8. The spatial processes of the remote rural areas are more diverse than in the commutable rural areas. A large part of the remote rural areas provide unsatisfactory possibilities for employment and livelihood, yet they display limited changes in the land use and migration – they can be viewed as conserved rural areas. But we can also find islands of counterurbanisation, areas of destination for (involuntary) social immigrants and quickly depopulating rural areas – sometimes in the direct vicinity of each other.

9. The restructuring processes described in Western Europe only appear in fragmented islands. This is perfectly illustrated with the example of counterurbanisation. During the exploration of the driving factors behind the migration patterns, the indices of natural amenities showed very little explanatory power (and sometimes even turned out to have negative effects!). This does not indicate western-type amenity migration. Even if we examine the remote rural areas separately, their effect on the migration remains minimal (except in the case of elevation). We can conclude that even from the amenity-rich units of analysis, only very few locations can attract a notable number of immigrants.

10. According to the abovementioned results, in case of the Visegrad Group, the concept of rural restructuring is only applicable as a board umbrella term. The contemporary rural transformation includes both similar and also totally opposite processes like what described in Western Europe. This finding is in accordance with the theoretical approach, which justifies the term restructuring based on the presence of a well-identifiable tipping point (like the political transition). While the appearance of Western European processes is scarce, from other aspects, the rural space of the Visegrad group can undergo rather drastic transformations. The rapid expanse of the grasslands and the abandonment of arable land in the Czech

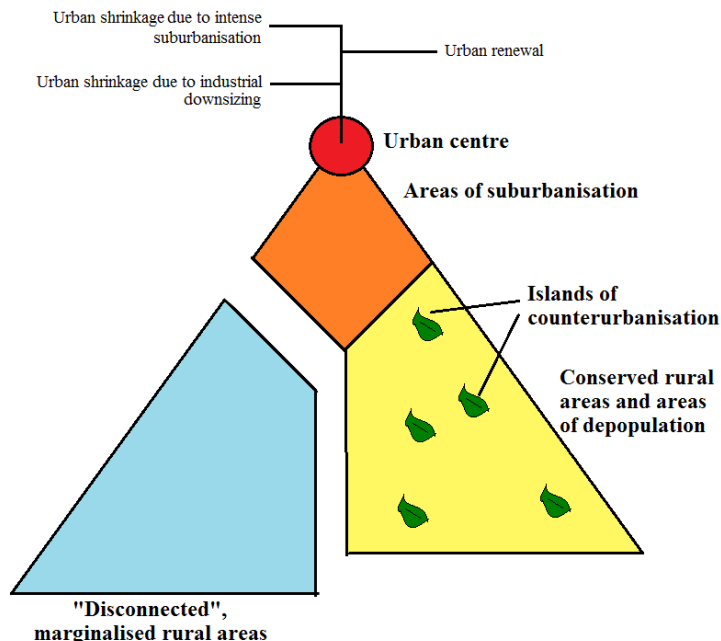
peripheries is a good example for that. In Western Europe, the national and EU level regulatory framework provides consistence and successfully prevents the drastic shifts in land cover change. In the Visegrad Group, however, the shock of transition, later the integration into the Common Agricultural policy placed the agriculture into completely different conditions, and created more possibilities for sudden and rapid changes. In the Visegrad Group, the repeated restructuring events in the agriculture also pose the following question: can we talk about restructuring in the Western European sense in a region which already underwent many drastic transformations during the twentieth century?

11. Finally – the research results indicate that the rural areas of the Visegrad Group cannot simply be divided into a productivist and post-productivist part. In some areas, the ongoing processes do not fit either into the postfordist, neither into the productivist narratives, and indicate the formation of a novel type of rural area. One of the paradoxical attributes of these areas, that high unemployment can even positively correlate with the migration rate, especially in the first decade after the transition. Microregions, which can be characterised with peripheral location, infrastructural conditions way below the average and very poor economic conditions at the same time have become the migration destinations of low status immigrants. While we could see these territories as spare areas still ahead of the upcoming rural restructuring, the recent trends do not support this interpretation. Because of the long-time social marginalisation, it is a more plausible prospect that the rural areas of the Visegrad Group will disintegrate into small shreds without any functional and social connections to each other (Figure 3.).

After summarising the results of my research, I will answer my research questions, and accept or reject my hypotheses. My first hypothesis (*the main processes of rural restructuring are similar to each other, and the country- and region specific trends play only a secondary role*) turned out to be only partially true. While there are some certain common spatial processes, we still cannot neglect the effect of the regional and country-specific attributes. Moreover, the false changes in the artificial surfaces in

Poland has pointed out that the answer was not only influenced by the processes, but also the selected methodology.

Figure 3. Post-socialist rural area types in the Visegrad Group



Source: own elaboration

My second hypothesis (*the processes of the commutable and remote rural areas are markedly different: the former is dominated with suburbanisation, while the latter is still characterised with rural depopulation*) is turned out to be mostly true, with one addition: while the processes of the commutable rural areas are rather similar to each other in the four countries, the spatial processes of the remote rural areas are more diverse.

My last, third hypothesis (*The main elements of the Western European rural restructuring appear in the Visegrad Countries only in*

fragmented islands. The rural area of the Visegrad Group cannot be described with Western European type rural restructuring in its entirety; the productivist agrarian paradigm still dominates significant parts of the research area.) is also turned out to be mostly true. However, it is important to add, that after the political and economic transition, some areas do not fit either into the postfordist, neither into the productivist narratives. The processes of these areas indicate the formation of a new, economically and socially marginal area type, which only has limited links to the parts of the rural areas.

V. Publications related to the topic of the dissertation

1. CSATÁRI B. – FARKAS J. ZS. – LENNERT J. 2013: Land Use Changes in the Rural-Urban Fringe of Kecskemét after the Economic Transition. – *Journal of Settlements and Spatial Planning* 4. 2. pp. 153-159.
2. FARKAS J. ZS. – LENNERT J. 2015: A földhasználat-változás modellezése és előrejelzése Magyarországon. – In: CZIRFUSZ M. – HOYK E. – SUVÁK A. (szerk.): Klímaváltozás – társadalom – gazdaság. Hosszú távú területi folyamatok és trendek Magyarországon. Publikon Kiadó, Pécs. pp. 193–222.
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4. LENNERT J. 2014: A magyarországi és lengyelországi vidéki települések vándorlási egyenlegének alakulása a városi központoktól való távolság függvényében. – In: Csiszár I, Kőmíves P M (szerk.): Tavaszi Szél 2014 / Spring Wind 2014 VII. kötet: agrártudomány, fizikatudomány, földtudomány, műszaki. Doktoranduszok Országos Szövetsége, Debrecen. pp. 211-219.
5. LENNERT J. 2015a: Vidéki megújulás, vagy folytatódó elnéptelenedés?: A visegrádi országok vidéki vándormozgalmi folyamatai a centrum-periféria viszonyok függvényében. – *Településföldrajzi Tanulmányok* 4. 1. pp. 72–86.
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7. LENNERT J. 2016: Land use changes in the Visegrád Group after the political and economic transition. – In: ZAPLETALOVÁ, J. – VAISHAR, A. – STASTNÁ, M. (szerk.): *Eurorural '16: 5th Moravian Conference on Rural Research.* 72 p.
8. LENNERT J. 2017: Land use changes in the Visegrád Group after the political and economic transition. – *Columella. Journal of Agricultural and Environmental Sciences* 4. 1. suppl. pp. 199–204.
9. LENNERT J.: A visegrádi országok vidéki tereinek rendszerváltás utáni vándormozgalmi folyamatai. – *Területi Statisztika.* Accepted for publication. Anticipated release: 2017.