TERRITORIAL DIFFERENCES OF RURAL CITIES AND THE DEVELOPMENT OF TRANSPORT INFRASTRUCTURE IN HUNGARY

LÁSZLÓ PÉLI[1], GYÖRGY IVÁN NESZMÉLYI[2]

ABSTRACT - Regional disparities can be explored from many aspects, however, most researchers agree in that due to political and economic changes, the former trend of decreasing regional disparities turned back and started to increase rapidly. In the early 2000s, a new structure with more competitive, more innovative areas and also with lagging settlements and areas seem to emerge. As result of the differentiation processes of the past two decades, in comparison with the EU member states, Hungary has the largest gap in GDP per capita among its regions. A little more than 50% of the Hungarian micro-regions have disadvantaged conditions for 30% of the population. Even now, in many studies and disputes, the under- and over-valuation of the role of highways are combined with each other. In our opinion, highways have strong, if not the strongest economic stimulus effect and settlements bordering highways formulate a single, coherent cluster. In general, these areas belong to the more developed areas of the country, which have better employment, income and infrastructure conditions. Currently, Hungary has strongly central and radial transport network. This structure hinders the formation and strengthening of large rural cities, as the capital city is the political and economic centre of the country, and its central location makes it easily accessible from the major part of the country. This state however does not help strengthening rural growth centres.

Keywords: project of modern cities, transport infrastructure, rural development, territorial differences, global economic crisis

INTRODUCTION

Territorial policy before the change of regime was centralized; settlements did not have or had only minimum freedom in decision-making and the real market and social conditions were sometimes hidden. Despite this, the changes due to the change of regime, which were drastic in many cases, as well as the adaptation to the real market conditions have modified significantly the economic-social space structure of Hungary. Not all the settlements could adapt to the sudden changes appropriately and this was even worsened by the problems due to the collapse of the socialist centralized system (collapse of heavy industry, closing of factories, extremely high unemployment, etc.). The basic features of the space structure were created at that time and the gaps have further widened since then. The different areas reacted in different ways to the sudden changes in the economy; therefore, various development paths have been created due to the various economic development measures. Such development paths determine the future of the local economies and the achievable targets. If we carry out analysis, independent from the geographical location, significant come off can be observed in the relation between urban and rural areas, especially in the villages with population under 1,000 inhabitants (tiny, micro and small villages). Such villages are characterized by peripheral features (e.g. depopulation, ageing, the lack of economic activity, unemployment, etc.).

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[1] PhD, Assistant Professor, Szent István University, Faculty of Economics and Social Sciences, Institute of Regional Economics and Rural Development, Gödöllő, Hungary.
E-mail: peli.laszlo@gtk.szie.hu
[2] PhD, Associate Professor, Institute of Commerce, Budapest Business School, College of Commerce Catering and Tourism, Budapest, Hungary.
E-mail: dr.neszmelyi.gyorgy@kvifk.bgf.hu

The basis of the examinations was the mapping of regional differences in Hungary and also the examination of the impacts of the highway network on the reduction of regional differences. In the course of this roughly one decade – since Hungary has acceded to the European Union – two programmes were launched in order to reduce the regional disparities. The objective of both programmes was to strengthen the economies of towns in the countryside in order to induce development and a closing-up process throughout their peripheral areas. Dealing with and moderating territorial imbalances are the determinant elements of regional policy not only in Hungary, but in the EU as well. Several theoretical wings (the Neo-classic theory, Keynes's theory, the theory of endogenous development, the export-base theory, the centre-periphery examination) were born to handle territorial discrepancies. While we were studying those wings, we found out that perfect territorial equality cannot be reached by any means in our globalized world. With artificial measures, it can be achieved for short terms, but it cannot be sustainable. The other wing of theories analyses the polarized development (the theory of growth poles), which does not intend to reach perfect equality in space since it is impossible; however, the key to economic development is "expanding" development. These theories support the idea that it is not the peripheral areas which must be developed but it is the strengthening of the economic centres which needs to be encouraged. In that way, the prosperous centres will pull the semi-peripheral and peripheral areas with themselves and, thus, they can generate economic development in the areas lagging behind.

In Hungary, the global economic crisis slightly mitigated the regional disparities because there was no substantial change in the least developed areas since these settlements had weaker economic activity. In contrast, the global economic crisis severely affected the economically efficient, especially export-oriented areas (Budapest only partially). Due to the economic crisis, sign of levelling can be observed and, consequently, there is no catching up in the peripheries. Treating, reducing regional disparities is a key element of regional policy not only at domestic but also at the European Union level.

As European statistics indicates, there are huge differences between the territorial units in the EU at both NUTS 1 and NUTS 2 levels (at NUTS 2 level there was a 5.7 times difference on the basis of per capita GDP). Although the international economic crisis slowed down the economies of the core areas as well and, therefore, the gap in the development levels slightly narrowed, it is these areas that can deal with the effects of the crisis in the shortest time. Innovation ability is concentrated in these areas (Schumpeter, Perroux, Boudeville, etc) that can find the way out from the handicapped status towards dynamic development.

Even higher territorial discrepancies can be observed at lower territorial levels. There are high inequalities at NUTS 3 level, but they are even higher at LAU 1 (micro-region) and LAU 2 (settlement) levels. The lower territorial level we take into the examination, the higher differences can be discovered. Thus, we chose to conduct research at settlement level (LAU 2).

The method applied in our research is comparison. As result of great efforts in collecting data and creating the database, we selected 2003 as the basic year – the start of the period under examination, the year before Hungary's EU accession and the global economic crisis – and the latest data available, i.e. the year 2010.

In our days, one of the biggest challenges both for the developing and for the developed world is the widening of territorial disparities, even at global scale. The gap between the poor and the rich shows a rapid and continuous increase instead of shrinkage or at least stagnation. The vast majority of countries are trying to combat against this phenomenon but, unfortunately, with not much success. The same is typical of Hungary as well, the gap in terms of territorial disparities has still been widening. Furthermore, Hungary has a peculiar situation as due to its historical antecedents, there is only one significant city which can be considered competitive in the European context, and this is Budapest, the capital city. Budapest with its agglomeration has a decisive role on the Hungarian economy, as none of the rural cities/towns is strong enough to act as economic de-centre in within the domestic spatial structure of settlements. In March 2015, the Government of Hungary announced a new programme, the "Modern Cities Program", which considers key role to the development of cities/towns with country rank from the point of development of rural areas. The Pólus Program, which was launched in

the mid 2000's, and the Modern City Program (which was launched nearly ten years later) are basically equal to each other. Their objective is the development of cities in the countryside and also of their catchment areas – in other words, the development of rural areas. While the Pólus Program indicated five rural "pole cities" (Győr, Pécs, Szeged, Debrecen, Miskolc), the current Modern City Program was extended to all the cities in county status – including the afore-mentioned five cities - as main development areas. The basis of the present Program – which encounters 23 members - is that more densely located, development-generating areas provide better accessibility for the peripheral areas from the viewpoint of economic development. In Hungary, there are 23 cities/towns with county rank (Figure 1).
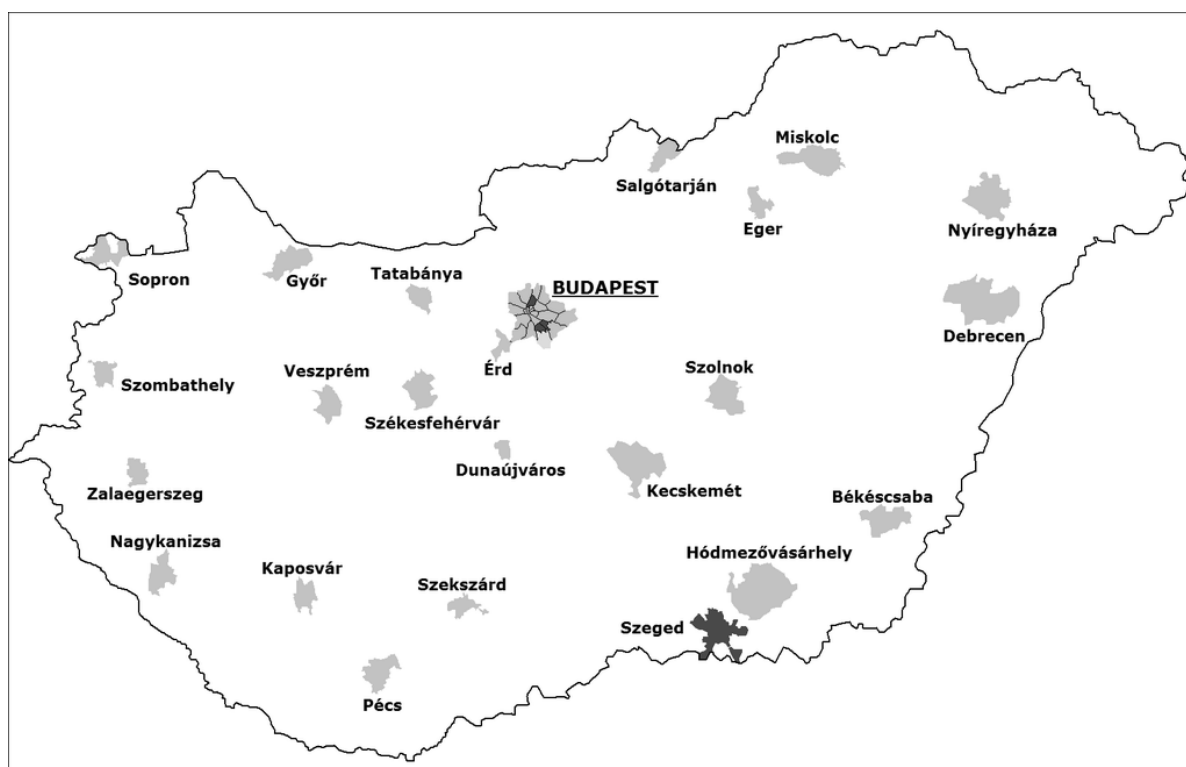

Figure 1. *Towns/cities of county rank in Hungary*
Source: National Election Office of Hungary, 2015

The goal is to strengthen the economic position of these towns by distributing the available development resources based on the decisions made by locals. The town Sopron became the first member of Modern Cities Program, then, by the end of April 2015, further four towns joined the program: Eger, Zalaegerszeg, Miskolc, and Pécs. The government and the concerned cities are to conclude co-operation agreements with each other for economic and infrastructural development goals, with a special focus on the development of motorways and job creation. The government plans that all towns and cities with county rank would be connected to the motorway network by 2018 and, for this, 600 billion HUF (about 2 billion EUR[3]) have been allocated. Highways have a major role in transport infrastructure. Figure 2 clearly shows that the national road network has a strong radial character and the highway network is concentrated in the capital, Budapest. According to medium and long-term development conceptions, the main task is to strengthen the outer ring by breaking the existing radial structure. As a result, the radial structure can be converted into a "grid-like" network

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[3] The central rate of the Hungarian National Bank (MNB): 303.65 HUF/1 EUR (on 04.05.2015).

with full settlement coverage. It is worthy to observe the map, then compare it with the borders of the central region, which is the result of our examination.

We share the opinion that the transport infrastructure, especially the existence of motorway network, has a predominant influence on the economy of a region. The new program, therefore, is of high timeliness and, in connection with it, we have carried out research on the results or failures of "Pólus Program", which was announced in 2006. We involved all the settlements of Hungary into our research. We could compare and put these two programs into parallel as both programs aimed to advance the economies of the rural towns. Contrary to the present program, in which 23 towns/cities have been involved, Pólus Program targeted only the five, most significant rural cities (Győr, Pécs, Szeged, Debrecen, and Miskolc).

■ 0.0-25.0	■ 25.0-50.0
■ 50.0-75.0	■ 75.0-99.0
□ 99.0-124.0	
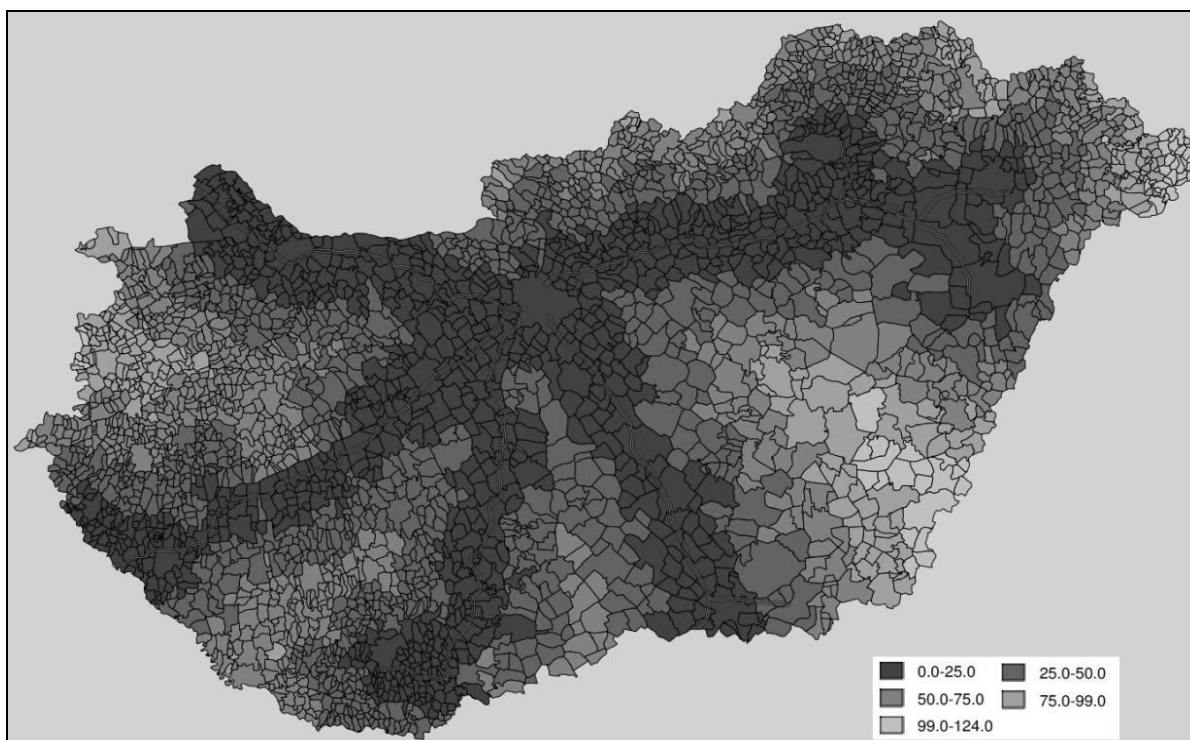
Figure 2. *The nearest motorway junction availability in minutes*
Source: own editing based on data provided by the National Information System for Regional
Development and Spatial Planning (TeIR), 2015

The above-mentioned motivated the selection of the topic, i.e. whether the theory can be applied in practice and how successfully it can be realized in Hungary. On the basis of all these, Polus Programme (which was launched a little more than a decade ago) can be considered as meeting point of theory and practice. The background of the methodology and data collection of this wide-scale examination will be described in the following.

MATERIAL AND METHODS

Our research was based on secondary data provided by the official databases of the Hungarian Statistical Office (KSH) and from other bibliographic sources: National Information System for Regional Development and Spatial Planning (TeIR), National Tax and Customs Administration (NAV), National Employment Service (NFSZ), Ministry of Rural Development (VM), GKIeNET Internet Research and Consulting Ltd.

The article primarily focuses on the research on regional disparities. Nowadays, such researches are carried out at micro-regional level; therefore, most of the latest data is available at that

level. Since the differences between the settlements located even in the same micro-region are also high, it might distort the status of the settlements very much. Thus, in our research, we carried out settlement (LAU 2) level analysis, getting a more accurate picture on their situation. In our opinion, it is also a merit that the results can be aggregated to carry out further examinations at any territorial level. This is extremely important because the existing 175 micro-regions are not the same as the 175 public administration units that came to effect on 1 January 2013.

After the long lasting data collection, we selected 2003 as the base year. We made this decision because 2003 was the year just before Hungary's EU accession. Other years, e.g. 2000-2002, could not provide full database. There were some missing data from each year. The most important aspect in selecting the other year was to find the latest data available, i.e. 2010.

The number of Hungarian settlements has been continuously changing in the past decades, the number of cities and settlements also increased. The number of Hungarian settlements was 3,145 in 2003, including the capital city, and increased to 3,152 by 2010.

We collected 87 indicators for all the Hungarian settlements for both years. Because there are high differences between the sizes of settlements, and, therefore, between their data, we used only inherited indicators in our examination. From the 87 raw, basic data, we created 54 inherited indicators.

While applying various statistical processes (*factor-analysis*, *cluster analysis*, *discriminant analysis*), we involved only 33 variables due to some missing data and after taking into consideration several conditions. We intended to select the above-mentioned indicators based on five major aspects:
- infrastructural indicators;
- unemployment data;
- demographic data;
- school attainment and human resource;
- economic status.

From various statistical methods, we selected three which, in our opinion, are the most suitable to achieve the targeted results. In the principle component analysis, we tried to reduce the number of the variables to be able to create groups (cluster analysis). In order to prove the results of cluster analysis, we carried out discriminant analysis.

CLUSTER-ANALYSIS FOR THE SETTLEMENTS

In a non-hierarchical clustering, the researcher is responsible for how many clusters are created. Therefore, we defined 4 clusters. We created groups so that the results of both years could become comparable. We summarized the tendencies which clearly show the changes in the positions of settlements (Table 1).

Table 1. *Matrix of the changes in clusters of the settlements, 2003-2010*

| Clusters (settlements)	Pole-zone	Close to pole-zone	Approaching to periphery	Absolute periphery
	2003	2003	2003	2003
Pole-zone, 2010	690	125	24	2
Close to pole-zone, 2010	77	970	52	22
Approaching to periphery, 2010	28	103	696	55
Absolute periphery, 2010	0	48	39	214

Source: own editing, 2013

The matrix shows that out of the four clusters the "pole-zones", the "approaching to periphery" and the "absolute periphery" clusters increased more or less. The cluster of "close to periphery" has the most members, however gradually decreasing, while the "absolute periphery" has the fewest members. Since there are thousands of cases, the maps show that it is very similar to that of

2003. In order to interpret the data easier, we will examine the new clusters one by one. By the end of the seven-year period, 575 settlements changed their positions, which is 18.24% of the total settlements.

INTRODUCTION OF THE 4 CLUSTERS OF 2010 AND THEIR COMPARISON TO THE 2003 CLUSTERS

The "pole-zone" cluster (Figure 4) was extended by the settlements around the core areas. It is basically characterized by positive economic performance. We can draw consequences regarding the incomes if we consider the personal income tax per capita. It seems to be an interesting research to examine the "migration" of settlements from one cluster to another. Analysing the cluster changes, it is not a surprising fact that the members of the "close to the pole-zone" "developed", namely 125 settlements, were able to improve their positions. The ring around the capital expanded by 34 members, primarily to the east; however, it is eye-catching that in the western part of the agglomeration there was a huge "white spot" in the "pole-zone" cluster in 2003. This group could catch up with the most-developed cluster by 2010. Ten settlements in the Gyúró-Tabajd-Alcsútdoboz triangle were able to achieve such a development. Consequently, almost all the settlements of the Central Hungary region belong to the most advanced group.
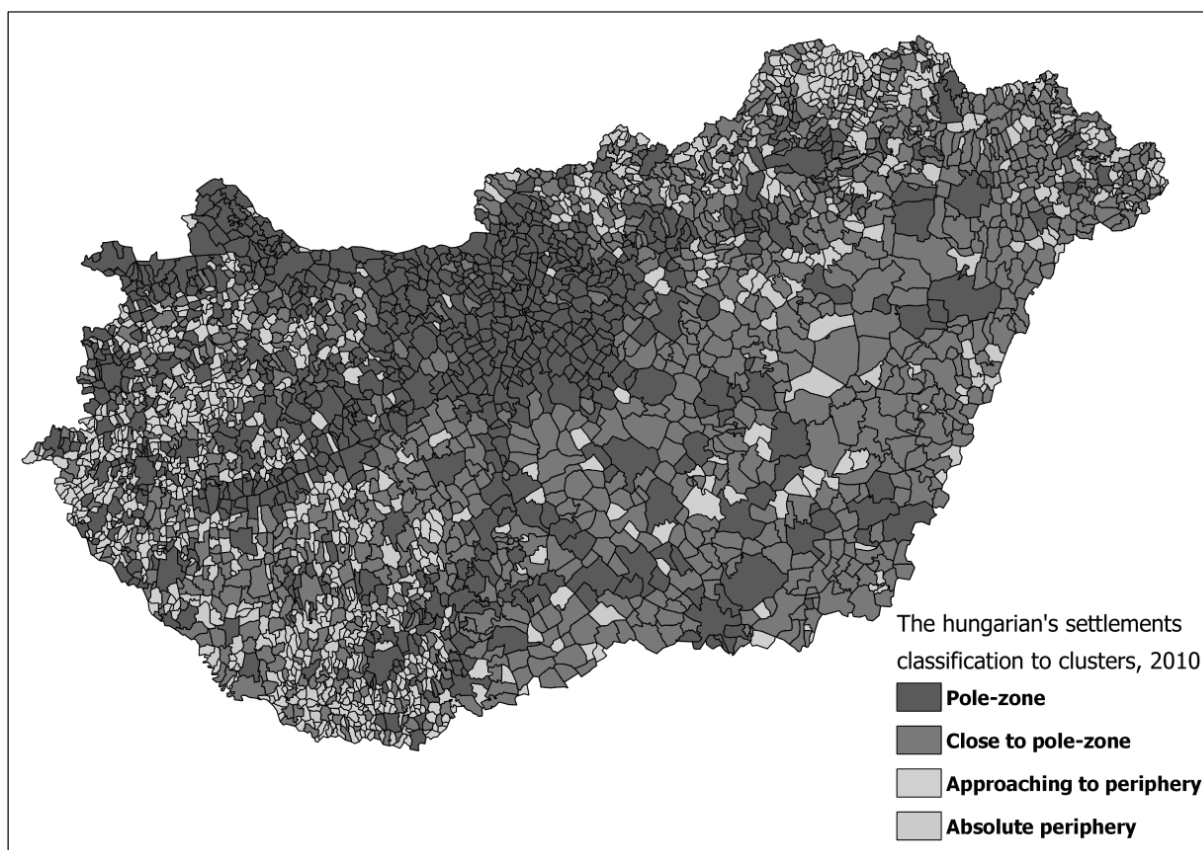
Figure 3. *Clusters of Hungarian settlements based on the data of year 2010*
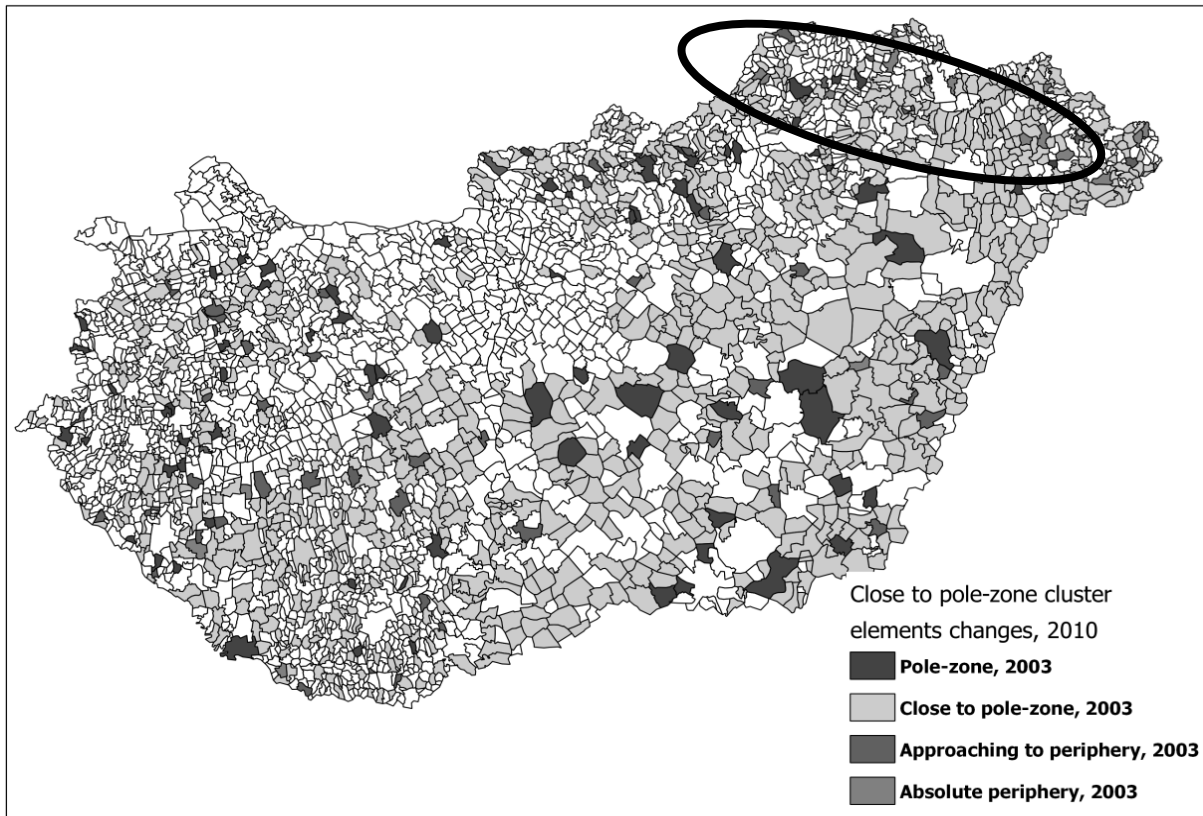Source: own editing based on TeIR data, 2013
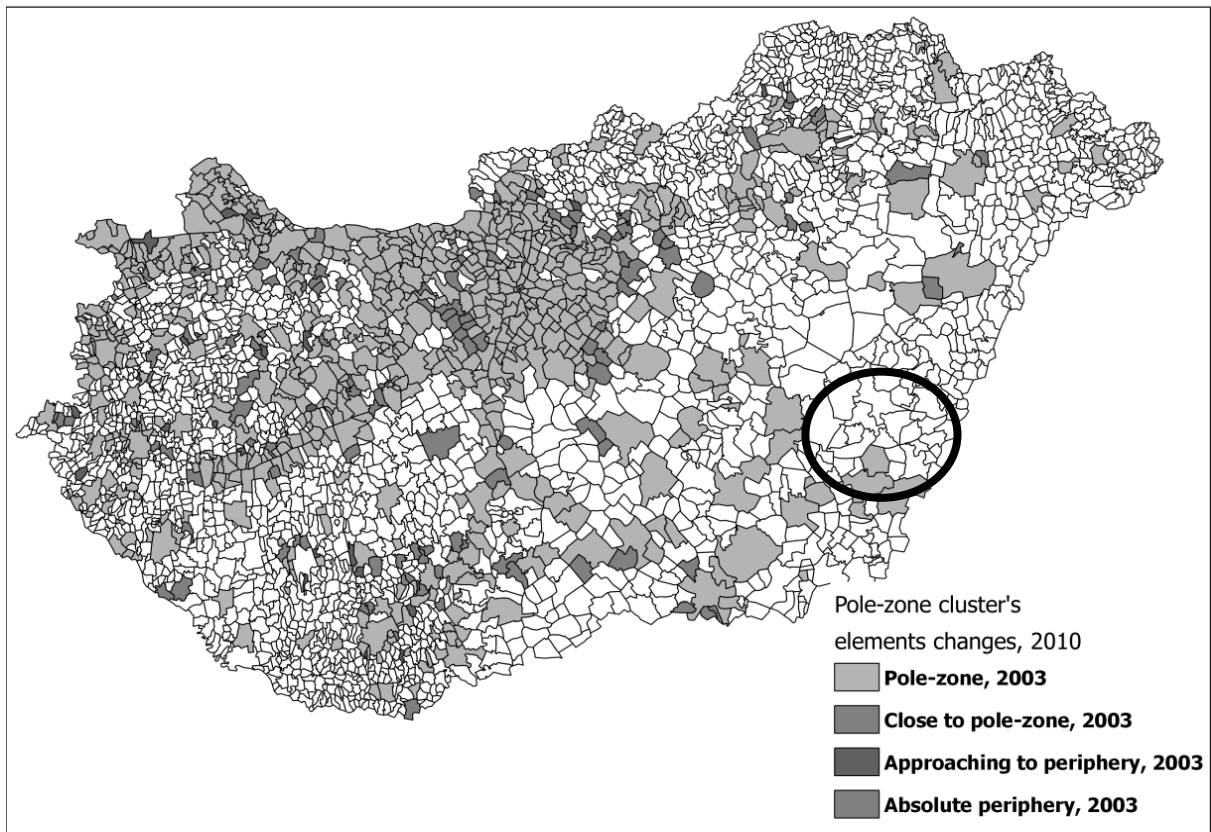
Figure 4. *The settlements belonging to the "pole-zone" cluster according to their "origin", 2010*
Source: own editing based on TeIR data, 2013

Based on our research, it can be stated that there is strong correlation between the highways and the members of the "pole-zone" cluster. There is only one exception in the case of a widespread "pole-zone". However, the nearest highway conjunction can be reached in over 100 minutes. This is the area of Békéscsaba-Gyula-Békés, which could keep its good position under unfavourable approachability conditions. We did not aim at the examination of cross-border co-operation; however, it is worthwhile to mention that this area is closely linked to the development zone of Timişoara-Arad, which obviously has significant influence on the area, despite the fact that the Schengen border isolates them from each other at the moment.

Although it is much more surprising that 24 settlements of the "approaching to periphery" cluster have become the member of this category (skipping one step i.e. "close to pole-zone" cluster). These settlements are located in the area surrounding the "pole-zone" cluster, having good accessibility (highway, main road) (Figure 2).

If the above-mentioned fact was a surprise, this case is a miracle – certainly, if it is not an implication of data-collecting or supplying failure. This is the case of two settlements from the "absolute periphery" cluster (black-coloured circle) that moved directly to the central zone, namely to the "pole-zone" cluster. These two settlements are Hernádkak and Bátaapáti.

The "close to pole-zone cluster" (Figure 5) had the highest number of members even in 2010, with middle-sized and large villages and small and middle-sized towns, mainly located in the Great Plain. Settlements near the highways, highway conjunctions are close to the central settlements. Nearly all of the members of the second most developed cluster surround the most developed settlements or directly neighbour such developed settlements, or they look favourable because of their accessibility through highways.

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Figure 5. *Settlements of the "close to pole-zone" cluster, according to their "origin", 2010*
Source: own editing based on TEIR data, 2013

Settlements whose category has not changed are signed in light grey in Figure 3, meaning that they belonged to the "pole-zone" cluster even in the base year. These settlements are characterized by a favourable ratio of young population and high quality healthcare service.

For the 77 settlements which used to belong to the "pole-zone" cluster, this is a result of unfavourable tendencies. Out of the settlements of the "approaching to periphery" in the base year, 52 shifted to the "close to pole-zone" cluster. It includes middle-sized and small villages and they are located throughout the country. Their situation is improving with positive trends in infrastructure, unemployment, healthcare and the age-structure, resulting in stronger indicators within the whole cluster. In the examination mentioned above, the "absolute periphery" cluster could achieve the highest improvement. It can be observed in the case of 22 settlements, which are only small-sized and tiny villages. They are located mostly in Borsod-Abaúj-Zemplén and Szabolcs-Szatmár-Bereg counties.
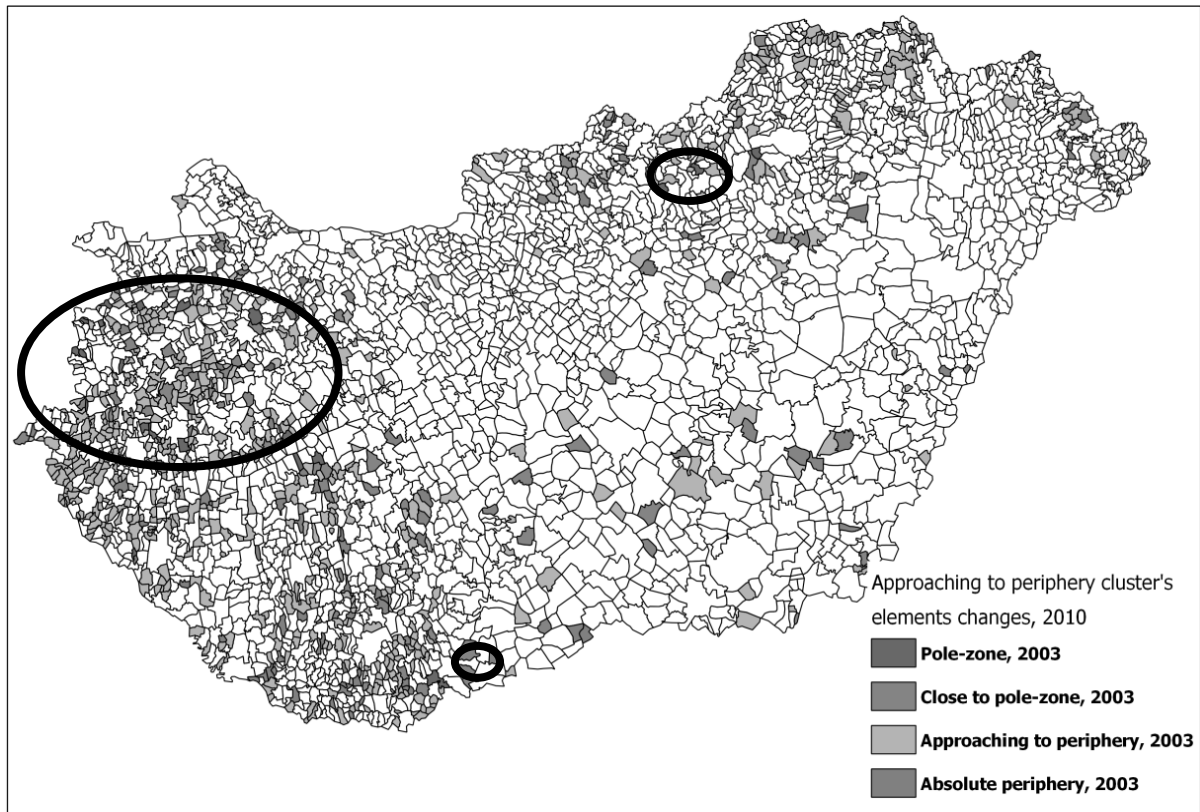
If the "approaching to periphery" cluster is examined (Figure 6), it can be seen that except for 1-2 settlements in the Great Plain, it kept its character consisting of mainly middle-sized and small villages as well as tiny ones. Their existence is dominant in Transdanubia and North Hungary, with increasing density as we are getting farther from Budapest. Twenty-eight settlements within the cluster, which used to belong to the "pole-zone" cluster, namely the most favourable category, were hit the most by unfavourable impacts. They are located mainly in the area bordered by M7 and M1 motorways, near the national border. All of them have population below 1,000 inhabitants; however, this kind of settlements are represented in Nógrád and Baranya by two settlements. They feature economic recession, combined with unfavourable social conditions. Settlements that originally belonged to this cluster feature ageing population, high migration rate and high social benefits. The

infrastructural conditions are poor. Due to the ageing population, the quality of primary education is also low.

The last group of the original investigation ("absolute periphery") experienced minimal improvement, since they could move to the semi-peripheral cluster.
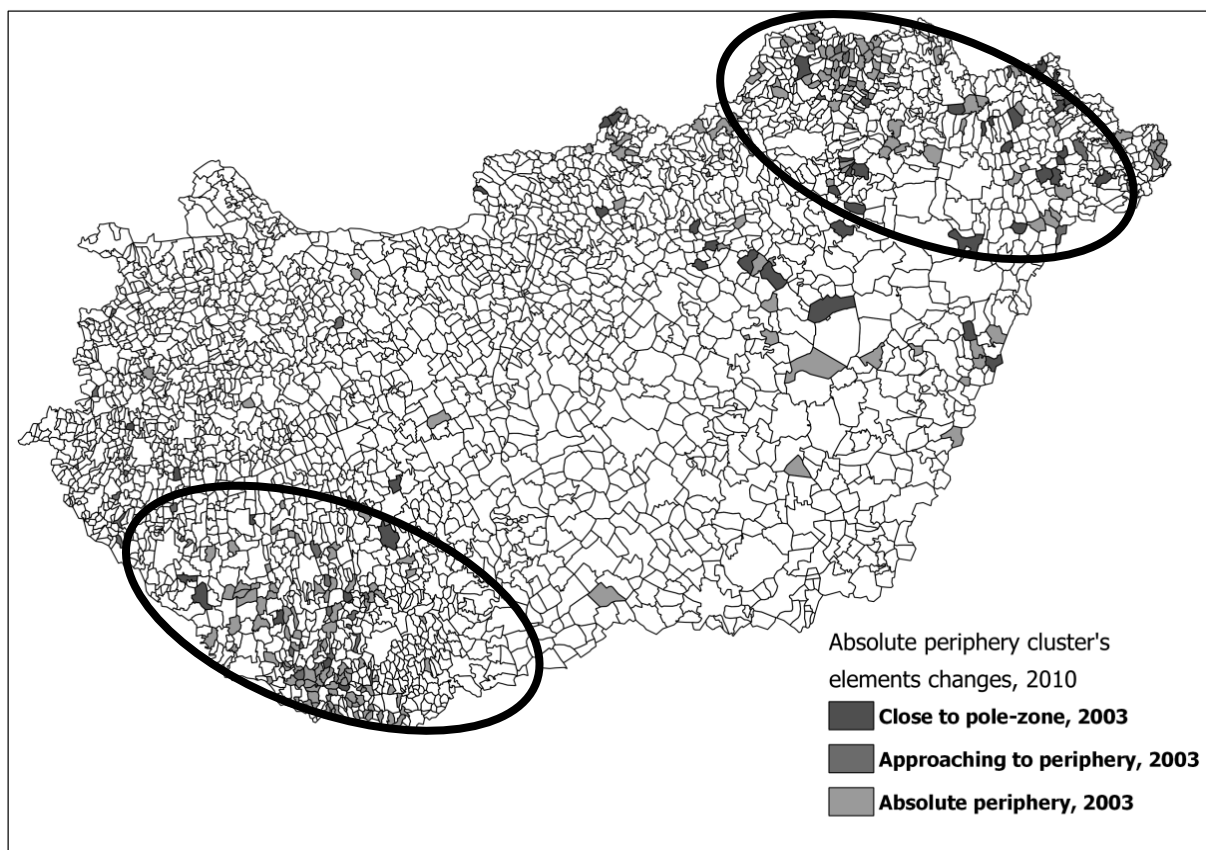

Figure 6. *Settlements belonging to "approaching to periphery" cluster, according to their „origin",
2010*
Source: own editing based on TeIR data, 2013

The last cluster (covering the fewest settlements), i.e. "absolute periphery" received new members only from two clusters – "close to pole-zone" and "approaching to periphery" (Figure 7). Similar to the analysis of the year 2003, the least developed settlements form this group. They were hit the most by the economic recession (in circles: Baranya, Borsod-Abaúj-Zemplén, Szabolcs-Szatmár-Bereg, and Nógrád). They represent an extremely peripheral picture even based on the indicators, especially regarding the unemployment rate. They are located far from the central areas and are characterized by total lack of prospects for the future.

Forty-eight settlements that belonged to the "close to pole-zone" cluster in 2003 are the losers of the cluster because they fell down from a prosperous zone to the perfect periphery. It is an interesting fact that we can find some settlements of this kind near the pole-cities, like Pécs, Debrecen and Miskolc.

Thirty-nine settlements which became "approaching to periphery" declined. This was reflected in the unemployment rate and the higher share of young population.

Figure 7. *Settlements belonging to the "absolute periphery" cluster, according to their "origin", 2010*
Source: own editing based on TeIR data, 2013

It is also interesting to examine the population of the settlements that changed their status over the period (see Table 2). In the diagonal of the matrix, the size of the population of the unchanging status can be found.

Table 2. *Cluster-changing matrix of the settlements regarding their population, 2003-2010*

Clusters		Pole-zone	Close to pole-zone	Approaching to periphery	Absolute periphery
		2003	**2003**	**2003**	**2003**
Pole-zone	2010	6,857,436	246,473	7,023	548
Settlements average population		9,938	1,972	293	274
Close to pole-zone	2010	326,068	1,928,984	15,197	12,762
Settlements average population		4,235	1,989	292	580
Approaching to periphery	2010	179,729	383,325	216,099	28,209
Settlements average population		6,419	3,722	310	513
Absolute periphery	2010	0	77,469	10,455	152,293
Settlements average population		0	1,614	268	712

Source: own editing based on TeIR data, 2013

As for the population, the most significant "migration" is characteristic to the two developed clusters. In order to avoid distortion, we included the indicator "average population size of

settlements" in the table. It can be clearly seen that although the total size of population in the moving settlements is lower, this is due to the small size of settlements. The population of the periphery cluster members is mainly under 500. Table 3 shows the main features of the groups in 2010.

Table 3. *Clusters of year 2010 in figures*

Variables (2010)	Pole-zone	Close to pole-zone	Approaching to periphery	Absolute periphery
Number of settlements in the cluster (piece, %)	843	1,123	883	303
	(26.74%)	(35.63%)	(28.01%)	(9.61%)
Permanent population (person, %)	7,241,698	2,360,067	280,782	235,571
	(71.57%)	(23.33%)	(2.78%)	(2.33%)
Area (km^2, %)	32,716	43,417	11,648	5,245
	(35.16%)	(46.67%)	(12.52%)	(5.63%)
Personal income tax per capita (HUF)	269,083 Ft	155,517 Ft	152,191 Ft	92,637 Ft
Natural increase/decrease of the population (%)	-0.4	-0.67	-1.24	0.29
Migration rate in %	0.23	-0.25	-0.3	-0.26
Vitality index	0.99	1	0.66	2.42
Unemployment rate	6.56	12.53	13.79	25.95
Unemployment rate (2003)	4.31	9.56	9.84	22.66
Share of active population in public purpose employment	1.41	5.35	5.47	15.46
Figures from 2003	0.44	1.74	2.38	6.23
Registered businesses per 1000 capita	152.8	155.4	168.2	103.8
The accommodation facilities of all the commercial quarters	272,463	23,674	5,906	434
Number of cars per 1000 capita	317.9	239.5	262.8	168.8

Source: own editing based on TeIR data, 2013

The personal income tax per capita at national level increased from HUF 139,135 (2003) to HUF 178,914 (2010). However, the difference between the clusters with the highest and lowest figures changed from 2.42% (2003) to 2.91 % (2010), which reflects the existing territorial differences. We are in the third year after the global economic crisis and the differences in incomes increased dramatically. We also need to highlight the examination of the unemployment rate because a difference of 3.95% can be observed between groups. The global economic crisis influenced the human resource management first. While comparing it to the data of 2003, it can be clearly seen that this influenced all the clusters. The increase compared to the base year was 2.2-3.9%. The difference is even higher if the number of people in employment for public purposes is also taken into account. While the increase in the case of "pole-zone" cluster is only 1%, it is 3.5-4% in the case of two semi-peripheral clusters. Really extreme data can be seen in the case of "absolute periphery", where the increase was 9%, which can be considered high even compared to the already high value of 6%. If those who work for public purposes are added to the unemployment rate, we get a figure over 40% (!). The picture is even more significant if we remember the fact that "Program for public employment" started at the beginning of our research period, meaning that the examination of years 2011 or 2012 would be even more "colourful".

DISCRIMINANT-ANALYSIS FOR THE CLUSTER EXAMINATIONS CARRIED OUT FOR YEARS 2003 AND 2010

This analysis is the check of the results derived from the cluster analysis. It can be stated that the settlements examined are really the members of the clusters. If not, they can be categorized into another cluster. With the help of the discriminant-analysis, we intended to justify the results of the cluster-analysis. The final results of the discriminant-analysis are showing the size of the groups which were put into the right category (Tables 4 and 5). In the first part of the tables, the number of settlements are represented in absolute value. It shows to which group-mid the settlements are closer. After having interpreted the results, it is clear that, regarding the extreme values, there were no cluster changes at all (except for 1 in 2003).

Table 4. *Classification results, 2003*

Classification results[b]							
		Clusters	**Predicted group membership**				**Total**
			1	**2**	**3**	**4**	
Original	Settlement	Close to pole-zone	1,186	11	5	44	1,246
		Approaching to periphery	44	744	15	8	811
		Absolute periphery	30	8	254	1	293
		Pole-zone	68	16	1	710	795
	%	Close to pole-zone	95.2	0.9	0.4	3.5	100
		Approaching to periphery	5.4	91.7	1.8	1	100
		Absolute periphery	10.2	2.7	86.7	0.3	100
		Pole-zone	8.6	2	0.1	89.3	100
b. 92.0% of original grouped cases correctly classified							

Source: own editing, 2013

The tables include the same figures in percentage. The share of settlements which were categorized into the right cluster was over 85% in all the clusters in 2003, while it exceeded 90% in 2010. It means that the results of the cluster analysis are suitable to carry out further analyses.

Table 5. *Classification results, 2010*

Classification results[b]							
		Clusters	**Predicted group membership**				**Total**
			1	**2**	**3**	**4**	
Original	Settlement	Absolute periphery	276	22	0	5	303
		Close to pole-zone	10	1,053	55	5	1,123
		Pole-zone	0	23	808	12	843
		Approaching to periphery	21	49	10	803	883
	%	Absolute periphery	91.1	7,3	0.0	1.7	100.0
		Close to pole-zone	0.9	93.8	4.9	0.4	100.0
		Pole-zone	0.0	2.7	95.8	1.4	100.0
		Approaching to periphery	2.4	5.5	1.1	90.9	100.0
b. 93.3% of original grouped cases correctly classified							

Source: own editing, 2013

The strongest justification was for the "pole-zone" cluster in both years, 95.2% and 95.8%, respectively. The results of the cluster analysis are justified in both examinations, even after the check by the discriminant-analysis. Meanwhile, based on the information below the table, it becomes clear that the matching points of the four functions covered 92% of the elements in 2003, while it was 93.3% in 2010.

EXAMINATION ON THE CHANGES BETWEEN THE CLUSTERS

After our cluster-analysis proved to be justified and valid, we carried out the following examination. In the sections above, we detailed how the elements of the clusters changed over the seven-year period. However, we intend to represent the positive and negative tendencies independently from the clusters. The settlements in white (2,577) did not shift from one cluster to another compared to the base year, belonging to the same groups in both year (Figure 8). The developing tendency was reflected by 280 settlements, while 295 recorded a decline. Based on the abovementioned figures, it can be stated that no significant changes could be observed, only some restructuring.

It can be easily admitted that in the country it was only Budapest and its agglomeration, i.e. Central Hungary, that realized improvement. There is only one settlement with declining figures (Kerepes). A group of settlements in the south-west of Central Hungary reflects a unique coherence. Ten settlements (area bordered by Gyúró, Tabajd, Alcsútdoboz) show similar development (Figure 8, the smallest circle in the middle), moving from the second cluster to the first one ("pole-zone"). The other six regions show a more various picture. Settlements which proved improvement based on the cluster analysis are towns of larger size and are located near highways, mainly in Transdanubia, but there are a few along the M3 and M5 as well. The situation is more shaded in the settlements reflecting signs of recession.

In order to understand their location better, we divided them into four sectors which are circled in Figure 8. The first zone – circled in the top left – covers the area of Balaton-Győr-Sopron triangle. Out of the four zones that we defined, this is the one with the highest number of settlements. Based on the previous examination, these settlements were mainly the members of the most advanced zone, namely the "pole-zone" cluster. Their basic feature is that they cover mostly tiny and small-sized settlements. The main reason for the recession was the increasing unemployment, since the high-tech industries (mainly car manufacturing) had outstanding role in this area. The economies of several middle-sized towns (Szentgotthárd, Győr, Zalaegerszeg, Szombathely, Sopron, etc.) depended on the performance of mainly one industry/factory (not a diversified structure) and they became too defenceless when the crisis came. The recession hit these sectors the most, therefore in cities that could not provide alternatives, the unemployment rate increased rapidly. Considering economic aspects, in the beginning, the dismissals hit the farthest settlements (requiring the highest transportation costs), then they gradually reached the centres.

The second zone (lower left circle) covers almost the whole Baranya County. It clearly shows that this area is dominated by developing settlements. It needs to be added that 2010 was the year when the M6 highway was opened and the pole-city of the area, Pécs, was the Cultural Capital of Europe. Thus, the increased state support and the projects for job creation were only temporary and distorted the results. Most of such projects were stopped after the series of programs related to the Cultural Capital. It is the maintenance of cultural institutions which still exists, but it does not require such high concentration of supports.

However, there are several settlements showing the signs of decline, which are all tiny or small sized and are located mainly near the borders and half way between the M6 and M7 highways.

The third group is in the lower right. It is the largest on the map and it still has the fewest members. It is characteristic to the Great Plain, with members of small and middle-sized towns and large villages, unlike the abovementioned. This group declined in positions, falling from the "pole-zone" to the "close to the pole-zone" cluster.
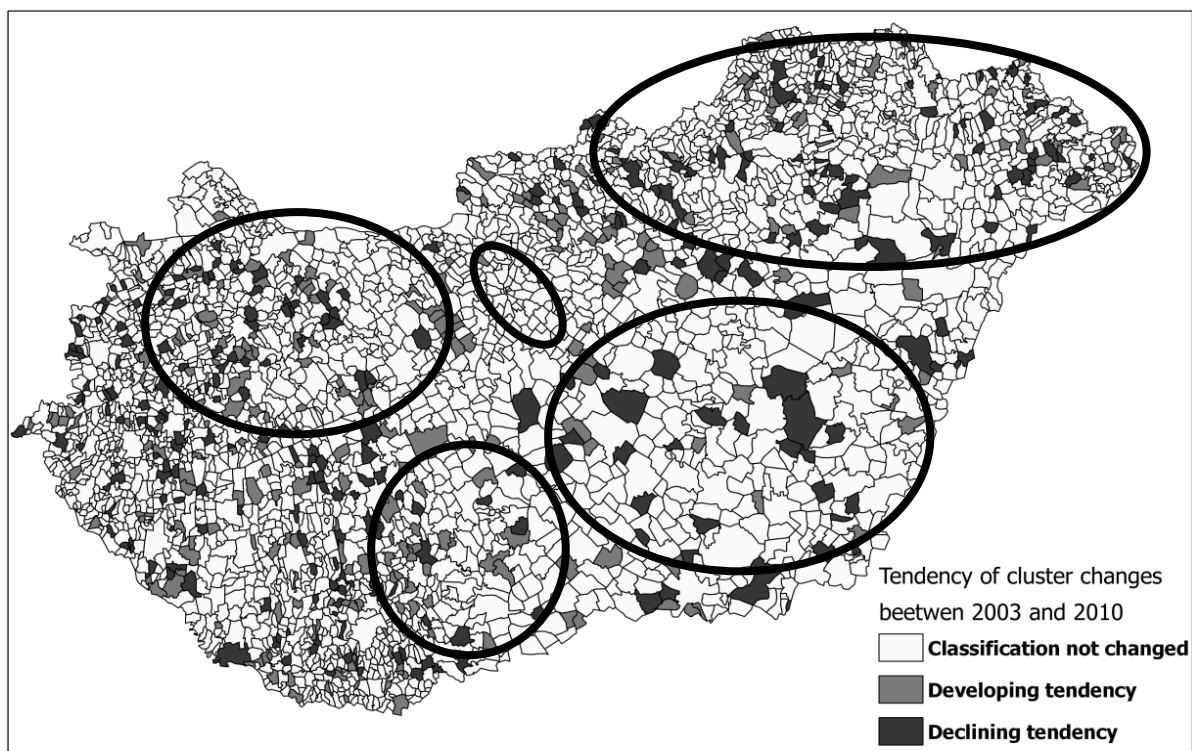
Figure 8. *Categories of settlements examined*
Source: own editing, 2013

Finally, the fourth (top right circle) area covers most of Nógrád, Borsod-Abaúj-Zemplén and Szabolcs-Szatmár-Bereg counties. In the cluster analysis, most of the settlements constituted the "approaching to periphery", which was almost the weakest cluster regarding the economic performance and far from any large towns that could be dynamic engines. However, they slipped to the "absolute periphery" (the settlements with the poorest conditions) over the seven years. This area is not only the largest in size and the second regarding the number of members, but it includes the most disadvantaged settlements with the poorest quality. Based on the indicators we created, most of the settlements with the weakest performance are located in this area, but this tendency is not constant; this group has been gradually expanding. The pole-city of the area, Miskolc, can have dynamic effects on only its own situation and its close surroundings. Settlements, which are located farther, gradually create links to the "absolute periphery" cluster. In this cluster, the segregation of minorities, namely the Roma population can be observed. They are concentrated in the abovementioned settlements, isolated from the areas with more favourable social conditions. In the areas with serious difficulties, there is no chance to create jobs, and the poor quality healthcare and education basically determine the local population.

CONCLUSIONS AND RECOMMENDATIONS

Based on our research results, we can state that the development of the centres has to be the Government's priority because only these "core areas" are able to generate dynamic growth in their agglomerations, gradually covering more and more areas towards the external peripheries. If the support directed to the peripheries does not serve self-sufficient economic growth, they should not be encouraged. We could state that supporting artificial generators and poles, based on the comparative cluster analysis, can be a right way, therefore it should be a priority task of the government, of course, in relation with and in cooperation with a polycentric system of towns.

Based on the research results, we stated that only Budapest and its expanding agglomeration, namely Central Hungary, was the only one that could improve its status over the seven years. Since we examined the years of 2003 and 2010, we did not detail the starting year of the crisis; however, the above-mentioned region was the only one that could step up from the original position (except for Kerepes). Territorial imbalances do not really affect Central Hungary, although they exist in that region as well, but the settlements are in the upper quarter. The capital and its agglomeration constitute almost a whole cluster, while significant differences characterize the other six regions. The crisis had little effect on Budapest. It was able to recover fast, since its economic growth is self-induced. Their tertiary sector is very strong, which dynamically develop the whole economy. Due to this self-induced development, it was able to break out from the crisis much faster than the others were and was able to renew. Its economy is complex, polarized and, therefore, the stronger and prosperous sectors pull the weaker ones.

With our research results, we proved that the gravity zone of the capital has expanded. Compared to the situation of 2003, we can see that 34 settlements (directly bordering the agglomeration) moved to the most-developed ("pole-zone") cluster. In addition, several settlements along the highways developed much and shifted to the abovementioned cluster. With a complex analysis, we proved that it is the only centre in Hungary which has influence on the economies of the other regions. In our research, we justified that the come off in the peripheral areas is lasting and gradual. Due to the economic crisis, sign of levelling can be observed and, consequently, there is no catching up in the peripheries. The settlements belonging to the periphery and approaching to periphery are mainly tiny and small settlements (population below 1,000 inhabitants). Therefore, they are not able to catch up on their own due to their sizes. Moreover, they are segregated based on the age and race distribution which shade their prospects further.

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