

Egyetemi doktori (PhD) értekezés tézisei

**Az Észak-alföldi régió periférikus térségeinek tagoló tényezői
a rendszerváltás után,
különös tekintettel a területi jövedelemegyenlőtlenségekre**

PhD thesis

**Dividing factors of peripheral areas
in the Northern Great Plain Region after the political transition,
with special attention to spatial income inequalities**

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1.1 Introduction, the relevance of the topic

The *core-periphery dichotomy* is a permanent question of the regional science, the social geography and the regional development as well.

Probably the most important dimension of spatial inequalities reappearing or accelerating after the political transition in Hungary is the problem of core-periphery dichotomy

The spectacular *outstanding position of Budapest*, and the *West-East slope* were examined in the scientific works, though the investigation of *mosaic-like pattern* on the lower administrative level has not attracted enough attention.

There are several methods regarding the delimitation of peripheral areas, but dynamical approaches focusing on the temporal changes are rarely found in the studies.

The Northern Great Plain Region – besides Northern Hungary – is specific among the seven NUTS-2 planning-statistical regions, as its spatial pattern is characterised both by the appearance of the *outer periphery* along the state border and *inner periphery* in the Middle-Tisza-Basin.

The economic decay affected especially the peripheral areas after the political transition, however the dramatic increase of the spatial inequalities showed uneven distribution as the result of the recession. Several questions have remained unanswered regarding the development of spatial inequalities and the territorial patterns of social-economic tendencies.

There are only a few precedents in the Hungarian scientific literature for fitting the local spatial processes into international models.

1.2. Objectives, applied database, methods

This work intends to examine the following objectives:

1. to present the methods used during the territorial demarcation of peripheral areas in the Hungarian scientific literature and in the practice of regional development;
2. to investigate empirically whether the applied indicator is suitable to characterize the spatial processes;
3. to trace the Hungarian income pattern and its changes after the political transition based on own investigations;
4. to present the processes of intra-regional income inequalities in the NUTS-2 planning-statistical regions;
5. to draw up the spatial distribution and temporal changes of settlements regarded as peripheries based on their income;
6. to discover the differences in spatial income processes on the settlement level in the Northern Great Plain Region;
7. to calculate the level of spatial income inequality tendencies in the micro-regions of the Northern Great Plain Region;
8. to model the spatial income pattern of the region and its alteration in time;
9. to investigate the core-periphery dichotomy by the delimitation of urban sphere of influences measured by the employers' commute;
10. to point out the effect of state borders on the spatial income pattern;
11. finally, to model the spatial income pattern of the region after the political transition summarized by international and Hungarian studies on the core-periphery processes, on the border effects influencing the spatial development, and on the relationship between regional development and income inequalities.

The calculations in the dissertation are primarily based on the taxable income data taken from the personal income tax database of the Ministry of Finance – Hungarian Tax and Financial Control Administration (PM-APEH) and the Hungarian Central Statistical Office (KSH) for the 1988 and 2007 period. Further resources of analyses are derived from the data from the census of KSH in the years 1990, 2001 from the TEIR database and from the code for regional development.

The results of the thesis are based on different inequality indices (weighted Gini-coefficient, Robin Hood index, weighted logarithmic relative deviation) and other methods (correlation, factor-analysis, potential-model). Mapping the calculations and results gained special attention.

The investigations and their interpretation were completed with the help of the Microsoft Word, Excel 2003, Power Point programs and SPSS for Windows 11.0 software, thematic maps were created by ArcView GIS 3.2 and GoldenSoftware Surfer.

2. Investigation of the determinant spatial inequality processes in the Northern Great Plain Region in international context

The *problem of core-periphery dichotomy* deserved special attention during the overview of the international and Hungarian literature. Two different approaches can be separated regarding the core-periphery relationships – on the one hand, the first approach puts the emphasis on the process of cumulative causation (e.g. Myrdal's theory) (MYRDAL, G. 1957), on the other hand, the second approach highlighted the process of territorial equalization (e.g. Friedmann's and Richardson's theory) (FRIEDMANN, J. 1966; RICHARDSON, H. W. 1980). A theory explaining the recent inequality trends occurred in the U.S. has also been presented (FAN, C. C. - CASETTI, E. 1994).

The *state border* significantly influences the spatial processes in the Northern Great Plain Region. First of all, the methods for delimitation of the border zone were reviewed, as the first step to define the border problems. The positive and negative effects of state borders on the regional development were summarized: James Peach's hypotheses about the income disparities of border areas deserved special attention, as these statements became key element for the investigations carried out in the dissertation as well (PEACH, J. 1997).

The most important *theories on the relationship between regional development and spatial inequalities* were also reviewed. The presentation of spatial inequality methods used in the investigation logically fitted to this part. The arguments for and against the relevance of the Kuznets-Williamson inverted-U hypothesis were comprised by the different theories. Generally, my results confirmed the most important statements of the hypothesis, however newer conceptions rethinking the original hypothesis should also be taken into consideration. This is especially relevant in the case of the post-socialist countries in transition, where the inequality tendencies differ from the European trends.

3. Methods of the delimitation of peripheral areas

In this chapter of the dissertation, the most important resources on *the delimitation of the Hungarian peripheral areas* were reviewed focusing on the procedures, methods and indicators applied in the studies. The comparative analysis regarding the backward areas of the Northern Great Plain Region gave *ambiguous results by the literature – however, there is*

no significant difference between the results of each method, similar methods with some constraints could result completely different spatial pattern of development.

Since the mid 1980's *the Hungarian regional development has listed the underdeveloped settlements* within the framework of legislation practice of the government. A criticism of the applied methods, the socio-economic indicators taken into consideration and the underdeveloped settlements in the investigated region designated by the code for regional development are involved in my overview. *Summarising the results of different approaches the peripheral areas of the region can be identified, however significant and causeless differences appeared by one year to the next.* It can be stated that the territorial delimitation using the code for regional development is not appropriate to allocate the peripheral areas on the settlement level.

The taxable income per capita and the ratio of taxpayers correlated significantly with several socio-economic indicators by the calculation applied for the settlements of the North Great Plain Region. The distribution and temporal changes of peripheral areas are well expressed by the group of settlements labeled backward based on income per capita. *The relevance of income and employment indicators is supported by more Hungarian regional analyses.*

4. Regional income processes and the development of regional income inequalities in Hungary after the political transition

On the level of LAU-1 microregions the examination of income value in comparison with the national average revealed the most important characteristics of spatial pattern and their changes. After the political transition the spatial income structure is primarily characterized by *polarization*. The situation of Budapest, developed even before, and its agglomeration, of North-western Hungary and the largest towns improved, while the mining and heavy industrial axis and North-eastern, South-western Hungary were faced with long term crisis.

These changes generated *serious increase in spatial disparities* by the mid 1990s and long stagnation occurred in the intra-regional income inequalities by the millennium. Income convergence began after 2000 in the case of the regional inequalities. However, *the Northern Great Plain Region has the lowest level of income and the highest level of inequalities* among the Hungarian NUTS-2 regions.

The analysis of settlements, regarded as peripheral, with the lowest income per capita, proved that:

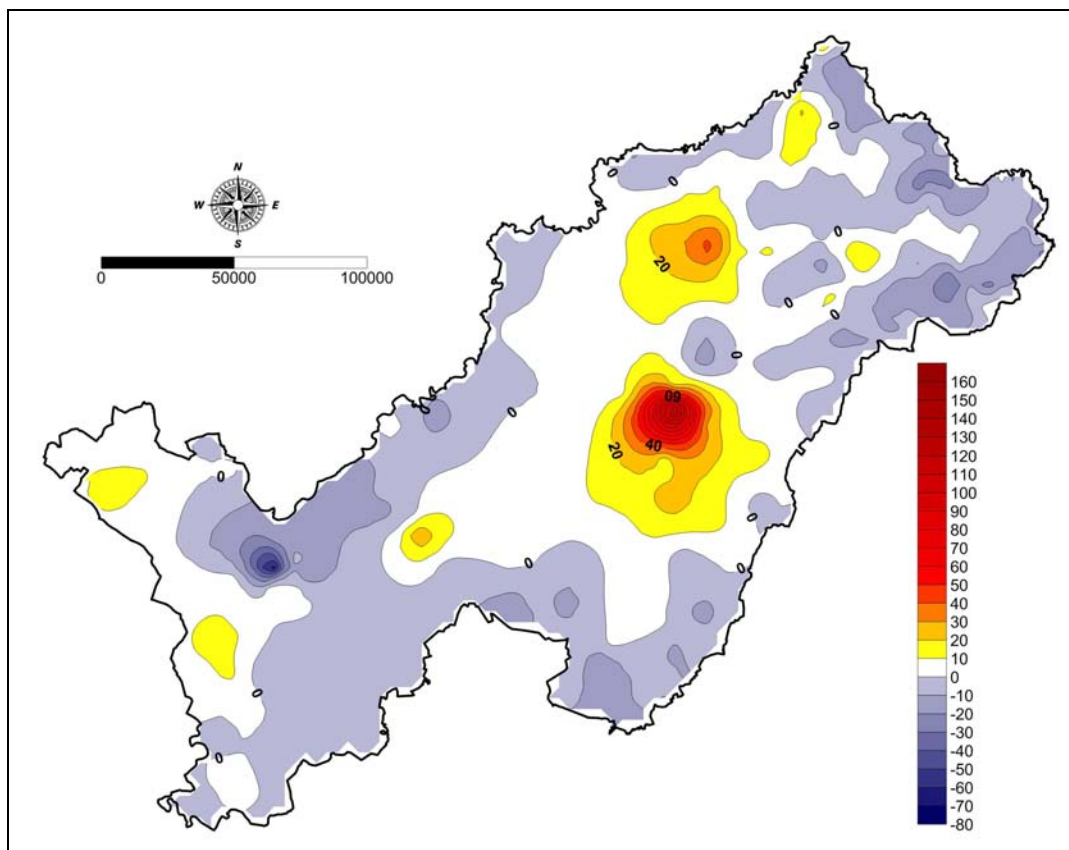
- *the number of peripheral settlements decreased significantly in the developing counties after the political transition;*
- *the number of settlements with extremely low income level grew in the counties with permanent crisis;*
- *peripheral settlements tend to concentrate geographically;*
- *backward areas – like the outer periphery along the state border and the inner periphery in the Middle-Tisza-Basin in the Northern Great Plain Region – can be detected with the help of this method.*

5. Determinant factors of income processes in the Northern Great Plain Region

5.1. Components of income processes on the settlement level

Most of the settlements in the region suffered decrease in the relative level of income in comparison with the national average between 1988 and 2007. *The categories of settlements according to the number of inhabitants are characteristically reflected by the change.* The county-seats (Debrecen, Nyíregyháza and Szolnok) showed growth in their income level, the towns with more than 10,000 inhabitants had a small decrease on the average, but villages with population less than 2000 suffered a serious drop-off in their income level:

- *increasing level of income* can be detected in the surroundings of the largest towns as the result of the suburbanization process;
- *the largest decrease* occurred in the case of peripheral settlements in inner and outer periphery;
- *due to this polarization, the gap between the poles of the development rank* became enormous;
- *the closing up of settlements with the lowest income values* – in spite of the convergence at the regional level – *has not yet started.*



The change of summarized potential value in the Northern Great Plain Region
between 1988 and 2007, %
(edited by Németh, G. by the authors calculation based on database from PM-APEH)

5.2. Application of potential-model in the investigation of income processes

The characteristic features and changes of the spatial income pattern can be represented with the application of potential-model. The three components of the model and their summarized value indicated that:

- *areas with the largest income potential – the surroundings of the county-seats and the axes between them, the Jászság area and the significant urban centres of the region – were able to hold and improve their income potential values after the political transition;*
- *large fluctuation of the potential-field was observed during the first period following the political transition in 1989;*
- *the most significant decrease can be found in the case of the inner and outer periphery;*
- *the process of suburbanization is also shown by this model;*
- *the spatial sphere of short-term income changes can also be detected;*
- *the method has the capacity to show the effect of Budapest or other centres located outside the region.*

5.3. The development of regional income inequalities

The calculation of income inequalities was carried out in terms of the LAU-2 microregions. The results can be summarized as follows:

- *regional income inequalities showed a more equal pattern before the political transition;*
- *the median values of the inequality trends exhibits similar tendency as in the case of the national and regional values;*
- *however, different trajectories can also be found:*
 - *divergence appears in more microregions (e.g. Baktalórántháza, Tiszafüred, Záhony microregion);*
 - *long-term, high-level stagnation can be detected in the case of the peripheral areas (e.g. Berettyóújfalu, Fehérgyarmat, Mátészalka, Nyírbátor and Vásárosnamény microregion);*
- *decreasing income inequalities can be evaluated as negative processes, the falling income level of the centre might cause income convergence within the microregion (e.g. Tiszavasvári microregion)*
- *the influence of suburbanization may appear in two ways:*
 - *microregions containing the county-seats show convergence (e.g. Nyíregyházai and Szolnoki microregion);*
 - *divergence can be detected in the territorial units containing suburban settlements, but not the centre (e.g. Derecske-Létavértes and Hajdúhadház microregion)*

5.4. Core-periphery processes within the region

The economic recession after the political transition entailed the dramatic fall in the employment and commuting, which differs in extent according to the size of the settlements. The tendency of change basically reflects that of the income level. The core-periphery

problem of the region outlines the decrease in the employment. In order to investigate this phenomenon I delimited commuter belts, out of which I only considered those that attract at least 10 settlements. The following characteristics can be observed:

- *the relative income level of the centres is above or a little bit below the national average;*
- *income level tends to decrease with the increasing distance from the centres;*
- *the relative income level of the centres increased or decreased less between 1988 and 2007;*
- *the decrease of the income level tends to be higher with the increasing distance from the centres;*
- *the larger the centre is, the more extended sphere of influence it has;*
- *exceptions generally appear as a result of a significantly high (mainly in the case of settlements along an axis between two centres) or an extremely low income value.*

This investigation gave evidence that *the illustrated core-periphery processes should be considered as the most important element in the income inequalities within a region. The polarization primarily taking place in this dimension resulted in the increase of disparities. It characteristically occurred during the economic recession, therefore it can be named "polarization during recession".*

5.5. The effect of state borders on the regional income disparities

Comparative analysis of the Western Transdanubia Region was completed in order to investigate the effect of state borders on the regional income disparities. James Peach's statements gave the basic hypotheses in this case (PEACH, J. 1997). The effect of state borders on regional income inequalities can be summarized as the following:

- *income inequalities can be lower in the border areas than in the non-border territories – in spite of Peach's hypothesis;*
- *Williamson's hypothesis seems relevant in the case of the Hungarian border areas, i.e. a higher level of development entails less income inequality;*
- *the traditionally higher level of development, the more appreciated environment and the successful economic transition are (beside other factors) the causes of the different income distribution in the case of the investigated regions;*
- *in the Eastern border area the positive effect of state borders can mainly be attributed to the higher state employment connected to the border crossing stations*
- *in the Eastern regions the low economic potential on both sides of the state border cannot boost economic development, as a consequence. the dividing functions of the state border prevail.*

6. Summary

The expansion process of peripheral areas in Hungary and within the studied Northern Great Plain Region after the political transition is confirmed by the investigations. Undivided backward areas formed with deepening crisis during the examined period.

The dynamic growth of intra-regional income inequalities after the political transition, their stagnation at high level until the millennium and moderate convergence during the last few years can also be detected in the region. However, the income level is the lowest and the inequality values are the highest in the North Great Plain Region among the Hungarian regions.

The general economic recession took different forms in spatial patterns after the transition. Differentiation according to the categories of settlements by the population number is one of the most characteristic elements. During the polarization within the region the most developed settlements were able to maintain or improve their relatively high income level while the formerly underdeveloped settlements faced the most serious decrease. In addition to this suburbanization is regarded as the most determinative process.

Spatial income inequalities are typically high in the peripheral areas and they are increasing or stagnating. On the other hand convergence may be the result of downward levelling (the decline of a centre).

The analysis of the commuter belts in the region attracted the attention to the *local core-periphery processes* as determinant factors of the economic recession after the political transition. *Settlements are characterized by lower level of employment and income level with the increasing distance from the centres. The degree of the recession also followed this tendency.*

The border areas of the region – as opposed to the Western border area in Hungary – have not become dynamical as the lack of economic potential results the cumulative causation process. However, the employment effect of the border crossing stations arises from the existence of state border.

The processes after the political transition can be placed into theoretical framework. *In the region the polarization accelerated by the recession caused the increase of the spatial income inequalities. The successful economic transition causes the growth of inequalities in short-term, however this process will be the responsible for the convergence process after that. As a result of the absence of the economic transition inequality values tend to stagnate on a high level, and convergence is only going to appear along with the decline of the centres.*

7. Novel outcomes – applicability

The investigations gave evidence for several important elements of the local spatial income inequality processes by the example of the Northern Great Plain Region – these are *the characteristics of intra-regional core-periphery problems, the phenomenon of suburbanization and the dynamical processes of peripheral areas.*

The existence of *different inequality trajectories* in comparison with the national or regional tendencies has been proved by the calculation and the reasons were also mentioned.

The *application of potential-model* on the level of settlements also provided new results. The spatial processes of peripheral areas can be detected with the help of the model.

The local and intra-regional income tendencies after the political transition *were attempted to be placed into a general theoretical framework* and to be fit into models explaining the Hungarian spatial processes.

The conclusions of the dissertation emphasized the important role of local centres in the spatial processes and that the employment functions of these towns should be strengthened in regional development and planning. However, the question of local core-periphery processes should be taken into account in further detailed investigations.

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