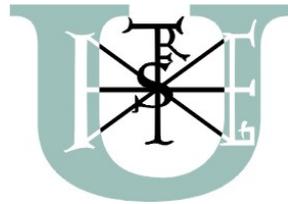


SZENT ISTVÁN UNIVERSITY
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Regional economic and social processes in the northeast of Hungary

Thesis of (PhD) dissertation

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INTRODUCTION

Through centuries several areas of science have been examining the characteristic features of space, its connecting and separating role. It is enough to think about astronomy, geography, physics or architecture. Before the 20th century regularities in connection with space were recorded and analyzed scientifically a lot of times in the mentioned fields. On the other hand social sciences had significant backlog; if we consider the science of economics we can see that the examination area of traditional economics – as Walter Isard says – is only “wonderland without dimension” in the first half of the 1900s. (Fujita, 1999). It means that neither classical microeconomics nor macroeconomics dealt with spatial position. The former dealt with isolated corporate models; the spatial position of national economy appeared occasionally and only in the form of shipping expenses by the latter, however almost all economic factors have spatial characteristic features as well (Lengyel – Rechnitzer, 2004).

The situation has significantly changed recently. The role of spatiality, spatial concentration, globalization, regionalization and localization has become so significant that regional science – and geography as its basis and social sciences too handle the effects of spatial dimensions as a key question, mainly since they have significant impact on the quality of life and the standard of living of those living on a particular area. Hence it is not accidental that the results of regional inequalities have become national and international political issues in the last fifty years. Just think about the regional development policy of particular countries or the European Union.

As far as the above mentioned questions are concerned, Hungary is not an exception either and it does not concern only the era after the political transformation as the developmental differences between particular regions could be experienced before that as well. However, these differences were connected to sectorial features but later on they became important elements of the process of regional differentiation in the 1990s and contributed to the sharp differences between the classical relations of the west and the east or Budapest and the provinces. Besides we also have to reckon with the differences between the north and the south and other further center-outskirts differences. Furthermore, there is also a segregation line between the Győr – Székesfehérvár – Budapest – Kecskemét – Szeged developmental curve and the territories outside the curve. We also have to take the frontier into consideration.

We might list several differentiation dimensions besides the above-mentioned ones, but it is more than probable that northeast Hungary might be concerned somehow. Beyond my individual motivation – this region is my homeland proper – that is why I have chosen this region as the topic of my dissertation concerning economic and social issues of this land and its quality of life and being livable matters.

The topic is timely; spatiality gives its actuality as space, and its continuously changing social and economic relations, local features and phenomena experienced globally require that regional development policy should give actual answers to regional problems. For this I think it is indispensable to follow the features of economics, society, living standard and quality of life and their changes; and to analyze regional heterogeneity at the level of settlements, micro regions, counties and regions as well. In the present case I lay emphasis on micro region-level research. It is not accidental as, in my opinion, – without forgetting the need of the harmonization of micro regional programs at regional level – in the long run the key to successful national regional development might be the micro regional-level planning, the fulfillment of (public) tasks and the economic development. Namely, micro region is especially the size category that is large enough to be effective in the principles of economies of scale; on the other hand it is small enough to provide local characteristic features.

The main goal of my dissertation is not to prove this statement of mine but to give a comprehensive view of northeast Hungary that describes the economic and social situation of the recent past of the region, the possible reasons for the micro regional developmental differences, the tendency of the stages of regional heterogeneity and last but not least the identity of people living in this region, the attitudes towards their narrower and wider dwelling homes and the judgment of their quality of life and well being. The latter ones are very important as they significantly influence the retention capacity of the region – and through that its competitiveness and development.

It follows from this that it was also my goal to compare the results of a secondary research study based on the regional data of the Central Statistical Office (CSO) and that of a nearly one thousand-person questionnaire; and to show that the regional valuations and analyses based on economic statistics indicators are significant, but do not mean exclusive decision basis in connection with regional development issues. Those features that are unknown or less known to regional statistics make the particular problems more shaded, what is more they are quality of life factors as well. That is how the role of individuals, their local communities, their images of the region, attitudes towards the area and identity become very important; so all aspects of local people, the local culture. The wider-scale sociological approach is also reasonable in the local and micro regional economic development. A very good international and partly national sample to this is the activities of the LEADER action groups, a form based on local initiatives of rural development.

Besides the above mentioned goals I drafted my hypotheses. According to the first one, in the analyzed region the income differences due to the differences between the county town and other micro regions are significant and increasing. I thought that there was close connection between the judgment of livability in particular micro regions and the settlement type and rank and the age of the answering groups. I also made it probable that in the course of the comparison of regional units the complex livability (quality of life) index created by me would show similar relative values with the retention capacity index per regional units. And last but not least, I also presumed that the development categories made by the CSO and the local inhabitants would show differences in several cases. The former one is a complex development index based on statistical data while the latter is based on own experiences, requirements and attitudes.

The scientific literature I have chosen is to achieve the aims of the above mentioned, to be effective in connection with the hypotheses and to be grounding. Among the literature there are works that mainly deal with the role of space, the characteristic features of the spatial rearrangement of economy, the regional differentiation, the measuring of this differentiation and the factors that influence the quality of life. I presume that only with the help of these works can we understand an analysis that deals with spatial examination of economic and social processes. Since without knowing, understanding and considering the background reasons arisen from spatiality (interpretation of space, regional economic issues) we might not be able to transform spatial factors that concentrate on economic-political and social interests as well (regional policy). And all of these are not effective if we will not be able to follow closely, quantify and demonstrate with analyses the regional changes (regional indices). This triplet can also be interpreted as the triplet of the exploration of background reasons of regional differentiation, the intervention in regional differentiation and the indication of the effectiveness of this intervention.

Similarly, according to the above mentioned directives, in the questionnaire there are questions that refer to personal assessment of the direct residence and its surrounding area, to public utilities and amenities, to availability, income situation etc. I hope that with the help of these I was able to develop the topic at the proper level. When choosing this topic I was also encouraged by the fact that due to my teaching publishing activities I have been dealing with the characteristic features of regional processes for years.

MATERIAL AND METHOD

As I pointed out in my introduction, northeast of Hungary stands in the focus of the spatial analysis of my doctoral thesis. The analysis can be divided into three interrelated phases but the methods applied are different. The *first* is a brief analysis based on the above outlined statistical indices and on some of the indicators that measures spatial differences. Its main objective is to position the area and its two statistical regions nationally, and the examination of heterogeneity of the area. The *second* one is a questionnaire, with which I wished to get a picture of the local inhabitants in connection with their regional *image*, *identity* and their *attitudes* related to their closer and farther places of residence. And last but not least, based on the macro-regional data of (CSO), I applied principal component analysis to complete the results of the former two analyses. I intend to introduce the circle of the basic data applied, the indices and methods through this triple distribution. But first of all, I state my hypotheses that significantly determine the above mentioned based on the summery of the special literature maintaining presuppositions.

Hypotheses based on special literature

My first hypothesis based on presuppositions is that the income differences in the examined region due to the differentiation between the county town and the other micro regions are significant and are increasing. (H1).

I also presume that there is close connection between the judgment of livability in particular micro regions and the settlement type and rank and the age of the answering groups (H2).

I also made it probable that in the course of the comparison of regional units the complex livability (quality of life) index created by me would show similar relative values with the retention capacity index per regional units (H3).

And last but not least, I also presumed that the development categories made by the CSO and the local inhabitants would show differences in several cases. The former one is a complex development index based on statistical data while the latter is based on own experiences, requirements and attitudes (H4).

Positioning and examination of heterogeneity

However northeast of Hungary is in the focus of my dissertation, I also felt it necessary to make a national wide level comparison of particular territorial units – regions, counties – in order to interpret the results of surveys within the region properly. Since an analysis of a middle- or micro-level region itself – without placing it to macro environment – would not say enough. That is why I compared the regional data of 9 indices relating to the period of 1998-2007 in the form of graphs and diagrams. The 9 indices at issue can be connected to territories internationally examined in chapter 1.4 or they are indices measuring the quality of life and standard of living in those territories – concerning their usage and availability in the national statistics:

1. aging index,
2. activity rate (%),
3. unemployment rate (%),
4. gross average income (HUF/person/month),
5. GDP per person(thousand HUF/person),
6. investment rate per person (HUF/person),
7. number of recorded enterprises (No/1000 persons),
8. number of flats built (No/10000 persons),
9. number of cars (No/1000 persons).

Furthermore, when choosing these indices listed above I also considered it important that they were suitable to describe the economic activity and income situation of a particular region. And this undoubtedly helps me to do my micro region-level research in the northeast of Hungary more thoroughly.

In connection with the distribution of GDP and regional investments I applied the already mentioned *dual-index*, the *Hoover-index* and the *allocation ratio* for the same reasons at both regional and county levels. As far as the above mentioned two indices – the Hoover index and the allocation ratio – are concerned I compared them to the regional population ratio. These values have also been calculated in the period of 1998-2006 (GDP), and 1998-2007 (investment) in different spatial approaches per index. The dual index has been calculated at regional and county level – according to the sense related to all regional units, weighted and unweighted as well. In the case of the latter I take the population ratio of particular regions within the total population for the basis of weighing where the weight points were the reciprocal value of population ratio.

The formula of the unweighted dual-index and the condition of $1 \leq D < \infty$ will not change; the difference is only in calculating the means:

$$D = \frac{x_m}{x_a},$$

where

x_m = the weighted mean of x_i that is above \bar{x}

x_a = the weighted mean of x_i that is below \bar{x}

\bar{x} = the weighted mean of x_i

Besides the application dimensions of the dual-index I also calculated the values of the Hoover index in further regional relations that are the following:

- the 7 statistical regions together,
- the central Hungarian region and further 6 statistical regions,
- altogether the 20 NUTS are 2 regional units (19 counties and Budapest),
- Budapest and the 19 counties,
- 2 statistical regions forming the northeast Hungarian region and the further 5 statistical regions,
- The statistical regions of northeast of Hungary and the north of the Great Plains,
- 6 counties within the northeast of Hungary together.

The latter ones are clearly in attendance on the examination of heterogeneity in the given country region, just like the Robin Hood index applied in the micro-regions. However, when analyzing the regional disparities I was not interested only in the issue that how much percent of the indicators examined – GDP, investment, and income – should be rearranged among the regional units, but I also wanted to know from which region and where.

That is why I calculated allocation ratio – again with the help of regional population ratio – in each and every case where I also applied the Hoover index as well. To facilitate the regional comparison of the allocation ratio I also calculated temporal mean and deviation per regional unit and in case of enough regional units (county- and micro-regional level) trends (tendency, steepness) were also calculated. Furthermore, I displayed the categorization based on the calculated allocation mean related to micro regions in the form of cartograms.

Questionnaires in the northeast of Hungary

For the sake of a more complex examination of the economic, social and regional processes I carried out a standardized written questionnaire. The main objective of this survey was to get an average picture of the livability and living standards of the particular counties, regions and micro-regions, plus the opinion of these factors of the local inhabitants. Hereby, I presume that there is a possibility to compare the situation reports made by the local communities and to clarify the possibly contradictory points.

The above mentioned questionnaire according to the sense was carried out in the northeast of Hungary in April, June and July in 2008. It includes the two statistical regions (northeast of Hungary and north of the Great Plains), the 6 counties that form these regions (Heves, Borsod-Abaúj-Zemplén, Nógrád, Jász-Nagykun-Szolnok, Hajdú-Bihar and Szabolcs-Szatmár-Bereg) and the 55 statistical micro-regions within the regions. According to this the basic multitude was the population of this region in Hungary; the randomly chosen *sample size* (N) was 989.

Neither in the case of northeast Hungary nor its component regional units can the survey be considered representative. However, the 989-member sample size of the randomly chosen sample is close to the 1000-member sample size that – as far as social sciences are concerned – is called national and representative due to its 95.5 % reliability level (Lehota, 2001), due to the features of the questions and the regional divisions the stratification is very significant, therefore it cannot be considered representative.

It is true in spite of the fact that in the course of carrying out the questionnaire I could reach 210 settlements from the 999 ones found in the above mentioned region, and it means 21.02% reaching ratio. If we reduce this to its components according to settlement ranking, we can see that the sample contains all the six county towns, every second town and every sixth large village and village. The settlements included in the questionnaire have been examined according to settlement categories. It is important to add that in this case the categories are based only on the number of inhabitants and not in such a complex way that Pál Beluszky (2003) groups them in his analyses where the particular groups are determined according to the number of inhabitants, function and settlement hierarchy. I disregarded the latter two as the examination of settlement hierarchy was not the aim of my thesis. I formed eight settlement size categories based on several works and groupings including the population size grouping of the CSO, the settlement sizes that characterize the national settlement structure, the characteristics of the settlement network (Süli-Zakar, 2003) and the different town categorization trends (Pál, 2001); and eventually I took Zoltán Kovács's grouping (2002) as my starting point. All the settlement categories created this way can be seen in Table 1.

Table 1. Settlement categories used in the survey (based on Kovács)

Settlement categories	Number of inhabitants
Dwarf village	0 - 199
Tiny village	200 - 499
Small village	500 - 1 999
Large village	2 000 - 4 999
Giant village	5 000 - 9 999
Small town*	10 000 - 19 999
Medium town	20 000 - 99 999
Large town	100 000 - 999 999

Source: Kovács, 2002

*Those settlements that have fewer inhabitants than 10.000 but have town rank also belong to small towns

If we disregard the above mentioned stratification and the examination factors resulted in it and if we examine the ‘representativity’ of the particular counties and micro-regions only from the point of view of population ratio we will see in Table 2. that Heves, Nógrád and Jász-Nagykun-Szolnok counties are above ‘represented’, while in the case of the other three counties the number of questionnaires does not reach the sufficient ratio level. In the following parts of the thesis ‘representativity’ is to be interpreted according to this simple assumption. The aim of this simplification is that the obtained results in connection with the particular regions and the conclusions drawn from them should take into consideration properly. Hence it is not a surprise that the sufficient 45,1%-54,9% ratio that should provide the representativity of the population ratio in the northeast of Hungary and the north of the Great Plains (within the north of Hungary) cannot be realized. In the present case it shows a 71,4%-28,6% distribution. In spite of this, I presume that the obtained results related to the northeast of Hungary, the north of Hungary and the north of the Great Plains regions and the results related to the component counties and the statements based on them are authoritative in each and every case due to the size of the sample and its random choice.

Table 2. **‘Representativity’ of sample at county level according to regional distribution of population**

Regional unit	population		questionnaire		Representativity
	persons	%	pieces	%	
Heves county	319 460	11,5%	397	40,1%	Significantly above
Borsod-Abaúj-Zemplén county	719 001	25,9%	214	21,6%	Slightly below
Nógrád county	213 030	7,7%	95	9,6%	Slightly above
Hajdú-Bihar county	545 641	19,6%	61	6,2%	Significantly below
Jász-Nagykun-Szolnok county	404 072	14,5%	159	16,1%	Slightly above
Szabolcs-Szatmár-Bereg county	576 054	20,7%	63	6,4%	Significantly below
The northeast of Hungary	2 777 258	100,0%	989	100,0%	-

Source: CSO, 2008; own research, 2008

Going on with the analysis of representativity at micro-region level it can be laid down that from the 55 micro-regions of the examined geographical territory 4 are not represented at all, 30 are below represented and 21 are above represented or represented nearly to the same extent (with 1-2 % difference) considering the population distribution ratio.

In the very moment, beyond the statistical representation, I also felt it important to shade the grouping of micro-regions further according to certain professional point of views and the weight of certain ratios within the sample. On the basis of all this, from 65,5% of the 55 smaller regional units found in the northeast of Hungary can be drawn conclusions that are at least authoritative or in the best possible case can be considered general.

As far as my self-compiled questionnaire is concerned (appendix M4) it consists of 26 questions of which 18 are professional and 8 are personal; and according to the manner in which the questions are put they are all direct. I applied open format, closed format and rating scale questions (Lehota, 2001) as well. There was only one clearly open format question and it related to the place of residence, therefore the analysis of that question did not mean any problem as its primary role was to find out the settlement category and to range it to a certain micro-region. I could find the relevant information in the book of place names of the Hungarian Republic.

The topic questions were basically divided into two groups: 1) assessment of the residence and its area and 2) possibility of employment and income level.

All the first three questions belong to *semantic differential scale* (within interval scale) where according to given aspects, such as accessibility, capability of development, state of environment, income level, services, infrastructure, unemployment etc., the particular regional unit – county, micro-region, and settlement – was to rank with the help of a 1-5 scale. In this case I used this psychological type of question because it is excellently suitable to measure *consumers' opinions, attitudes and behavior*. (Lehota, 2001). Furthermore, the opposites at the end of the scale have the characteristic of 'general understandability', therefore the way and intensity of attitudes can be measured. (Molnár, 1995). I consciously laid emphasis on this since the Dunning-Normann research – mentioned in the scientific literature – and other works as well revealed that regional identity, regional image and the attitude of the inhabitants have a region shaping role both in economically and socially speaking as well.

The scientific literature that deals with subjective quality of life and its measuring (e.g. Márfai) was also favorable to the application of rating scale questions. For that matter, the effects of the latter appear in the following questions of the questionnaire.

The fourth question was focused on the assessment of the *phase of development of the (micro)-region* ranked with the help of a 1-5 scale. The names of the above mentioned five groups were in accordance with the names created by Albert Faluvégi (2000) that were formerly applied by the CSO as micro-regional development categories – falling behind, stagnant, closing up, developing and dynamically developing. The aim of this coincidence was to compare my own results with the former ones connected to the northeast of Hungary.

The following two questions refer to the livability of the settlements examining the availability of public-utility services and the accessibility of the settlements – time of accessibility on clearways and motorways. The presence or lack of settlement services also belongs to the circumstances that influence quality of life just like the question how a village or town is accessible (public roads). Additional to this, the latter significantly influences the retention capacity by means of mobility willingness – for example commuting – and also affects economic investment mood as well.

The presumed economic activity typical in the region – question 7 – might influence the personal requirements towards the regional unit significantly; just think of the income situations of a particular sector of the economy, the working conditions, on the other hand it might be resulted in peculiar attitudes by means of the different milieu or everyday experience. And last but not least, to a certain extent it might refer to the educational level of the inhabitants as well, since the educational requirements may vary in the field of agriculture, information technology or business facilities.

I also found it important to touch the question of migration in the course of the survey; see questions 8-10. Beyond the fact that I obtained information on the ratio of those who had changed or were about to change their places of residence I also found it important that with the help of the answers on the further – personal – questions I could get a picture of the reasons and dimension of changing residence along with the information on age and qualification of the inhabitants. In this particular case and in accordance with the question dimension means the following possibilities of changing residence: local (within settlement area or micro-region), middle (within county or region), macro (outside region, to Budapest) and international (abroad). All the previously mentioned factors might influence the retention capacity of the micro-region or the particular settlement, and what is more important its future possibilities.

Question number 11 is somehow different from the others as regarding its content it does not deal either with the region or its income or employment situation, or with the personal income or qualification conditions.

I cannot state it either that I can measure how well-informed they are as financial regional development resources are concerned. On the other hand, the obtained answers reflect their associations of the inhabitants and this way we can find out how optimistic or pessimistic they are in a given regional unit.

The next questions (questions 12-18) create a separate block within the arch since it refers to job opportunities and income levels homogeneously. Its weight – more than one-fourth of the questions – might seem to be an exaggeration, however we must not forget that in an everyday sense job opportunities are equal to workplaces and all things considered to incomes. And this – regardless to the qualities of workplaces and the income levels – encourages the retention capacity of the settlement or micro-region both directly and indirectly as well. As far as the direct way is concerned further comment is needless as it is derived from the nature of the job opportunity. The indirect way means that the wage earners and their households mean effective demand on the local and regional markets of products and services as well. Therefore there is a chance to stabilize and develop the local service sector, that is, it generates further job opportunities. What is more through its effect on the budget of the local governments – taxes, social benefits etc. – it influences the livability of the settlement as the extra amounts can be spent on development and service quality improvement.

The next questions (19-26) refer to the sex, age, qualification and job of the respondents, the sector he/she works in, and also help to define the geographical localization.

Some of the results obtained from the answers are represented with the help of diagrams, while others are described in cartograms. Where it was possible and reasonable I calculated the mean and the deviation as well; and for the sake of the effectiveness of the hypothesis examinations I made correlations as well.

Principal component analysis

The principal component analysis applied in micro-regional level analysis is a multivariate analysis system, a type of factor analysis. With the help of it – beyond the fact that larger amount of data based on more variables can be analyzed easily- information can be compacted and the results can be represented visually in a proper way. (Székelyi – Barna, 2002).

The aim of multivariate examinations are generally to reveal the relationship between the variables, to reveal variable groups based on correlations, to determine the direction and extent of the correlation of the variables, the reasons behind the correlations of variables belong to the same group, to reduce the number of the basic coordinates, to represent, group and compare the observed units.

In the course of applying the method numerous requirements have to be met. There is a general requirement towards the database as well. Namely, that the number of the observed units must be higher or equal to the number of observed variables multiplied by three. The Bartlett's test and the Kaiser test also serve to determine applicability. Factor analysis – therefore principal component analysis too – is reasonable only in the case when based on the Bartlett's test the value of significance is below 0,05, that is, the variables correlate. The Kaiser- Meyer-Olkin (KMO) degree obtained in the course of the Kaiser test assigns a number between 0 and 1 to the matrix. If this value is below 0.5, that is, belongs to the unacceptable category there is no point in carrying out the principal component analysis. (Sajtos – Matev, 2007). There is one more important requirement to mention in connection with the choice of the principle components. Only those background variables (components) generated during the survey are considered principle components of which variability is above 1; and we can determine only as many principle components that can explain at least 80% of the total variability.

Being aware of all these information and the application areas of this method I considered the principle component analysis reasonable as I also aspired to reduce the number of the original regional characteristic features and to represent, group and compare them at micro-regional level.

The basis of the principle component analysis carried out by me was the basic data matrixes based on the micro-regional data of the Central Statistical Office. I use the expression in plural because the survey embraces a 10-year interval (1997-2006) therefore, according to the meaning we can count on a 10-year basic data matrix and analysis made.

Obviously, the observed units occurred in the basic data matrixes are the micro-regions of the northeast of Hungary, while the observed variables are the following indices:

1. Migration difference for 1000 inhabitants (person/1000 persons)
2. Number of enterprises for 1000 inhabitants (piece/1000 persons)*:
 - a. *Number of registered enterprises (1996-1998; 2004-2006)*
 - b. *Number of operating enterprises (1999-2003)*
3. Number of retail outlets for 1000 inhabitants (piece/1000 persons)
4. Ratio of the unemployed (1997-2005) and registered job seekers from the employment-aged population (2006**) (%)
5. Income forms PIT-basis for permanent resident (1997-2006) (HUF/person)
6. Number of automobiles for 1000 inhabitants (piece/1000 persons)
7. Number of finished classes

* The difference is derived from the applied indicators by the CSO.

**from 2006 the CSO applies data referring to registered job seekers.

I used these factors in my analysis because they are irrelevant to the economic activity of the region, the income conditions and the human factors related to them. However, while determining the indicators found in the above mentioned list – similar to the selection of positioning indicators – the basis was the indicators used in international surveys in connection with the measuring of the subjective and objective quality of life and living standard (chapter 1.4.)

The first indicator can be interpreted as the retention capacity indicator of the given region which by itself might refer to the assessment and general situation of the given regional unit. The 2-4 indicators might give some guidance in connection with the economic activity of the particular micro-regions, although it is true that the number of registered enterprises – due to the differences of headquarters, premises and places of taxation – and the ratio of the unemployed – due to regulations – might have a distorting effect. However this distortion exists regardless the regional units. The situation is similar in connection with the 5-6 indicators that refer to the income conditions as the regional comparison of the nominal values of income and the numbers of automobiles itself cannot mean a basis on formulating reasonable conclusions. Just think about the abnormally different cost of living levels and the price level differences between the local markets – mainly services – etc. that can be perceived in connection with particular country districts or even with towns.

As far as automobiles are concerned the average age and price category of the car-park are also determinant factors. Regarding the small and middle-category automobiles the credit financing practice that lasted until the fall of 2008 the car market was made more income insensible to a certain extent. Since I did not have the possibility to search data in connection with this topic, and I could not reach any other database, I neglected the above mentioned distorting effects basically in order to simplify the analyzing requirements.

The last but very important indicator gives a picture not only on education level but the economic potential of the region as well as the available knowledge is the key factor of technological adaptation. Moreover, it also determines the behavior towards economic risks and therefore influences the business mood too. And this – developing the train of thought – has an outstanding importance; it is enough if we think of its role in the employment of the SMEs.

There is another reason why I have chosen the above mentioned indicators, namely, that they were also applied in the micro-regional development classification by Faluvégi (2000) and in the calculation of the complex indicator that measured the socio-economic and infrastructural backwardness/development of micro-regions and settlements. (67/2007. Parliament decision)

In the case of the yearly analysis of the basic data matrix the fundamental applicability requirements were given as:

- numerous observations were realized as there were more than 300 basic data matrix items per year, moreover the 11-year interval increased the number of observations (total 4600),
- the $n \geq 3p$ relation existed between the observed units (n) and the observed variables, as the number of the 46 (1997-2002) and 55 (2002-2006) micro-regions as observed units exceeds the triplicate of the statistical indices (7).

Of course, before applying the above mentioned methods I carried out both the KMO and Bartlett's tests as well in connection with the basic data matrix. On the basis of the results it is clearly statable that the variables correlate (significance level is below 0,05) and based on the KMO value the applicability rate of the factor analysis that refers to the yearly data matrix is at least satisfactory, and in more than 50% of the cases is praiseworthy. Therefore the method is applicable, although it is true that the total explanation rate of the principle components between 1997 and 1998 is lower than the generally required level.

RESULTS

Complex livability index

While processing the answers of the questionnaire I applied three livability indices and other complex indices derived from the former ones. The three indices are the following: county livability index (CLI), settlement livability index (SLI) and relative micro-regional livability index (RMLI). The names of the indices refer to the regional units indicated in the questionnaire. The simple arithmetical mean of these three indices gave the complex livability index (CLI) which was modified by the development category value and this way I created a modified complex livability index (MCLI) as well. On the basis of all this the formulas of the created indices are the following.

County livability index (CLI)

$$M = \frac{\sum_{i=1}^n x_i}{n},$$

where

- x_i = score obtained by the i th character of the given regional unit
- n = regional sample number
- $1 \leq M \leq 5$.

Settlement livability index (SLI)

$$T = \frac{\sum_{i=1}^n y_i}{n},$$

Where

- y_i = score obtained by the i th character of the given regional unit
- n = regional sample number and
- $1 \leq T \leq 5$.

Relative micro-regional livability index (RMLI)

$$R = \frac{\sum_{i=1}^n z_i}{n},$$

where

- z_i = score obtained by the i th character of the given regional unit
- u = regional sample number and
- $1 \leq R \leq 5$.

Complex livability index (CLI)

$$K = \frac{M + T + R}{3},$$

where

- $1 \leq K \leq 5$.

Modified complex livability index (MCLI)

$$K_f = \frac{K + f}{2}$$

where

- f is the development score of the given regional unit, $1 \leq f \leq 5$ és $1 \leq K_f \leq 5$.

According to the complex livability index 6 of the micro-regions are outstanding: Debrecen, Eger, Gyöngyös, Hajdúszoboszló, Jászberény és a Nyíregyháza. (Figure 1).

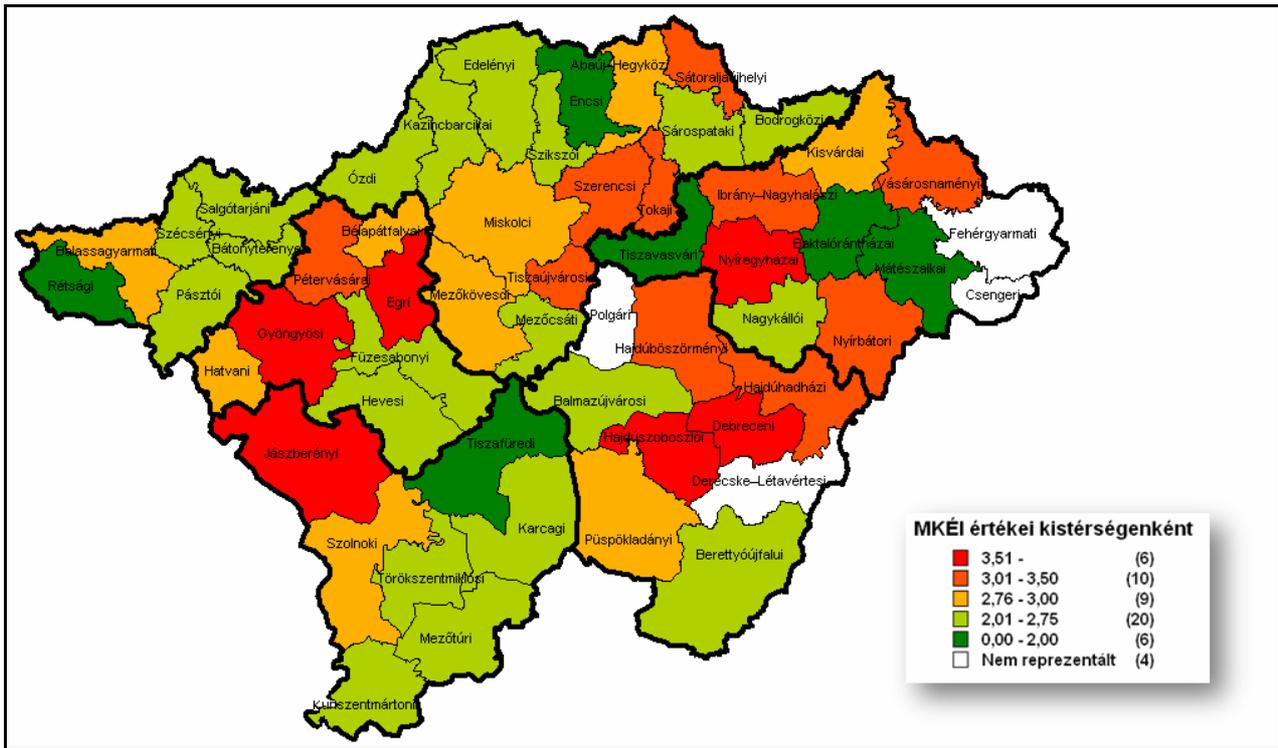


Figure 1 The modified complex livability index of micro-regions

Source: own construction, 2008

Retention capacity index

Attached to the notion of livability in a given region – also based on the obtained answers of the questionnaire – I examined the retention capacity of settlements and micro-regions. For this I used the service function points created in connection with the settlement functions and the motorway accessibilities as well. With the help of these and the values that refers to the settlement type, the settlement rank and the representativity level I created another index, the so called retention capacity index (RCI)

Based on the above mentioned the formula of the retention capacity index for micro-regions is:

$$I_{HK} = \frac{\sum_{j=1}^m \left(\alpha_j \times \beta_j \times \sum_{i=1}^n x_i \right)}{m} \times r_k,$$

where

x_i = score obtained by the i th character of the j th settlement

α_j = settlement rank weight of the j th settlement,

β_j = settlement type weight of the j th settlement,

m = sample number of the k th micro-region,

r_k = representativity focus of the k th micro-region and $1 \leq k \leq p$.

The results are summarized in the following cartogram (Figure 2).

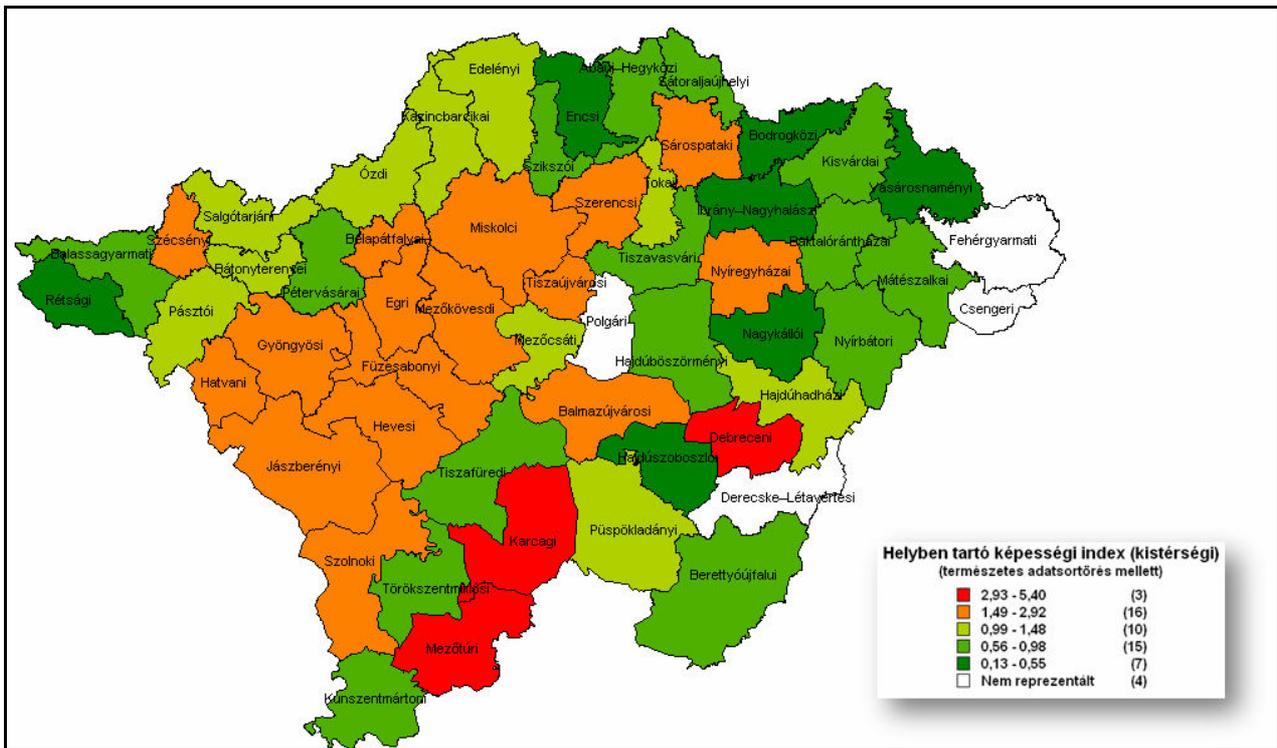


Figure 2 Retention capacity index per micro-regions

Source: own construction, 2008

Results of principal component analysis

While illustrating the micro-regions in the system of coordinates that is determined by the two principal components I discovered two larger and three smaller sample-size groups. In one of them there are 6 county-town micro-regions completed by the Gyöngyös micro-region. Due to the prominent situation, central function and the role in public administration of the county towns it is no small wonder that the county-town micro-regions are separated. It is because all these factors influenced their situation positively and thus had a positive impact on the economic processes in the region in an indirect way. Within the group the Eger micro-region is separated, which also indicates the stretching force of the county town in Heves County. The Gyöngyös micro-region was also in a rather good situation due to its previous food industry and viticulture traditions, its relatively high infrastructural network and the closeness to Budapest. The presence of higher education and the availability of high-level services also contributed to it.

To the next two groups that are relatively close to the county town group belong such micro-regions of settlements as Jászberény, Hajdúszoboszló, Hatvan, Tiszaújváros, Mezőkövesd (Figure 64). On the basis of their economic situation of that time this is no surprise as Jászberény has been growing dynamically for years and it has beneficial results in its direct environment as well; and we must not forget about the presence of higher education either. The relatively good situation of the Hajdúszoboszló region was due to its tourism potential, while that of the Tiszaújváros region was due to its chemical industry importance. The Hatvan micro-region similar to Gyöngyös could take the advantage of the closeness of Budapest, its central railway position and the significant role of food industry in the 1990s.

Going on in time and reaching the end of the first period there is no significant difference in the rearrangement of the represented points concerning the above mentioned micro-regions. The micro-regions are still divided into four groups (Figure 65). In relation to the county town group the change is that not only Gyöngyös but Hajdúszoboszló also joined the 6 county town regions; and that the 6 central regional units departed from each other.

The former change was probably due to the obtained tourism results of Hajdúszoboszló and its district; while the latter was due to the effects of the economic structural changes and the changes in sectorial hubs. Just think about the increasing interest in tourism in Eger and its district and about the sectorial problems in the Salgótarján and Miskolc micro-regions (glass-making, metallurgy). From the two smaller groups the micro-regions of the above mentioned two towns remained in coherence; while within the other one the Edelény, Encs, Szikszó and Baktalórántháza micro-region remained in coherence.

The significant change in this is only the approach of the Baktalórántháza region as geographically speaking it formed one unit with the three neighboring settlements in the Borsod micro-region in the mentioned year. In the case of the latter three their rather disadvantageous situation is due to frontierness and the one-sided dependence upon the Diósgyőr metallurgy.

By 2006 the general spatial concentration intensified and the central regions of the counties also came closer to each other. However there is a slight separation in the case of the Eger, Debrecen, Nyíregyháza-centered regional units (Figure 67). As far as the period between 2002 and 2006 is concerned there is no sharp difference; the localizations of the regions in the northeast of Hungary seemed to be conserved. (Figure 3).

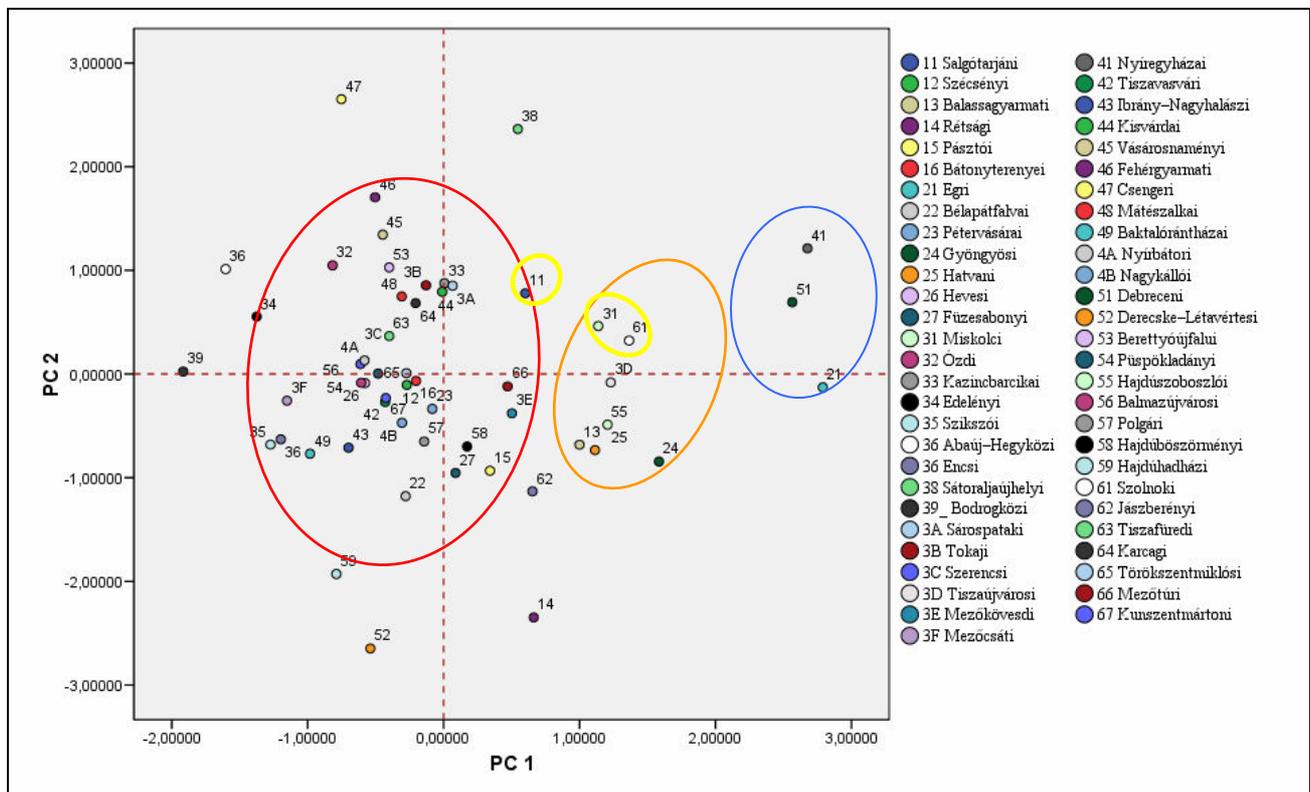


Figure 3 Relative localization of micro-regions (2002-2006)

Source: own construction, 2008

Results of hypothesis examinations

And last but not least, I also presumed that the development categories made by the CSO and the local inhabitants would show differences in several cases. The former one is a complex development index based on statistical data while the latter is based on own experiences, requirements and attitudes (H4).

Hypothesis (H1): My first hypothesis was that the income differences between the county town and other micro-regions in the northeast of Hungary are significant and are increasing. The hypothesis has been partly proved, as the correctness of the assumption that refers to significant income differences was proved by the results obtained by the Robin Hood index and the use of income allocation ratio; on the other hand the income differences in the above mentioned relation are not increasing, however they are not decreasing undoubtedly either. Those seem to be conserved; therefore the second half of the hypothesis is wrong.

Hypothesis (H2): There is close connection between the judgment of livability in particular micro regions and the settlement type and rank and the age of the answering groups. There was a close relationship between the judgment of livability and the settlement rank, that is, the assumption seemed to be right; however the close relationship between the age groups and the answers has not been proved, the values of the indices related to each other within one question circle change rather hectically.

Hypothesis (H3): In the course of the comparison of regional units the complex livability index shows similar relative values with the retention capacity index per regional units. The correlation value calculated on the two indices and the representations in the cartogram have also disproved the assumption.

Hypothesis (H4): The development categories made by the CSO and the local inhabitants would show differences in several cases. The former one is a complex development index based on statistical data while the latter is based on own experiences, requirements and attitudes. The hypothesis has been confirmed as the cartogram represented the results of the arrangement and the thematic map created by the CSO (67/2007. Parliament decision) were compared and there were significant differences.

New scientific results

Result (R1): With scientific method I proved that in the northeast of Hungary due to regional differentiation the county towns and the county-town micro-regions have an exhausting effect on their environment due to their strong roles in the last few years; besides the income differences between the regional units are powerfully sensible and they are stagnating.

Result (R2): I created an index suitable to measure the livability of the regional units, and another one that measures the retention capacity, which were applied to process the answers of a nearly 1000-respondent questionnaire.

Result (R3): With the help of the indices I proved that as far as livability and retention capacity are concerned the count-town micro-regions stand pre-eminent among the other regional units; and the retention capacity of the inner territories of the northeast of Hungary are better compared to the border territories.

CONCLUSIONS AND PROPOSALS

Based on the obtained results of my examinations I have come to the conclusion that the northeast of Hungary, which stands in the focus of my thesis, has significant backwards comparing to other regions. This is true for numerous indices in the regions and counties of the area.

These indicators can be for example the regional employment, incomes, GDP, investment etc. Examining almost any of these indicators the values of the northeast of Hungary are relatively low. This is not only valid for the Great Plains and the northern territories of the country as the values of the allocation ratio and the Hoover index calculated on GDP and investment proved that the central issue of regional heterogeneity on a national scale is connected to the excessive dominance of Budapest and the central region. The investment and GDP amount ratio to be rearranged is very high and as far as these two criteria are concerned the high-level regional concentration seems to be conserved or rather to increase in some respects.

However heterogeneity is not only a national problem since the northeast of Hungary itself is very unequal; the Robin Hood-index and the income allocation ratio calculated on micro-regions also seem to prove this. We can see from the values that in the case of the county town micro-regions – mainly due to the exhausting power of the county towns – the income concentration is high. However it is true that there are some micro-regions with middle town centers, for example Gyöngyös, where the ratio within regional incomes exceeds the ratio within population. We can also mention a counterexample since before 2002 the Miskolc micro-region had the highest allocation ratio but after that it belonged only to the second concentration category. I have been driven to the conclusion that the economic structural change in the 1990s had a disadvantageous effect on Miskolc and its district but was advantageous for Nyíregyháza and Debrecen.

The obtained answers given to the questionnaire and the results received during their processing also reinforced this. Furthermore, based on the information it is also sensible that the region is very heterogeneous; this statement is based not only on the socio-economic statistical indices and analyses but on the assumption of the inhabitants of the region as well. Mainly those inhabitants gave positive assessments who live either in a county-town micro-region – however, as we see not homogeneously either – or in a tourism region or relatively close to Budapest (Jászberény). These are understandable as the economic stretching force of the county towns and the services provided by them influence the livability and the inhabitants' quality of life of the given geographical region positively. Just think about the possibilities of work, wages, public transport, services, environment etc.

Going along this thought it is not that surprising that the Miskolc, Salgótarján and Szolnok micro-regions are judged in a different way compared to other county-town micro-regions, however there have been significant changes in these centers in the past few years as well.

The next conclusion could be that as it was observable from the cartograms and the values of the calculated indices the attitude towards quality of life and development are not necessarily equal to the facts proven by statistical indices or economic figures. Primarily not the world of figures influences the inhabitants of a particular region, but their personal experience. We have to account on personal value judgment that cannot be measured by economic and social statistics and preferences in connection with factors that influence the quality of life, which cannot be measured that properly and belong only to notional categories. We can only affect them if we are socially sensible and respect community norms. And to tell the truth, in the enchantment of economic profit and economic market this effectiveness is not a simple task but this region, among other things, is expecting this too.

The Welzel research could be the guiding point for us on where to find development facilities in our country with respect to both individual and collective cultural values since the evaluation an image of Hungary – therefore all of its parts, regions and settlements – is significantly dependant upon both he hard, traditional factors and the cultural and other soft factors as well. All of this generate and improve the investment and business mood, the productivity (income, capital etc.), the effectiveness, that is, the competitiveness factors. Therefore it reduces and terminates the cultural and institutional reasons of the backwards that are typical all over Europe in contradiction to the American economy as Phelps indicated it, too.

A lot of questions might arise in connection with the above mentioned things. One of them might be whether the cultural parameters of one nation or region can be changed consciously, ‘from above’ with the help of educational or economic political means. If we think about Japan that ceased with its feudal policy one and a half centuries ago it can anyway. However the economic political responsibility and the responsibility of the whole society is huge since the less-popular or less ‘comfortable’ steps also have to be taken in order to be successful in the long run, to be competitive and to create good will. Nevertheless it is questionable whether the necessary intellectual surplus is given in the present-day society of Hungary or the northeast of Hungary...

SUMMARY

We can witness the continuous upgrading of space and spatiality all over the world. In the name of globalization the connecting and separating role of space has become part of our everyday life, economy, society etc. as well. In connection with space the first thing that occurs to us between national frames is the regional differences of economy in Hungary.

The different regional disparity processes are realized in numerous dimensions; it is enough to think about the relation between Budapest-the country, further regions of middle region-country, west-east or in connection with smaller regional units think about development axes. In the case of the northeast of Hungary, for example, Hatvan – Gyöngyös – Eger - Miskolc development axis or Tiszaújváros – Miskolc – Kazincbarcika industrial axis etc.

The regional differences mainly refer to the economics – GDP, investment, unemployment, salary etc. – but also mean the social consequences as well that cause deep conflicts in the long run, that is why the interventions of central policy is needed by conscious and program-like rural development.

However for this adequate information is needed, that is, wider exploration of the regional problems for which the economic statistical indicators themselves are not enough since numerous indicators that cannot be measured statistically influence these processes invisibly. That is why those methods might be useful at different regional levels – for example, questionnaires – that can measure the attitudes, regional identities and loyalty towards the region of the local inhabitants. These techniques might give the decision makers such extra information that cannot be measured only by socio-statistical indicators.

I emphasize, I do not mean the inadequacy of the statistical and created indicator system but I mean its imperfectness. In the course of positioning the regions and analyzing the NUTS 2 and NUTS 3 regional levels of the northeast of Hungary I, myself, also applied indicators used by official statistical offices and those that are suitable for measuring regional heterogeneity.

By means of the examinations – dual-index, Hoover-index, allocation ration – I determined the degree of regional backward concerning GDP and national economic investment, its characteristic features in the near past and the expected tendencies. In the course of examining the regional distribution of income – Robin Hood-index, income allocation ratio – I indicated those regional units that are stretching regions and those that are obliged to face income deficits.

In reflection of the above mentioned thought I also completed all of this with two indices created by me that were applied to process the answers of a nearly 1000-respondent questionnaire. The first index is the *complex livability index* that refers to attitude, regional identity, image and individual preferences. The *retaining capacity index* includes the number of the settlements of a particular regional unit, the degree of their service function supply, motorway accessibility, settlement rank and type aiming at considering both the settlement structure and the hierarchy as well.

Considering our future the results obtained by this means make us think anyway since from the point of view of the country regions, the favored and the disadvantageous regions the population retaining capacity has become a key issue, mainly in the era of information societies where the regional knowledge base – including the knowledge of the skilled labor force as well – has an outstanding role.

THE LIST OF THE PUBLICATIONS BEING ATTACHED TO THE TOPIC

Zsolt Király

Book, passage in a book:

In English: -

In Hungarian:

1. Király Zsolt (2008): Falumegújítás és –fejlesztés. In: *Tudásalapú vidékfejlesztés (Új Magyarország Vidékfejlesztési Program III. tengely Kézikönyv)*. pp. 165-238. ISBN 978-963-06-6640-4
2. Király Zsolt - Takács István (2003): A SAPARD-pályázatok elkészítése. In: *Gazdálkodók kézikönyve - G 3.1. fejezet*. RAABE Kiadó, Budapest.

Publication in scientific review:

In English: -

3. Király, Zsolt – Takács, István (2008): Living standard, quality of life in North-East Hungary based on a survey. *Bulletin of Szent István University*. pp. 215-229.
4. Király, Zsolt – Takács, István (2008): Living standard, quality of life in North-East Hungary based on a survey. *Research in Agricultural & Applied Economics*.
Online: <http://ageconsearch.umn.edu/bitstream/47549/2/25kiraly-takacs.pdf>
5. Király, Zsolt – Szmolka, Alexa (2009): The Comparative Analysis of The Micro Regions in The Northern Great Plains Region. *Gazdálkodás LIII. évf. 23. különkiadás*. pp. 56-63.

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7. Király Zsolt (2003): A magyarországi régiók és megyék gazdasági fejlettségének összehasonlító elemzése, különös tekintettel az Észak-magyarországi régióra és Heves megyére. *Magyar Internetes Agrárinformatikai Újság - 57. szám*. 2003. május.

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8. Benet, Iván – Király, Zsolt (2009): Two Characteristics of Hungarian Development. Two Characteristics of Hungarian Development. „The Structural Changes in the Rural Areas and Agriculture in the Selected European Countries”. International Conference, Institute of Agricultural and Food Economics – National Research Institute. Sterdyn, Poland.
9. Király, Zsolt – Takácsné György, Katalin – Takács, István (2009): Livability, population retention capacity and income position of subregions in North-East Hungary. Regions – countryside – Environment 2009. International Scientific Conference. Slovak University of Agriculture in Nitra, Faculty of European Studies and Regional Development.

10. Király, Zsolt (2006): The Dimensions of Regional Central-Periphery Relations in Hungary. Agricultural Transition and Rural Development after 1989 (Experience of Different Countries). International Conference, Budapest, Institute of Economics of Hungarian Academy of Sciences, 27 May – 2 June 2006. ISBN-10: 963-87229-1-6
11. Király, Zsolt (2005): Development or Stagnation – Subregions of The North-Hungarian Region. Perspectives of Regional Development in The Europe of Regions. International Conference, Gödöllő. 18-20. March 2005 ISBN 963 9483 52 4

In Hungarian:

12. Király Zsolt (2008): Település- és régióimázs, mint a vállalkozások egyik versenyképességi tényezője. XI. Nemzetközi Tudományos Napok. Károly Róbert Főiskola, Gyöngyös 2008. március 27-28. ISBN 978-963-87831-2-7
13. Király Zsolt (2006): A magyar közigazgatás reformja, mint regionális politikai igény. XXI. Óvári Tudományos Nap. Nyugat-Magyarországi Egyetem, Mosonmagyaróvár. 2006. október 5. ISSN 0237-9902
14. Király Zsolt (2006): Magyarország kistérségi rendszere a '90-es évektől napjainkig. X. Nemzetközi Agrárökonómiai Tudományos Napok. Károly Róbert Főiskola, Gyöngyös 2006. március 30-31. ISBN 963 229 623 0
15. Király Zsolt (2004): A scoring és ökonometriai módszerek alkalmazása regionális gazdasági elemzésekre IX. Nemzetközi Agrárökonómiai Tudományos Napok. Károly Róbert Főiskola, Gyöngyös. 2004. március 25-26. ISBN 963 214 313 2

Other publication:

Professional study:

16. Király, Zsolt (2005): Összehangolt természetvédelmi ökológiai és ökoturisztikai fejlesztési koncepció, program és akcióterv kidolgozása az Észak-magyarországi Régió területén a magyar-szlovák határ mentén – I. fejezet. pp. 7-56.
 „Összehangolt természetvédelmi, ökológiai és ökoturisztikai fejlesztési koncepció, program és akcióterv kidolgozása az Észak-magyarországi régió területén a magyar-szlovák határ mentén” (PHARE CBC program - 2002/000-604-01: Határmenti együttműködés “Helyi kezdeményezéseken alapuló környezet- és természetvédelem a szlovák-magyar határ mentén” - HU2002/000-604-01-18(06A)projekt).