MEASURING REGIONAL COMPETITIVENESS
A REGIONÁLIS VERSENYKÉPESSÉG MÉRÉSE

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ABSTRACT

European Union measures competitiveness of regions on the basis of gross domestic product (GDP) per capita which means goods and services produced in a year by one inhabitant of a given spatial unit. As a sole index of regional competitiveness GDP cannot produce exact outcome since it includes incomes their possessors can drive away from the given region. In other aspects, however, GDP is based on real, objective data, so it is purely driven by economics, therefore it hardly can integrate other factors just as the ones being important in determining the life standards of the inhabitants in that region. As to our knowledge no model was introduced that can take both objective and subjective factors into consideration in being able to describe the changes in a complex way. Of course it is not the model maker to blame, but the question itself points out the basic problem that makes elaboration of a complex model or index rather difficult.

Keywords: factors of regional competitiveness, objective regional competitiveness, subjective regional competitiveness, regional classes

ÖSSZEFOGLALÁS

Az Európai Unió az egy lakosra jutó bruttó hazai termékkel (továbbiakban GDP) méri a régiók versenyképességét, a mutató az adott területi egységen, egy év alatt megtermelt és felhasználásra kerülő termékek, és szolgáltatások értékét jelenti. Mint a regionális versenyképességet mérő egyetlen mérőszám, a GDP nem adhat pontos eredményt, hiszen például a regionális GDP azokat a jövedelmeket is magában foglalja, amelyeket tulajdonosaik kivonhatnak az adott területről. Más szempontból vizsgálva a fenti mutató kizárólag objektív valós tényadatokra támaszkodik tehát tisztán ökonómiai szemléletű, így nem tudja figyelembe venni azokat a tényezőket, amelyek a régióban élő lakosság számára az életszínvonal szempontjából meghatározóak. Ennek ellenére – ismereteink szerint – még nem született olyan modell, amelyben mind az objektív, mind a szubjektív tényezők egyszerre, komplexen bevonhatóak lennének a vizsgált tényező mérése érdekében. Természetesen ez nem a modellalkotók hibája, a fentiekben kifejtettek alapján érzékelhető a probléma alapja, amely megnehezíti egy egységes, komplex mérésre alkalmas modell vagy akár mérőszám

Kulcsszavak: a regionális versenyképességet befolyásoló tényezők, objektív regionális versenyképesség, szubjektív regionális versenyképesség,

Introduction

Regional politics aiming the harmonic and balanced spatial development counts regional competitiveness as the most effective tool of improving cohesion. Cohesion reports and regional documents all highlight the importance of competitiveness. It is indicated by the fact that 2000-2006 issue on guidelines of Structural Funds definitely refers to development proposals on improving regional competitiveness and puts such tasks among the main priorities and objectives. The same tendency can be observed in a more emphasized way in the terms of 2007-2013 guidelines. Competitiveness is present in Hungarian development documents, too. National Spatial Development Concept (NSDC), National Development Policy Concept (NDPC) and New Hungary Development Program (NHDP) identify improving competitiveness as a main goal of spatial development.

Aim of the survey described in this report was to identify, analyze as well as to integrate the main factors influencing regional competitiveness into a unified model – on the basis of GDP per capita and subjective human values – by using mathematic-statistical methods.

In the scope of the derived results a model of regional competitiveness can be established that can be aggregated into one single index and that is suitable to measure the spatial competitiveness levels of Hungarian regions. Further aim was to introduce such an index that beside measuring development level of regions is also suitable for other spatial categories. As a result the model is appropriate to establish a competitiveness rank list of Hungarian regions and counties.

Materials and methods

Survey was based on primary and secondary databases. As for the secondary database it was taken into consideration that micro-regions entitled for subsidies are determined by the Hungarian Parliament within the frames of regional development policies. Actual enlistment is stated in 24/2001 parliament decision. Categorization was performed on the basis of economic, infrastructural, social and employment data.

Analysis was placed on the T-Star database, calculations integrated the period of 1999-2003. Primarily settlement level data were used to give a detailed picture on the status and competitiveness of regions – since a region itself can be quite heterogeneous in terms of development level – and to make it possible to use the model on other (i.e. non regional) spatial levels.

Intensity and tightness of relationship between GDP per capita and chosen variables was determined by correlation analysis [1].

Applicability of the model assumes that it should reflect the general opinion of the inhabitants as well. Therefore a primary database was set up, actually a questionnaire that included the variables of T-Star database along with the ones used in 24/2001 P.D. Task of the involved panel was to rank the variables on their own opinion. The panel was representative on national and regional levels and as much as 1051 have been filled out through personal interviews since 2004. Evaluating included rank analysis through a scoring system elaborated by the author [3].

Involved variables could be evaluated only after having turned them on an identical platform in order to eliminate the problem originating from incompatibility of different scales and dimensions. It could be performed through Scale Harmonizing Transformation [2].

Data cover the period of 1997-2003 because actual survey began in 2004 so the results have reference to 2003. Namely, the formation the enormous – primery and secundary – database, data management, induction and the working-out of new methods last for two years so the

Table 1. Variables involved

Population, end of year, head	Flat built, %
Population density, head/km^2	Flats on water pipeline, %
Ratio of 60+ yrs population, %	Length of sewage drain per 1 km water pipeline, %
Live birth per 1000 inhabitants, head/tsd head	Flats on gas pipe per total flats, %
Mort. per 1000 inhabitants, head/tsd head	Operating enterprises per 1000 inhab., pcs/tsd head
Immigration per inhabitant, head/head	Cars per 1000 inhab., pcs/tsd head
Emigration per inhabitant, head/head	Long term unemployed, %
Retail units per 1000 inhabitants, pcs/tsd head	Unemployed, %
Guestnights per 1000 inhabitants, pcs/tsd head	

Source: own collection on the base of T-STAR

Table 2: Intensity and direction of correlation coefficients of GDP per capita and influencing factors

Variable	1997		1999		2001		2003	
	Budapest incl.	Budapest excl.	Budapest incl.	Budapest excl.	Budapest incl.	Budapest excl.	Budapest incl.	Budapest excl.
Population, end of year, head	0,665	-	0,624	-	0,690	-	0,712	-
Population density, head/km^2	0,825	-	0,791	-	0,864	-	0,893	-
Length of sewage drain per 1 km water pipeline, %	0,881	0,550	0,844	0,605	0,733	0,548	0,803	0,563
Operating enterprises per 1000 inhab., pcs/tsd head	0,806	0,462	0,840	0,545	0,922	0,732	0,948	0,789
Cars per 1000 inhab., pcs/tsd head	0,734	0,460	0,771	0,606	0,922	0,733	0,780	0,685
Long term unemployed, %	-0,665	-0,690	-0,701	-0,730	-0,700	-0,834	-0,638	-0,800
Unemployed, %	-0,640	-0,622	-0,753	-0,760	-0,749	-0,841	-0,721	-0,850

Source: Own calculations

analysis must have been finished in 2003.

However, follow from the specialties of the method from 2003 to 2006 there wasn't sweeping changes int the regional order, as well as, there wasn't capital difference in the country order.

Because of the short distance of the research, analysis of time series cannot be used. Consequently, a reiterated correlation research can results, that factors can be taken in and out the regional competitiveness model. However, a new method useable if it simple and has spectacular results. The research has not finished, that is the model after a long distance can be made better and final.

Results

Identifying main subjective variables affecting regional competitiveness

Beside GDP per capita values other variables – representing the position of a region in spatial competition - were involved into the survey. Variables were chosen on the basis of 24/2001 P.D. (Table 1)

Importance of GDP – as a basic index of regional competitiveness – cannot be ignored, therefore intensity and direction of the relationship between GDP and the other 17 influencing factors were determined by multivariable correlation analysis[1]. Individual calculations were performed for the years 1997, 1999, 2001 and 2003 including and excluding Budapest in or from the pattern (Table 2.)

Correlation coefficients – in absolute terms – with higher than 0.7 value and with a persistency at least 2 years were counted as representatives of tight relationship and only categories with such tight relationship were chosen among the objectively heavy influencing factors. It means, these factors had the closest connections to GDP. In Table 2 main influencing factors along with their correlation coefficient – on 5% significance level – are shown for the case when Budapest was excluded from the calculations. Exclusion of the capitol points out the economic strength of the city, since if included correlations are weaker or even in some cases (just as end of year population, population density) no significant correlations could be observed. Exclusion highlights the economic status of Budapest because in this case GDP per capita and drainage gap (sewage pipe per 1 km water pipe) values are decreasing showing the infrastructural lacks of the country and the same pattern appears – as a direct result of the above - if ratio of operating enterprises is picked out. Cars per 1000

1Basic method for narrowing the circle of variables is factor analysis. In case of the survey it was not used because it results in hypothetic (fictive) factors and identifying or explaining such factors is ambivalent. Main influencing factors, however, were numerically taken into consideration.

inhabitants show again weaker correlation, while both variables of unemployment results higher relationship indicating that the country „around Budapest" has remarkably less enterprises, therefore employment is lower, income positions are weaker. Obviously, in case of unemployment values the relationship is controversial.

As it can be seen in Table 2 primary factors influencing development level on the basis the intensity of correlation coefficients are as follows:

– operating enterprises per 1000 inhabitants,
– population density,
– drainage gap,
– cars per 1000 inhabitants,
– unemployment rate and
– population at the end of year.

In being able to cumulate the variables of the objective segment of the model le harmonizing transformation is needed resulting in a unified platform for all the variables involved.

where

x_i: value of given variable in given settlement

$x_{\min}$: minimum value of the given variable among the settlements

R_x: range (min-max difference) of the variable

Resulting from the transformation the variables were turned to be aggregateable and the main influencing factors were weighted on the basis of correlation coefficients for the year 2003, so the objective regional competitiveness can be given through the following formula.

$$ORC = 0{,}948 \cdot E + 0{,}893 \cdot PD + 0{,}803 \cdot DG + 0{,}780 \cdot C - 0{,}721 \cdot U + 0{,}712 \cdot P$$

[2]

Substituting the actual values of the six influencing factors in the formula competitiveness can be given in one single measure for each individual counties and through a simple average the same of a given region. Tables 3 and 4 show a comparison between the two ways of measuring regional competitiveness, one list on the basis of GDP per capita and one for the objective regional competitiveness index described by the author.

Table 3 contains two list resulting from the two separate indices. ORC-based list remarkably differs from GDP-based one, apart from Budapest and Győr-Moson_Sopron county all counties changed its place. Most positive effect of ORC-based calculation had on counties Borsod-Abaúj-Zemplén and Szabolcs-Szatmár-Bereg. It comes from the fact that on the basis of population density and drainage gap both counties are in the mid section, so ORC calculation pulled them upwards. The absolute losers are Bács-Kiskun and Csongrád counties because in their case the drainage gap and the relatively small number of cars pushed them down on the complex list. If county ranks are changing so do the ranks of the regions (Table 4).

Identifying subjective variables influencing regional competitiveness

Evaluation of collected questionnaires was performed by MS Excel where positions of all 17 variables were recorded. Subjectivity cannot be fully met this way but in order to ensure comparability answering chances had to be directed according to a directed random pattern. Final sequence of the 17 variables depended, however, only on the answering persons. In being able to identify most important variables the values of them had to be weighted. Weights were determined by a scoring system. Final value of a variable was modified according to its positions in the 1051 questionnaires. Hence, a variable was put at first position in an individual list received a score of 17, if second then 16 etc. Dividing total scores of a variable by the range resulted in a dimensionless number between 0 and 1. Using this latter as weight was appropriate to represent the importance of the variable. As in the case of correlation coefficients a variable with above 0.7 value was taken as essential influencing factor of subjective competitiveness. (Table 5)

As in the case of the objective segment the variables turned to be aggregatable following a scale harmonizing transformation. For weighting the corrected scores were used and it resulted the below formula of subjective regional competitiveness (SRC).

$$SRC = 0{,}916 \cdot PD + 0{,}769 \cdot FB + 0{,}745 \cdot LB + 0{,}740 \cdot RU - 0{,}717 \cdot LU + 0{,}712 \cdot FW$$ [3]

2ORC: objective regional competitiveness, E: operating enterprises, PD: population density, DG: drainage gap, C: cars per tsd inhabitants, U: unemployment rate, P: population at the end of year

3SRC: subjective regional competitiveness, OE: operating enterprises, FB: flats built, LB: live birth, RU: retail units, LU: long term unemployment, FW: flats on waterpipeline

Table 3: Rank list of counties on the basis of GDP per capita and objective regional competitiveness (ORC) index in 2003

County	GDP, tsd HUF/head	County	ORC
Budapest	3598,82	Budapest	2,143
Győr-Moson-Sopron	1996,14	Győr-Moson-Sopron	0,895
Vas	1674,78	Komárom-Esztergom	0,879
Fejér	1597,53	Pest	0,810
Komárom-Esztergom	1570,75	Zala	0,689
Pest	1495,56	Fejér	0,662
Zala	1470,84	Heves	0,635
Veszprém	1346,21	Vas	0,588
Tolna	1329,73	Veszprém	0,584
Csongrád	1307,07	Borsod-Abaúj-Zemplén	0,582
Baranya	1261,75	Jász-Nagykun-Szolnok	0,577
Heves	1245,27	Szabolcs-Szatmár-Bereg	0,567
Hajdú-Bihar	1242,18	Tolna	0,562
Bács-Kiskun	1149,48	Baranya	0,523
Somogy	1148,45	Nógrád	0,516
Jász-Nagykun-Szolnok	1145,36	Csongrád	0,500
Borsod-Abaúj-Zemplén	1055,75	Hajdú-Bihar	0,486
Békés	1051,63	Somogy	0,458
Nógrád	923,91	Bács-Kiskun	0,450
Szabolcs-Szatmár-Bereg	917,73	Békés	0,440

Source: own calculation based on T-STAR, 2003

Table 4: Rank list of regions on the basis of GDP per capita and objective regional competitiveness (ORC) index in 2003

Region	GDP, tsdHUF/head	Region	ORC
Central Hungary	2763,081	Central Hungary	1,476
West Transdanubia	1755,456	West Transdanubia	0,723
Central Transdanubia	1506,715	Central Transdanubi	0,708
South Transdanubia	1240,361	North Hungary	0,578
South Great Plains	1170,550	North Great Plains	0,544
North Great Plains	1093,931	South Transdanubia	0,514
North Hungary	1081,490	South Geat Plains	0,463

Source: own calculations based on T-STAR, 2003

Table 5: Main influencing factors of subjective regional competitiveness

Variable	Corrected score (weight)
Operating enterprises per 1000 inhab.	0,916
Flats built	0,769
Live birth per 1000 inhab.	0,745
Retail units per 1000 inhab.	0,740
Long term unemployment rate	-0,717
Flats on water pipeline	0,712

Source: own calculations

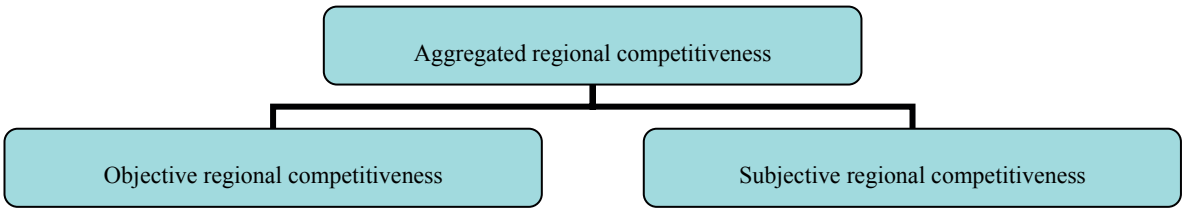


Fig. 1: Model of regional competitiveness
Sources: own design

Substituting the actual values of the six influencing factors in the formula competitiveness can be given in one single measure for each individual counties and through a simple average the same of a given region. Tables 6 and 7 show a comparison between the two ways of measuring regional competitiveness, one list on the basis of GDP per capita and one for the objective regional competitiveness index described by the author. On the basis of the subjective regional competitiveness index – similarly to the objective one – Budapest and Győr-Moson-Sopron county are at the top (Table 6)

Ranks upon both indices are the same for counties Békés and Nógrád. Most positive effect of using SRC can be observed in the case of Somogy county. It is because that on the basis of number of retail units, built flats, operating enterprises and flats on waterpipe the county is rather in the middle of the list, hence SRC pulls it upwards. Vas and Fejér counties are affected negatively by the SRC since in the case of Vas county the actual values of population, population density, live birth, operating enterprises and in the case of Fejér county the values retail units and flats built are lower than the average, so SRC pushed them lower on the list. Obviously, any changes in county ranks will affect the ranks of the regions, too (Table 7).

Conclusions

Using the above described two regional competitiveness indices assumes that the two segments can be aggregated (simply added together) resulting in aggregated regional competitiveness (ARC) index which again is suitable for positioning counties and regions. (Fig. 1)

Table 8 shows the lists based on GDP and aggregated regional competitiveness indices. ARC-based list differs in quite a few points from the GDP-based one. Status of Budapest and Győr-Moson-Sopron county seems to be stabile, Szabolcs-Szatmár Bereg county was pulled upwards because the values of built flats, live birth, operating enterprises and drainage gap tend toward the mid section of the county rank list so it was enough to migrate from the 20th place of the GDP-based list to the 14th of the ARC-based one. In case of Vas county was dropped back from the 3rd place to the 8th because the involved variables are around the 7-9th place in the county comparison list.

Changes in the rank list of counties have an effect on the rank list of the regions, North and South Great Plains changed positions (Table 9).

When comparing the two segments of the aggregated regional competitiveness index it can be clearly seen that county rank list was remarkably changed by the subjective opinion of the involved population. Except for Budapest and Győr-Moson-Sopron county the positions of all other counties were modified (Table 10).

The above rank changes caused alterations in the regional

Table 6: Rank list of counties on the basis of GDP per capita and subjective regional competitiveness (SRC) index in 2003

County	GDP, tsd HUF/head	County	SRC
Budapest	3598,82	Budapest	1,808
Győr-Moson-Sopron	1996,14	Győr-Moson-Sopron	1,535
Vas	1674,78	Zala	1,491
Fejér	1597,53	Veszprém	1,482
Komárom-Esztergom	1570,75	Pest	1,476
Pest	1495,56	Komárom-Esztergom	1,444
Zala	1470,84	Somogy	1,422
Veszprém	1346,21	Vas	1,413
Tolna	1329,73	Baranya	1,393
Csongrád	1307,07	Fejér	1,374
Baranya	1261,75	Csongrád	1,370
Heves	1245,27	Tolna	1,354
Hajdú-Bihar	1242,18	Hajdú-Bihar	1,346
Bács-Kiskun	1149,48	Heves	1,319
Somogy	1148,45	Bács-Kiskun	1,298
Jász-Nagykun-Szolnok	1145,36	Szabolcs-Szatmár-Bereg	1,292
Borsod-Abaúj-Zemplén	1055,75	Jász-Nagykun-Szolnok	1,278
Békés	1051,63	Békés	1,238
Nógrád	923,91	Nógrád	1,155
Szabolcs-Szatmár-Bereg	917,73	Borsod-Abaúj-Zemplén	1,110

Source: own calculations based on T-STAR, 2003

Table 7: Rank list of regions on the basis of GDP per capita and subjective regional competitiveness (SRC) index in 2003

Region	GDP, tsd HUF/head	Region	SRC
Central Hungary	2763,081	Central Hungary	1,676
West Transdanubia	1755,456	West Transdanubia	1,490
Central Transdanubia	1506,715	Central Transdanubia	1,423
South Transdanubia	1240,361	South Transdanubia	1,401
South Great Plains	1170,550	North Great Plains	1,307
North Great Plains	1093,931	South Great Plains	1,303
North Hungary	1081,490	North Hungary	1,171

Source: own calculations based on T-STAR 2003

Table 8: Rank list of counties on the basis of GDP per capita and aggregated regional competitiveness (ARC) index in 2003

County	GDP, tsd HUF/head	County	ARC
Budapest	3598,82	Budapest	3,951
Győr-Moson-Sopron	1996,14	Győr-Moson-Sopron	2,430
Vas	1674,78	Komárom-Esztergom	2,301
Fejér	1597,53	Pest	2,285
Komárom-Esztergom	1570,75	Zala	2,178
Pest	1495,56	Veszprém	2,065
Zala	1470,84	Fejér	2,036
Veszprém	1346,21	Vas	2,001
Tolna	1329,73	Heves	1,953
Csongrád	1307,07	Tolna	1,916
Baranya	1261,75	Baranya	1,916
Heves	1245,27	Somogy	1,901
Hajdú-Bihar	1242,18	Csongrád	1,870
Bács-Kiskun	1149,48	Szabolcs-Szatmár-Bereg	1,862
Somogy	1148,45	Jász-Nagykun-Szolnok	1,855
Jász-Nagykun-Szolnok	1145,36	Hajdú-Bihar	1,832
Borsod-Abaúj-Zemplén	1055,75	Bács-Kiskun	1,748
Békés	1051,63	Borsod-Abaúj-Zemplén	1,692
Nógrád	923,91	Békés	1,677
Szabolcs-Szatmár-Bereg	917,73	Nógrád	1,670

Sources:own calculations based on T-STAR, 2003

Table 9: Rank list of regions on the basis of GDP per capita and aggregated regional competitiveness (ARC) index in 2003

Region	GDP, tsd HUF/head	Region	ARC
Central Hungary	2763,081	Central Hungary	3,152
West Transdanubia	1755,456	West Transdanubia	2,213
Central Transdanubia	1506,715	Central Transdanubia	2,131
South Transdanubia	1240,361	South Transdanubia	1,915
South Great Plains	1170,550	North Great Plains	1,851
North Great Plains	1093,931	South Great Plains	1,766
North Hungary	1081,490	North Hungary	1,749

Sources:own calculations based on T-STAR, 2003

Table 10: Rank list of counties on the basis of objective (ORC) and subjective regional competitiveness (SRC) index in 2003

County	ORC	Megye	SRC
Budapest	2,143	Budapest	1,808
Győr-Moson-Sopron	0,895	Győr-Moson-Sopron	1,535
Komárom-Esztergom	0,879	Zala	1,491
Pest	0,810	Veszprém	1,482
Zala	0,689	Pest	1,476
Fejér	0,662	Komárom-Esztergom	1,444
Heves	0,635	Somogy	1,422
Vas	0,588	Vas	1,413
Veszprém	0,584	Baranya	1,393
Borsod-Abaúj-Zemplén	0,582	Fejér	1,374
Jász-Nagykun-Szolnok	0,577	Csongrád	1,370
Szabolcs-Szatmár-Bereg	0,567	Tolna	1,354
Tolna	0,562	Hajdú-Bihar	1,346
Baranya	0,523	Heves	1,319
Nógrád	0,516	Bács-Kiskun	1,298
Csongrád	0,500	Szabolcs-Szatmár-Bereg	1,292
Hajdú-Bihar	0,486	Jász-Nagykun-Szolnok	1,278
Somogy	0,458	Békés	1,238
Bács-Kiskun	0,450	Nógrád	1,155
Békés	0,440	Borsod-Abaúj-Zemplén	1,110

Source: own calculations based on T-STAR, 2003

Table 11: Rank list of regions on the basis of objective (ORC) and subjective regional competitiveness (SRC) index in 2003

Region	ORC	Region	SRC
Central Hungary	1,476	Central Hungary	1,676
West Transdanubia	0,723	West Transdanubia	1,490
Central Transdanubia	0,708	Central Transdanubia	1,423
North Hungary	0,578	South Transdanubia	1,401
North Great Plains	0,544	North Great Plains	1,307
South Transdanubia	0,514	South Great Plains	1,303
South Great Plains	0,463	North Hungary	1,171

Sources:own calculations based on T-STAR, 2003

ranks. Central Hungary, West and Central Transdanubia are the three booming regions while the other four are mainly 'followers'. (Table 11).

Categorization of regions based on the applied indices

Indices having been applied to measure competitiveness of the regions (GDP, ORC, SRC, ARC) indicate that that by setting appropriate numerical borders the regions themselves could be classified or categorized. For all indices three distinct competitiveness groups were determined just as low, middle and high groups. On the basis of GDP the pattern is as follows.(Map 1).

According to GDP-based categorization leading regions are Central Hungary and West Transdanubia, middle ones are Central and South Transdanubia as well as South Great Plains, while North Hungary and North Great Plains are at the tail-off. When the same is turned over to ORC-base as it is shown on Map 2, the difference can be clearly seen.

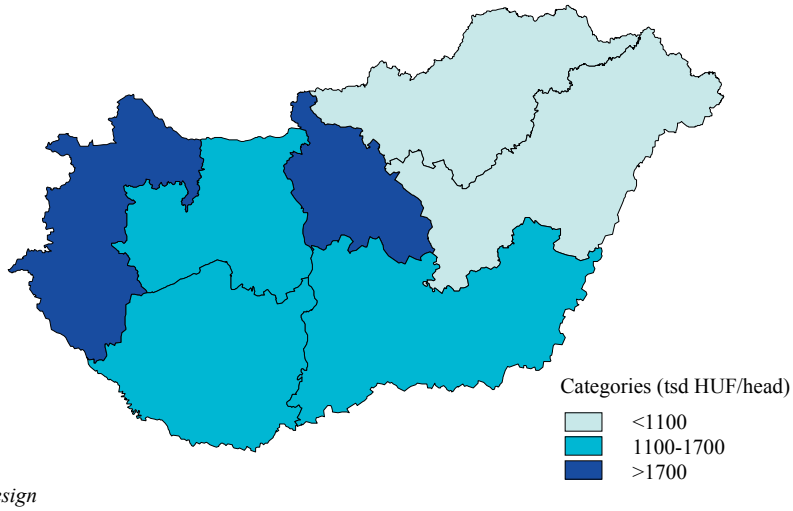
Central Transdanubian region came up to top-runners, North Hungary and North Great Plains took up to mid section, while South Great Plains dropped back to the joggers. Map 3 shows the rank list calculated on the subjective regional competitiveness index (SRC). Compared to the ORC-based map it points out a restructuring in the Eastern part of the country, North Hungary is slipping down, while South Great Plains is steaming up to the middle and if compared to GDP-based Map 1, North Great Plains is climbing up to the mid section

Map 4 represents the categorization based on the aggregated regional competitiveness index (ARC) and it remarkably differs from the patterns delivered by the previous (GDP, ORC. SRC) ones. In this case Central Hungary, Central and West Transdanubia are the leaders, South Transdanubia is the follower while the 3 Eastern regions are at the lower end.

On the basis of aggregated regional competitiveness index the following region classes can be determined:

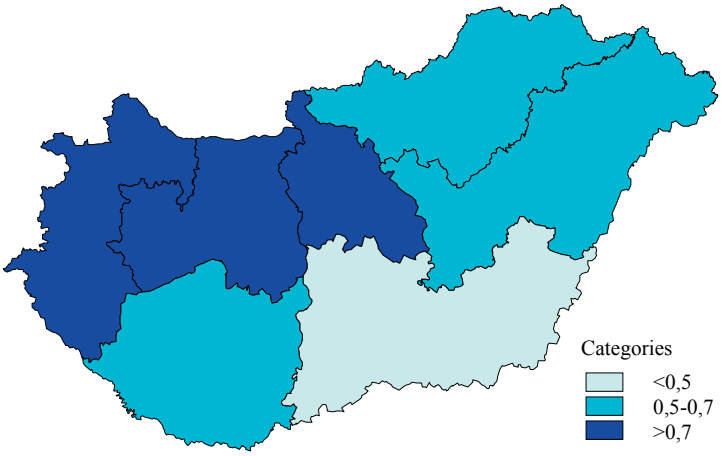
Roadrunner regions ($ARC > 2{,}1$): They have the highest income potential, they run the highest number of enterprises and they suffer the least of unemployment. These regions are the places where most flats are built, live birth rate is above while mortality is below the average. They have relatively developed infrastructure, transport network and human resources accessibility. Small- and medium sized enterprises are prepared to work integrated so they can become stronger and contribute more actively to employment. Main strategic goal of these regions is to strengthen the connections among operating enterprises and to involve NGOs and civil institutions into the existing connection network. Central Hungary, West and Central Transdanubia belong to this group.

Opportunity seeking regions ($1{,}9 < ARC \leq 2{,}1$) assume lower but still relatively high incomes, high number of operating enterprises and low unemployment. Rate of aged people is decreasing, mortality is getting lower. These – relatively developed – regions can be able to attract ventures and enterperises supplying and



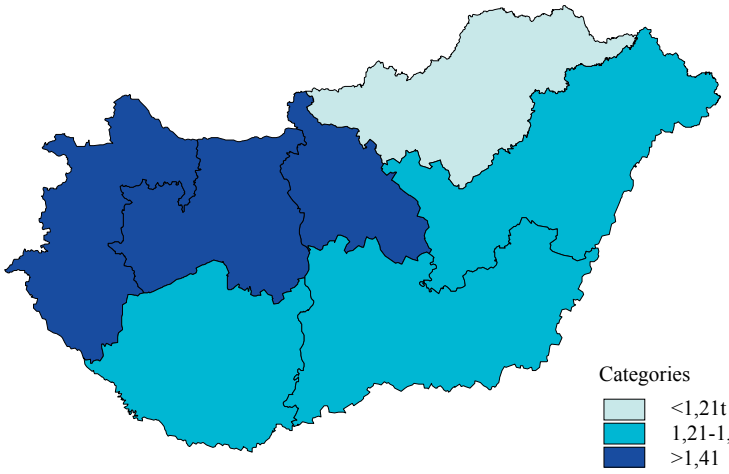
Source: own design

Map 1: Rank list of regions as per GDP (tsd HUF/head) in 2003



Source: own design

Map 2: Rank list of regions based on objective regional competitiveness index (ORC) in 2003

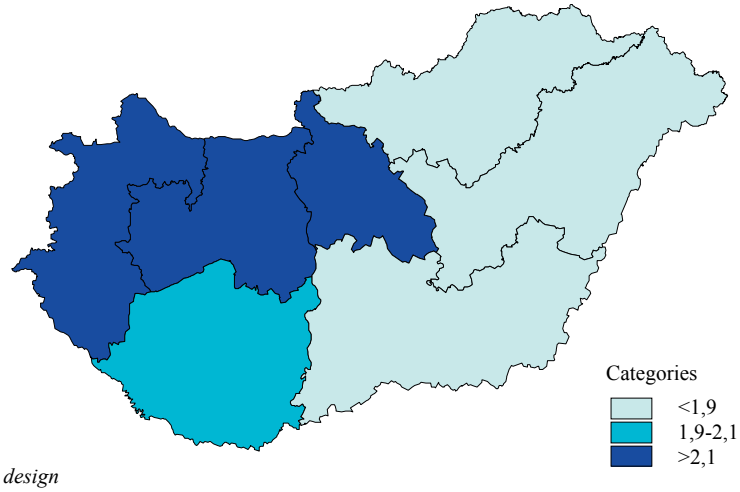


Source: own design

Map 3: Rank list of regions based on subjective regional competitiveness index (SRC) in 2003

serving the existing operations of the given area. Beside the attractive capacities of large enterprises, i.e. beside existing strategies, development of small and medium sized enterprises should be more emphasized. Therefore main goal of such a region is to improve and specialize the services for SMEs. These regions can provide higher quality vacancies, jobs, however permanent development of skills of existing human resources (along with technology and infrastructure development) cannot be ignored. On the basis of the reported analysis this group is represented by the South Transdanubian region.

Slowly emerging regions ($ARC \leq 1{,}9$) have the lowest income potential caused – among others – by high rate of aged people and the resulting high mortality level. Number of operating enterprises is low, number of flats built is below the average, unemployment rate is higher. Main task of such regions is to attract enterprises (large, medium and small), creating industrial parks with



Source: own design

Map 4: Rank list of regions based on aggregated regional competitiveness index (ARC) in 2003

high quality logistic (and other) services. Supporting the existing and newly opened enterprises by advisory and training should get special attention – eventually through knowledge transfer networks. It is important to develop and specialize existing incubation houses according to their service profiles. Performing the former tasks assumes infrastructural developments i.e. civil engineering, connections to highways etc. Beside attracting 'external' ventures it is essential to strengthen the 'local' ones through trainings in management, improving qualifications, developing capital supply, mapping market gaps in order to avoid high number of ventures for the same task. Improving the co-operation among enterprises is also an important issue. Such a process can result in generating new work places hence employment rate can be increased (following the necessary re-trainings, of course). Potential employees with appropriate qualifications are extremely important for enterprises with existing growth potential. When inviting ventures to the regions main decision factors are the followings: cost-advantages, cheap labor, indirect financial support (tax free or tax reduction offerings), infrastructural development. Shortly the main strategic aim is to offer specialized support for enterprises. Slowly emerging regions are North Hungary, North and South Great Plains.

Results show that rank lists of counties and regions based on GDP, objective, subjective and aggregated regional competitiveness indices can remarkably differ from each other. It indicates that analyzed spatial units (county, region) have different characteristics and these features influence their positions in the spatial competition. Position, however is influenced also by the variables involved and by the actual values of the involved variables. Measuring regional competitiveness is still far from consensus, definite and accepted set of parameters is missing. The survey reported here tried to highlight the fact that beside the different social and economic parameters of statistical databases the local specialties must also be taken into account. It means that measuring process should be sensitive for what people think of the factors influencing the competitiveness of their own region, what parameters they think to be improved in order to raise life standards and economic growth. When speaking about the development of a region the local level has an essential role because finding and maintaining persistent advantages can only be based on local cultural and industrial traditions. Development strategies of a region can be verbalized only on local level, so it assumes a kind of decentralization. Task of the regions in this process is to find those special fields of development which can lead them directly to improving their competitiveness (R&D, establishing innovation centers and other institutions, meeting the requirements for specially skilled labor through re-trainings etc.) Role of government in this aspect does not exceed the field of economy and business development through developing infrastructure and opening the ways to access central resources.

As a summary it can be concluded that indices described in the report are suitable for measuring the competitiveness of the spatial units involved and further they can be

projected to any other spatial levels (micro region and settlement levels). This transferability feature is a real advantage to conventional GDP-based measurment.

ACKNOWLEDGEMENT

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