Evaluation of the Competitiveness of the Hungarian Regions*

Ákos Dani
Assistant Research Fellow
ECOSTAT Institute for Economy and Society Research
E-mail: Akos.Dani@ecostat.hu

After the Hungarian regime change, in line with economic transformation, serious differences evolved among regions. Between 2000 and 2008 the economic growth of the NUTS 2 regions varied considerably despite the increase in the gross domestic product. Following a short literature review, the study evaluates the competitiveness of the seven Hungarian regions in two periods (2000/2001 and 2007/2008) based on the competitiveness pyramid model (*Lengyel* [2000]) serving as a methodological tool. This approach comprises five factors determining regional competitiveness. Setting up an order, the paper aims to highlight the differences in the competitiveness of the regions.

KEYWORDS:
Regional analysis.
Competitiveness.

* The author would like to express his thanks to *Csaba Tóth G., József Becsei, Dániel Báthori, András Balatoni*, *Mrs. György Csaba, Krisztián Széll* and *Zsófia Németh*. He is also grateful to the professional reader, *Ákos Kengyel* for his useful comments. All errors are the author's.

Although it is less researched than corporate and national competitiveness, regional competitiveness is also a relevant notion. The study addresses the latter subject. Using the pyramid model (*Lengyel* [2000]), it evaluates the competitiveness of the seven Hungarian NUTS 2 regions in two periods (2000/2001 and 2007/2008). Our aim is to observe the changes by exploring the strengths and weaknesses of the individual regions. Reviewing the available literature, we make a thorough examination of the various, micro and macro level definitions of competitiveness with particular emphasis on highlighting the special aspects of regional competitiveness. We concentrate on five areas (research and development, foreign direct investments (FDI), the development of human capital and the state of physical infrastructure) and analyse the competitiveness characteristics of the small and medium-sized enterprises (SMEs) sector with the help of several indicators. The data for the calculations were collected from the web-sites and publications of Eurostat and the Hungarian Central Statistical Office. For the assessment of the state of SMEs sector, business tax return data of the Hungarian Tax and Financial Control Administration were used.

1. Defining competitiveness

In the age of accelerated globalisation, the concept of competitiveness gains more and more ground both in scientific and everyday life, although it might be difficult to define it precisely. For instance, competitiveness in sports, culture or arts includes the suitability to take part in a competition, the realistic chance to win or gain a good position, but it does not necessarily mean overtaking all the other competitors, getting first position. A similar approach can be applied in the field of economy (*Blahó* [2008] p. 132.). As a collective term, competitiveness indicates the capability or tendency to compete under market conditions, the ability to gain and maintain economic positions in market competition, as shown by an increase in business success, market shares and profitability (*Lengyel* [2000] p. 962.). It is a comprehensive economic phenomenon with several definitions and calculation methods. We cannot talk about a unified approach in connection with it.

In economy, competition takes place simultaneously among a large number of participants at the level of commodities, services, production factors, industrial sectors, regions within a country, international regional integration and finally at that of

global economy. We start the discussion of the various definitions at the lowest level, and then proceed upwards. Accordingly, the notion of competitiveness is based on the product, the commodity. This implies merchantability, that is, the product is needed, it has a market, it is marketable. In parralel, it includes price-competitiveness where demand and supply meet, since exchange is only possible if the price is suitable. Cost competitiveness has to be also mentioned here. It is obvious that a company can permanently stay in the market only as long as it makes profit, which makes continuous innovation possible (*Botos* [2000]). Thus, the competitiveness of a commodity depends on its price and its physical quality (and the factors determining these); it can be realised both as an "exchange value" and a "use value" at the same time. The first means that the seller can make profit on top of the costs, while the second one indicates that the buyer uses the commodity, finds it useful, and thanks to it, expects improvement in welfare (*Szentes* [2005]). The successful marketing of any product or service includes the information of potential buyers, suitable market research and marketing activity, so the product level notion of "competitiveness" cannot be separated from modern marketing techniques.

According to one of the definitions, corporate competitiveness is the ability of a company to permanently offer the consumers products and services which they are more willing to buy than the products of the competitors under conditions profitable for the company, while keeping the norms of social responsibility (*Chikán* [2008]). Consequently, corporate competitiveness cannot be narrowed down to the processes of the real economy, it also includes the company's contribution to social welfare (which is undoubtedly difficult to measure). The company has to create value both for the consumers and the owners at the same time. The condition of the foregoing facts is that by accomplishing the market competition criteria permanently better than its competitors, the company shall be capable of perceiving and accommodating to the environmental and in-company changes (*Chikán–Czakó–Kazainé Ónodi* [2006] p. 9.). Based on a more detailed definition, approaching from profit rate and market share, competitiveness of a company means primarily its ability to continuously produce competitive products and services in the sense defined formerly, so that, on the one hand, the aggregate profit rate will not fall below the average profit rates of other companies competing in the same market (even after the deduction of contingent state support and benefits), and on the other hand, its market share (the turnover on the given market in percent) will not decrease, but grow or at least stagnate (*Szentes* [2005] p. 113.). Since SMEs play a crucial role in a country's employment conditions, it is reasonable to apply a special definition for their competitiveness. The SMEs sector of a region, country or macroregion can be regarded as competitive if it is capable of a considerable and growing contribution to the rise of economic output and employment rate of the given geographical region through its activity (*Némethné Gál* [2010] p. 190.).

The notion of competitiveness at the level of national economy is more difficult to define and it is a matter of debate in the literature on competitiveness. Starting from the micro-level definition, the competitiveness of a nation is marked by its ability to produce and sell products and services in a way that it improves the nationals' welfare and the companies' efficiency (*Chikán* [2008]). In this approach, the results of success are, among others, the improving balance of trade, improving export market shares[1] and ability to attract capital, and a better position in the international division of labour.

According to the European Commission, "competitiveness is understood to mean high and rising standard of living of a nation with the possible level of involuntary employment, on a sustainable basis" (*CEC* [2003] p. 6.). Based on the definition of OECD, national competitiveness means the ability of a given country to generate, while being exposed to international competition, relatively high income and employment levels (*Wysokinska* [2003]). Improving competitiveness results in higher productivity in the long run. According to the most comprehensive definition of national competitiveness, an economy is competitive if the population's standard of living is high and rising, and the employment rate is sustainably high. To be more precise, the level of economic activity does not lead to unsustainable balance of trade and does not endanger the welfare of future generations.

2. Special characteristics of regional competitiveness

The concept of a region is handled differently in various sciences; in economics we can refer to two things when we use the words, "region" or "regional". We can speak about regional integration (for example the European Union, MERCOSUR constituted by four South American states (Argentina, Brazil, Paraguay and Uruguay) or the Asian ASEAN (Association of Southeast Asian Nations)). These we call macroregions to differentiate them from the second type of regions, that is, the regions inside a given country, which constitute a level between the local and the national ones. In the course of Hungary's preparation for the EU-accession, seven NUTS 2 regions were created, while the county-system was kept. A region is a coherent area inside a country, containing more neighbouring settlements or parts of settlements. (*Lengyel* [2000] p. 966.). The regional, mesolevel competitiveness can be defined similarly to the definitions given in the previous chapter. Thus, it describes the ability of regions to sustainably generate relatively high income and em-

[1] About the unstable link between the rise in export and competitiveness in Hungary see *Botos* [2009].

ployment levels in the face of international (global) competition (*Deákné Gál* [2004] p. 5., *CEC* [1999]). In this description, high income is shown by the gross domestic product (GDP) per capita, while the level of employment is indicated by the employment rate. This approach is the closest to our conception of regional competitiveness.

In short, competitiveness both at micro and macro levels, that is, at the level of companies, industrial sectors, regions, supra-national regions (mesoregions) means that sustainable income and profit is realized by the marketing of commodities and services, which contributes to the growth of economic welfare and employment (*Botos* [2000]).

However, there is no agreement in the literature on the relevance of the concept of competitiveness. Both the national and regional concept of competitiveness were criticised by *Paul Krugman* in his classic work (*Krugman* [1994]). According to him, the term is too widely used; it is too general and "unscientific", which is acceptable in everyday use, but cannot be regarded as a well-founded notion in scientific life; it is not a macroeconomic category. The concepts linked to the improvement of competitiveness, like real income and rise in the standard of living, are connected to marketability, especially when we speak about a relatively closed economy. Nations do not behave and compete like corporations. Uncompetitive companies go bankrupt, get liquidated, which is unimaginable in the case of a nation. Krugman acknowledges the competition among states for status and power, but not the economic competition. For instance, the strengthening of Japan's status as a result of accelerated economic growth does not mean that the standard of living is decreasing in the United States, in other words, the welfare of a country does not depend on its competitiveness in the global market. Economic growth and international trade are not zero-sum games, but rather positive-sum games, that is, they bring profit to all participants. He regards the obsession with competitiveness as dangerous for several reasons: it leads to protectionism, trade wars, and the wastage of budget sources, similarly to the superfluous investments made in the cold war atmosphere of the 1950s. "So let's start telling the truth: competitiveness is a meaningless word when applied to national economies. And the obsession with competitiveness is both wrong and dangerous." (*Krugman* [1994] p. 44.) According to him, the expression of competitiveness can be used as a synonym for productivity, especially in large, less open economies, like the United States.

Similarly, *Porter* [1990] dismisses the concept of national competitiveness; it is marketability that he considers relevant and comparable at the level of national economy. But he still regards industrial competitiveness as applicable; his famous diamond model is the starting point for industrial analyses.

We believe Krugman's objections are relevant at national level, but considering regional competitiveness, protectionism does not exist. We share the view of *András*

Bakács, according to whom competitiveness can also be approached as an abstract, unobserved notion, which is determined by a group of measurable variables. Taking only one of them may give an incomplete, misleading picture (*Bakács* [2003] p. 5).

While interpreting the concept of regional competitiveness, we should not forget that the regional level is situated between micro and macro levels, so we can start from the micro level, that is, from the companies of a given region, or proceed by using the macro level concepts of competitiveness (*Lengyel* [2000] p. 970).

Here, ex post or "realised" and ex ante or "conditional" competitiveness shall be mentioned. The first one refers to the past performance of the economy using the well-known economic indicators (for example GDP per capita, relative labour costs, employment indicators). However, it should not be forgotten that certain indicators used to evaluate national competitiveness are irrelevant in the case of regional competitiveness. So, certain regions do not have their own exchange rate policy, or monetary and international trade policies. As opposed to "realised" competitiveness, the ex ante approach examines underlying conditions, factors necessary to hold on in our globalised world economy, and not certain indicators or indicator systems of economic performance. It concentrates primarily on business environment and inputs, and less on economic performance (*Lengyel* [2000] p. 972).

It must be emphasised that the conditions of an individual region are not independent of those of others, so each measurement requires comparison. (For example the compatitiveness of a region may improve due to not only its endeavours but also to the insufficient performance of the other regions of the country.)

This study aims to explore the competitiveness of the Hungarian NUTS 2 regions and the temporal changes thereof in the period between 2000 and 2007.

3. Competitiveness of the Hungarian regions

Based on the foregoing discussion, competitiveness is influenced by several determinants. Here, we focus on five underlying factors, using *Lengyel*'s pyramid model [2000].

Each of them has an effect on labour productivity and employment rate, and through them, on the income produced in a region, which determines the standard and conditions of living of the population in that area. The constantly rising level of subsistence is one of the indicators of competitiveness, as made clear in the previous chapters.

We analyse the *research and development activity of the regions*, that is, their ability to innovate through expenses on research and development measured in pro-

portion to the gross domestic product. New technology means competitive advantages for companies. Through the fast introduction of the latest technologies, they can improve their positions and thus enhance the productivity of the whole region. Of course, innovation may come from outside the area, but it is still the successful research and development activity of the given region that is decisive.

The second factor is the *regional distribution of foreign direct investments* (FDI), which indicates the ability of the individual areas to attract capital. Through the imports of foreign capital, the region usually gets access to new markets, and labour productivity improves too. The distribution of new technologies is added as a positive effect to the ones discussed in the previous paragraph. Foreign companies may favourably influence SMEs if they employ them as suppliers.

The *state of human capital*, as the element determining the quality of one of the production factors, is studied through the proportion of the population with higher education in the age group between 25 and 64. The last but one factor is the *physical infrastructure*, which is described by the data concerning the length of motorways.

Finally, the *state of the SMEs sector* determining the employment rate is examined. This sector, being capable of accommodating itself to the dynamic, rapidly changing economic conditions, is vital to the competitiveness of a region. Small and medium-sized enterprises generally join a global company as suppliers, and this way, they appear on the global market directly through that company. The regional SMEs are evaluated by means of their export performance, productivity and profitability.

3.1. Research and development

Research and development (R&D), that is, the introduction of innovations and new technologies faster than the competitors, mean competitive advantage; the quality of R&D can be of crucial importance for competitiveness, both at national and regional levels. Exploring this activity is not an easy task; it is usually approached through expenditure in proportion of GDP.

The predominance of the Central Hungarian region containing Budapest is not surprising, since the most important state and enterprise research centres are focused here. It has a clear first position throughout the period; in 2000 approximately one-and-a-half times more than the national value was spent on R&D in this region in the proportion of GDP. In 2007, this rate somewhat decreased due to an increase at national level. The rate of R&D expenditure fell below the national average in the rest of the regions in both of the years. Except for Southern Transdanubia, every single region managed to increase its R&D expenditure in proportion to GDP between 2000 and 2007, in accordance with the national tendency. It is fortunate that a kind of equalization took place; the dispersion of R&D expenditure of the regions' GDP de-

creased sharply. There have been only minor changes in the order of the regions. Western Transdanubia moved from the last to the fourth position, while Southern Transdanubia fell back to the last place.

Table 1

R&D expenditures given in the percentage of the region's gross domestic product

Region	R&D expenditure in the percentage of the region's GDP		Regional value (percent) (National average=100 percent)		Change in R&D expenditures (2007/2000)
	2000	2007	2000	2007	
Central Hungary	1.20	1.33	152	137	1.11
Central Transdanubia	0.36	0.50	46	52	1.39
Western Transdanubia	0.19	0.60	24	62	3.16
Southern Transdanubia	0.39	0.37	49	38	0.95
Northern Hungary	0.22	0.42	28	43	1.91
Northern Great Plain	0.60	0.85	76	88	1.42
Southern Great Plain	0.59	0.84	75	87	1.42
Hungary	0.79	0.97	100	100	1.23

Source: Eurostat.

Table 2

Composition of R&D expenditures
(percent)

Region	Business enterprise sector	Government sector	Higher education	Business enterprise sector	Government sector	Higher education
	2000			2007		
Central Hungary	52.46	29.51	18.03	53.03	29.55	17.42
Central Transdanubia	42.11	23.68	34.21	50.00	18.00	32.00
Western Transdanubia	42.11	15.79	42.11	62.50	14.06	23.44
Southern Transdanubia	7.50	17.50	75.00	21.62	16.22	62.16
Northern Hungary	45.45	9.09	45.45	47.73	11.36	40.91
Northern Great Plain	45.90	11.48	42.62	50.00	10.71	39.29
Southern Great Plain	23.33	45.00	31.67	39.29	27.38	33.33
Hungary	46.67	28.00	25.33	51.58	24.21	24.21

Source: Eurostat.

With regard to the compositon of R&D expenditures there is not a huge difference between 2000 and 2007 taking the whole country into account. The share of the business enterprise sector increased slightly, whilst that of the government sector decreased. The contribution of higher education virtually remained unchanged. Concerning the seven regions, the business enterprise sector played an important role especially in Central Hungary and Western Transdanubia in 2007. On the contrary, in Southern Transdanubia, despite the remarkable increase, it still plays a minor role.

In spite of the growth of the last few years, expenditure on R&D in proportion of GDP remained under 3 percent set as target in the Lisbon Strategy[2], in all regions, and at national level (in Hungary), economic policy has not paid appropriate attention to innovation.

3.2. Regional distribution of foreign direct investments

The lack of domestic R&D capacities can be partly compensated by foreign direct investments (FDI) if new technologies, leadership methods are introduced in the country. In addition, new workplaces can be created and the labour productivity can be improved. Of the complementary elements, the feedback effect is of crucial importance in investment and the establishment of the local supplier network. Nowadays, the primary condition of competitiveness is the improvement of the ability to attract foreign capital, especially in catching up, undercapitalized economies (*Szentes* [2005]). This is, of course, the same at regional level, but in the assessment of the results, it should be taken into consideration that the available data does not reflect reality.[3]

Partly due to the imperfection of data mentioned above, Central Hungary is far above the other regions both in terms of absolute and per capita values. Only this area and Western Transdanubia exceeded the national average in both years. In the period analysed, the foreign investment per capita at least doubled everywhere in nominal terms, except in Southern Transdanubia, while it almost tripled at national level. There was no change in the order of the regions, the differences, however, continued to grow. The smallest increase of foreign investment was measured in Southern Transdanubia, the region with the lowest numbers in 2000. Compared to the national average, Southern Great Plain, Northern Great Plain and Northern Hungary also became worse. The most conspicuous change happened in the Central Transdanubian region. Almost 80 percent of the rise in foreign investments of national level

[2] For more details on the Lisbon Strategy see *Gács* [2005].

[3] For instance, the headquarters of several business associations are located in Budapest, while their activity covers the whole country (about the problem see *Antalóczy–Sass* [2005]).

is due to Central Hungary and Central Transdanubia, the remaining 20 percent is divided among the other five regions. Foreign capital continues to flow mainly into the three most developed regions of the country; in 2007, the total foreign capital invested in the four least attractive regions was less than that of Western Transdanubia in the second place. Regarding per capita data, in 2007, foreign investment in the four worst-performing regions altogether hardly exceeded the third Central Transdanubia.

Table 3

Foreign-owned enterprises

Region	Amount of foreign investment (billion HUF)		Foreign investment per capita (thousand HUF)		Change in foreign investment per capita (2007/2000)	Foreign investment per capita compared to the national average (percent)	
	2000	2007	2000	2007		2000	2007
Central Hungary	3 758.5	10 384.0	1 327.6	3 584.0	2.70	242.83	237.41
Central Transdanubia	391.3	1 251.2	349.1	1 132.5	3.24	63.86	75.02
Western Transdanubia	600.2	1 640.0	597.9	1 643.4	2.75	109.36	108.86
Southern Transdanubia	108.9	160.7	109.2	167.4	1.53	19.97	11.09
Northern Hungary	254.4	472.3	195.3	381.9	1.96	35.72	25.30
Northern Great Plain	206.5	495.2	132.1	327.1	2.48	24.15	21.67
Southern Great Plain	181.8	429.6	131.7	321.9	2.44	24.09	21.32
Hungary	5 576.6*	15 164.3*	546.7	1451.9	2.66	100.00	100.00

* The amounts include various items (foreigners' real estate purchase, capital investments in nonprofit organizations, etc.) that can not be shared among the seven regions. Therefore they are higher than the sum of the regional data.

Source: *HCSO* [2003], [2009].

3.3. Development of human capital

In our approach, next to technological innovations and the presence of foreign capital, the third factor determining competitiveness is the human capital, the qualification of labour force. The sectors producing high value added require creative, qualified employees. As a result of the expansion of higher education after the regime change, the composition of the population became different.[4] The same could be observed in every region.

[4] We do not take into account the quality change in higher education.

Table 4

Population with higher education in proportion of the age group of 25–64
(percent)

Region	2001	2006	2011*
Central Hungary	21.33	24.32	27.34
Central Transdanubia	11.80	14.30	16.65
Western Transdanubia	12.70	15.47	18.08
Southern Transdanubia	11.49	14.02	16.39
Northern Hungary	10.84**	13.30	15.63
Northern Great Plain	10.84**	13.44	15.86
Southern Great Plain	11.51	14.35	17.07

* Prediction.
** Giving data to three decimal places, Northern Great Plain shows better result.
Note. There are no data available for 2007–2008, but the order is the same in 2006 and 2011.
Source: HCSO Demographic Research Institute.

The first place of the Central Hungary is not surprising in this respect either, since this area has the most renowned universities, moreover, Budapest is the intellectual and higher educational centre of the country. As regards the other regions, the proportion of the population with higher education in the age group between 25 and 64 exceeded 15 percent only in Western Transdanubia in 2006. The order between 2001 and 2006 changed only inasmuch as the previously fourth Southern Great Plain took the third position of Central Transdanubia. According to the predictions, no change is expected until 2011 in this respect. At the same time, the proportion of the population with higher education is continuously increasing since the rate of the youth that takes part in tertiary education is higher than that of the population aged between 25 and 64 having at least one degree.

3.4. The state of physical infrastructure

As mentioned, the state of the infrastructure is approached through the length of motorways, which starting from a low base, almost doubled in Hungary between 2000 and 2007. Although this growth happened considerably unevenly in the individual regions, a kind of equalization can be observed.

Considering the length, in 2000 more than half of the motorways concentrated in Central Hungary and Central Transdanubia; this fell back to little more than one third by 2007. The shift of proportions concentrated on Southern Transdanubia, Northern

Hungary and Northern Great Plain. In 2000, there were no motorways in the first two regions yet. In the period examined, Hungary's motorway network became more even, helping the less developed regions become part of the country's economic life. As a result, Northern Hungary overtook Western Transdanubia considering the length of motorways per one thousand square kilometres. There were no other changes in the order of the regions, except for Northern Great Plain overtaking Southern Transdanubia in the race of the regions with no motorways.

Table 5

The length of motorways in Hungary

Region	Length of motorways (km)		Motorway per one thousand square kilometres (km)		Change in the length of motorways (2007/2000)
	2000	2007	2000	2007	
Central Hungary	123	129	17.78	18.65	1.05
Central Transdanubia	135	188	12.14	16.91	1.39
Western Transdanubia	72	96	6.36	8.47	1.33
Southern Transdanubia	0	76	0.00	5.36	–
Northern Hungary	64	140	4.76	10.42	2.19
Northern Great Plain	0	108	0.00	6.09	–
Southern Great Plain	56	121	3.05	6.60	2.16
Hungary	*450*	*858*	4.84	9.22	191

Source: *HCSO* [2009], Eurostat and own calculations.

3.5. Competitiveness of the small and medium-sized enterprises sector

In the following we are going to evaluate the competitiveness of the micro[5], small and medium-sized enterprises sector based on the business tax returns of 2001 and 2008.[6] Our scope of research covers not only individual companies and company clusters, but the whole of the SMEs sector. It needs to be clarified at the beginning that the distortion mentioned in connection with foreign direct investments is present here as well; the central Hungarian region is far above the rest of the regions. The

[5] We are aware of the fact that the situation of the different size categories (micro, small and medium enterprises) may differ, but for a temporal comparison, aggregate data are suitable, too.

[6] Databases are available at ECOSTAT Government Institute for Strategic Research of Economy and Society. The financial changes causing considerable distortions in favour of Western Hungary were filtered out.

importance of the analysis of the company cluster lies in the fact that SMEs play a decisive role in the state of employment and thus, in social welfare both at regional and national level. The high rate of employment is one of the criteria of competitive regions, and it is not possible without successful SMEs.

Table 6

Regional distribution of the registered capital of SMEs

Region	2001 (percent)	2008 (percent)	Change (percentage point)
Central Hungary	65.86	66.06	0.20
Central Transdanubia	6.28	6.09	–0.19
Western Transdanubia	4.72	7.53	2.81
Southern Transdanubia	4.89	4.37	–0.52
Northern Hungary	6.28	4.74	–1.54
Northern Great Plain	5.99	5.83	–0.16
Southern Great Plain	5.98	5.38	–0.60
Total	*100.00*	*100.00*	

Source: Own calculations based on tax returns.

The dominance of the Central Hungarian region is similar in scale to its significance in connection with foreign investments: two thirds of the registered capital of SMEs concentrated in this area in 2001, and this figure rose somewhat by 2008. The position of Western Transdanubia improved considerably; in 2001, it had the last position, while it became second in the last year of the examined period. Accordingly, the percentage rates dropped in the other regions, the last place was taken by Southern Transdanubia, replacing Western Transdanubia. The Northern Hungarian region suffered the biggest position loss.

For the evaluation of international competitiveness, we turn to the export market performance; and we examine the rate of revenue from exports compared to aggregate net revenue of the sector. Regarding the whole country, the SMEs sector improved only a little.[7] Simultaneously, a remarkable realignment took place among the individual regions. Central Hungary fell below the national average, while Western Transdanubia gained first position and Northern Great Plain also showed consider-

[7] The dual structure of the Hungarian economy is justified by the fact that in the case of large industrial enterprises, this indicator was 40 percent in 2008; almost 80 percent of the income from exports, present in business tax returns, as well as 57 percent of the total net revenue can be connected to the enterprises with more than 250 employees.

able improvement. Southern Transdanubia, first in 2001, fell back to the last but one position by 2008, being only slightly better than the also worsening Southern Great Plain region.

Table 7

Export revenue of the SMEs sector as a proportion of aggregate net revenue

Region	Revenue from exports / aggregate net revenue (percent)	Regional value (National average=100)	Revenue from exports / aggregate net revenue (percent)	Regional value (National average=100)
	2001		2008	
Central Hungary	15.01	111	13.49	98
Central Transdanubia	13.43	99	14.71	107
Western Transdanubia	10.54	78	19.67	143
Southern Transdanubia	16.66	123	11.66	85
Northern Hungary	10.96	81	13.16	96
Northern Great Plain	9.33	69	13.66	99
Southern Great Plain	12.04	89	11.27	82
Total	13.53	100	13.77	100

Source: Own calculations based on tax returns.

Table 8

Revenue per employee in the SMEs sector

Region	Revenue per employee (HUF)		Revenue per employee (Hungary=100)	
	2001	2008	2001	2008
Central Hungary	15 654 046	24 172 934	119	120
Central Transdanubia	13 188 556	17 431 260	100	87
Western Transdanubia	10 078 082	17 692 476	77	88
Southern Transdanubia	10 924 725	15 500 622	83	77
Northern Hungary	10 150 389	14 848 377	77	74
Northern Great Plain	11 841 324	16 977 674	90	85
Southern Great Plain	11 738 044	17 719 461	89	88
Hungary	13 153 091	20 067 960	100	100

Source: Own calculations based on tax returns.

The operational performance, productivity, efficacy of the SMEs sector is approached through net revenue per employee. According to Table 8, the performance

of the SMEs sector was above average in Central Hungary throughout the period in contrast with the other NUTS 2 regions (only Central Transdanubia reached the national level in 2001). In the period examined, Central Transdanubia and Northern Great Plain experienced considerable loss in their positions, while the previously last Western Transdanubia became second, in a tie with Southern Great Plain.

Table 9

The aggregate profit before taxes of the SMEs sector

Region	Aggregate profit before taxes (thousand HUF)		Change* (2008/2001)	Aggregate profit of the region in relation to the national total (percent)	
	2001	2008		2001	2008
Central Hungary	523 817 823	553 682 258	106	56.32	57.18
Central Transdanubia	81 063 757	71 309 242	88	8.72	7.36
Western Transdanubia	44 380 631	69 300 966	156	4.77	7.16
Southern Transdanubia	70 383 808	57 553 661	82	7.57	5.94
Northern Hungary	83 537 819	47 471 968	57	8.98	4.90
Northern Great Plain	75 891 315	85 501 641	113	8.16	8.83
Southern Great Plain	51 065 024	83 429 038	163	5.49	8.62
Hungary	*930 140 177*	*968 248 774*	104	*100.00*	*100.00*

* Since the values are nominal, most of the increase is due to depreciation.
Source: Own calculations based on tax returns.

Between 2001 and 2008, Central Hungary is still dominant regarding the profit prior to taxes, although less than in the case of registered capital. Examining the other regions, we can observe a remarkable progress made by Western Transdanubia and Southern Great Plain. The former one had the last position in 2001, but it was already second in 2008. The situation of Southern Transdanubia and Northern Hungary obviously deteriorated, the latter one fell from the second to the last place.

4. Summarizing evaluation of the Hungarian regions

In accordance with the preliminary expectations, we can state that the most competitive region of Hungary is Central Hungary containing Budapest. It gives the best performance in both years we examined. It is only the export performance of its SMEs sector in 2008 that fell below the national average. The examination of the rest of the regions gives more interesting results.

In 2000/2001 Central Transdanubia is in second or third place in all categories except for research and development. However, its positions somewhat declined in the period examined since it was preceded by Western Transdanubia in several respects.

The most noteworthy progress took place in this latter region, its position changed for the better or stagnated in all aspects, except for the length of motorways. Especially its SMEs sector has developed remarkably. It became the second most competitive region after Central Hungary by the second half of the first decade of the 2000s.

While Western Transdanubia made the most spectacular advance, the situation of Southern Transdanubia became much worse. It declined or stagnated in every respect, compared to the other NUTS 2 regions. In 2007/2008, it was the last in the ranking of the regions on the basis of innovations, foreign-owned enterprises, and motorways. According to our categorization, it is clearly the least competitive region.

The status of Northern Hungary in the categories, taken into account in the final order, did not change, except for the progress made as regards motorways and for the deterioration experienced in the rating of profit before taxes of the SMEs sector. Its position improved in the final order, however, due to the setback that Southern Transdanubia suffered.

Northern Great Plain and Southern Great Plain are approximately at the same level of compatibility, the former one improved significantly in two SMEs sector categories (see Tables 7 and 9), the latter showed development in the level of its inhabitants' education and the aggregate profit before taxis of its SMEs sector. At the end of the period, they clearly overtook Northern Hungary in the aggregate order. (See Table 10.)

Table 10

The order of the regions by the aspects examined

Region	2000/2001	2007/2008
Central Hungary	1	1
Central Transdanubia	2	3
Western Transdanubia	5	2
Southern Transdanubia	4	6
Northern Hungary	5	5
Northern Great Plain	4	4
Southern Great Plain	3	4

Note. The table is based on a total of seven indicators (R&D expenditures, foreign direct investments, length of motorways, export performance, revenue per employee, profit before taxes, population with higher education). The order is set up according to the arithmetic averages of the positions in individual categories.

Source: Own calculations.

In the next step, we move one level up in the competitiveness pyramid and examine the regional income level, the gross domestic product that has the biggest influence on the standard of living. (See Table 11.)

Table 11

Gross domestic product per capita of the regions compared to that of Hungary and the corresponding order

Region	2000*	2007*	2000	2007
Central Hungary	154.32	164.35	1	1
Central Transdanubia	96.40	92.92	3	3
Western Transdanubia	113.31	98.14	2	2
Southern Transdanubia	75.36	68.22	4	4
Northern Hungary	64.27	64.07	7	6
Northern Great Plain	64.50	62.96	6	7
Southern Great Plain	73.30	66.80	5	5

* Hungary = 100.0.
Source: HCSO.

Table 12

Employment rate of the regions compared to that of Hungary and the corresponding order

Region	2000*	2007*	2000	2007
Central Hungary	107.66	110.41	2	1
Central Transdanubia	105.44	107.47	3	3
Western transdanubia	112.70	109.63	1	2
Southern Transdanubia	94.56	88.61	5	6
Northern Hungary	88.10	87.82	6	7
Northern Great Plain	87.90	89.00	7	5
Southern Great Plain	98.19	95.09	4	4

* Hungary = 100.0.
Source: HCSO.

The order of the regions is not the same (except that of the first three regions in the second period) as the sequence we made in Table 10 since GDP is determined by numerous factors. In spite of the considerable decline discussed earlier, Southern Transdanubia could preserve its relative position due to the significant advantage it pos-

sessed. Western Transdanubia is firmly holding the second place, though its value of GDP per capita has dropped compared to the national average. There is a great difference between competitiveness of this region measured by us and its positon regarding GDP in 2000. It seems that its strong foreign-owned enterprises were able to offset the weakness of its SME sector.

Competitiveness has better explanatory power at one level lower in the pyramid, in relation to employment. The regions in the first four positions are the same in 2007 as the first four regions in the competitiveness ranking set up by us. In the examined period Southern Transdanubia sustained the highest decrease in employment rate showing its weakening competitiveness. But owing to its initial advantage, this region still has a slightly better position regarding employment in 2007 than Northern Hungary.

5. Conclusion

The assessment of the performance of the NUTS 2 regions is of vital importance, not just for the EU-funds, but also for the fact that considerable regional differences can harm the economic and social development of the country as a whole. In the longer run, it would be unacceptable both economically and politically to have serious differences between regions regarding standard of living. In this study, we evaluated the competitiveness of the Hungarian regions based on the competitiveness pyramid model.

We can not expect dramatic changes during such a short time and our results confirm this assumption. There is a kind of inertia in regional competitiveness and it is very difficult to achieve a much better position. The factors determining competitiveness do not improve overnight. It does not mean, however, that remarkable changes are excluded. Of the changes experienced in the competitiveness of the Hungarian regions, besides the improvement of Western Transdanubia, the setback of Southern Transdanubia stands out. The latter can be traced back mainly to the worsening performance of research and development and to that of the SMEs sector. The decline in the competitiveness of this region is also reflected by employment data. Therefore the country's regional policy should focus on this area.

References

ANTALÓCZY, K. – SASS, M. [2005]: A külföldi működőtőke-befektetések regionális elhelyezkedése és gazdasági hatásai Magyarországon. *Közgazdasági Szemle*. Vol. LII. May. pp. 494–520.

BAKÁCS, A. [2003]: *Versenyképesség koncepciók*. MTA Világgazdasági Kutatóintézet. Budapest.

BLAHÓ, A. (ed.) [2008]: *Világgazdaságtan*. Akadémiai Kiadó. Budapest.

BOTOS, B. [2009]: Versenyképesség és külkereskedelem. *Európai Tükör*. Vol. XIV. No. 7–8. pp. 42–51.

BOTOS, J. [2000]: Versenyképesség elemzés: fogalmi körüljárás, hazai esélyek. In: *Farkas, B. – Lengyel, I.* (eds.): *Versenyképesség – regionális versenyképesség*. SZTE Gazdaságtudományi Kar közleményei. JATEPress. Szeged. pp. 218–234.

CEC (COMMISSION OF THE EUROPEAN COMMUNITIES) [1999]: *Sixth Periodic Report on the Social and Economic Situation and Development of Regions in the European Union*. Luxembourg.

CEC (COMMISSION OF THE EUROPEAN COMMUNITIES) [2000]: *European Competitiveness Report 2000*. Commission Staff Working Paper 2000/045/A1. Brussels.

CEC (COMMISSION OF THE EUROPEAN COMMUNITIES) [2003]: *European Competitiveness Report 2000*. Commission Staff Working Document SEC(2003)1299. Brussels.

CHIKÁN, A. – CZAKÓ, E. – KAZAINÉ ÓNODI, A. [2006]: *Gazdasági versenyképességünk vállalati nézőpontból – versenyben a világgal*. BCE Vállalatgazdaságtan Intézet, Versenyképesség Kutatóközpont. Budapest.

CHIKÁN, A. [2008]: Vállalati versenyképesség és társadalmi felelősség. *Harvard Business Review*. No. 11. pp. 6–13.

DEÁKNÉ GÁL, I. [2004]: A regionális versenyképesség tényezői, különös tekintettel a Nyugat-Dunántúlra. *Külkereskedelemi Főiskolai Füzetek*. No. 15. pp. 5–15.

GÁCS, J. [2005]: A lisszaboni folyamat – egy hosszú távú stratégia rejtélyei, elméleti problémái és gyakorlati nehézségei. *Közgazdasági Szemle*. Vol. LII. March pp. 205–230.

HCSO (HUNGARIAN CENTRAL STATISTICAL OFFICE) [2003]: *Regional Statistical Yearbook, 2002*. Hungarian Central Statistical Office. Budapest.

HCSO (HUNGARIAN CENTRAL STATISTICAL OFFICE) [2009]: *Regional Statistical Yearbook, 2008*. Hungarian Central Statistical Office. Budapest.

http://edok.lib.uni-corvinus.hu/199/

KRUGMAN, P. [1994]: Competitiveness: A Dangerous Obsession. *Foreign Affairs*. Vol. 73. No. 2. pp. 28–42.

LENGYEL, I. [2000]: A regionális versenyképességről. *Közgazdasági Szemle*. XLVII. évf. December. pp. 962–987.

NÉMETHNÉ GÁL, A. [2010]: A kis- és középvállalatok versenyképessége – egy lehetséges elemzési keret. *Közgazdasági Szemle*. Vol. LVII. February. pp. 181–193.

PORTER, M. [1990]: *The Competitive Advantage of Nations*. The Free Press. New York.

SZENTES, T. [2005]: *Fejlődés, versenyképesség, globalizáció*. Akadémiai Kiadó. Budapest.

WYSOKINSKA, Z. [2003]: Competitiveness and Its Relationships with Productivity and Sustainable Development. *Fibres and Textiles in Eastern Europe*. Vol. 11. No. 3. (42.) pp. 11–14.