Economic growth and competitiveness of Hungarian regions
(Economic development strategies for different types of regions)

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Abstract

Competitiveness has become one of the key concept in regional policy in the last two decades in the EU. It had become the received view by the 1990s that in an age of globalization the previous one-sided approach could no longer be relied on to explain what development factors are responsible for success in the interregional competition. Economic output (GDP/inhabitant), the rate of economic growth, export market shares and balance of trade do not show how competitive a given country or region might be.

This study will review the conceptual background and some special aspects of regional competitiveness and will also look more closely at one of the basic models, so called 'pyramidal-model' of measuring and enhancing regional competitiveness. In this paper I am going to analyze what characteristics do have the economic growth and catching up of Hungary and the spatial differences among its regions. Then I will examine key indicators of the competitiveness of Hungarian regions between 1995 and 2005. After outlining the basic background information this paper provides a review the types of development strategies, based on the pyramidal model.

Keywords: regional competitiveness, competitive regional development strategy

1. Transformation of the Hungarian economy and regional policy

It is well known that the change in Hungary's political and economic system took place in 1990, a long process where the transition from the socialist planned economy to a capitalist market economy accelerated spectacularly. The transition first brought about significant economic fallback, the manufacturing industry formerly exporting goods to the socialist countries and mainly to the Soviet Union lost its markets, the heavy industry (and the war industry) receded and the large extent of privatisation resulted in mass lay-offs and an increase in unemployment.

In 1993 the GDP per capita fell back to 82% of the figure in 1989 and returned to its ratio preceding the change of the political system only in 2000. In 1996 real income was only 85% of the figure in 1989, exceeding the ratio of the 1980's only in 2002. The transition from the planned economy to a market economy is a highly complex process in Hungary as well, with three major phases:

- The first phase ended in 1995, by when the institutions of the market economy had been established as a result of the passed laws and statutes,
- The second phase lasted from the 'budgetary shock' that occurred in 1995 (from the 'Bokros package' named after the Finance Minister at that time) until the country's accession to the EU in 2004,
- The third phase started with Hungary becoming a full-fledged member state of the EU in 2004 and an organic part of the single market.

The changes in the Hungarian regional policy broadly followed the above-mentioned phases of the transition. The Act on Local Governments passed in 1990 granted significant freedom to towns and villages, also part of the former state property (schools, hospitals, municipal flats, etc.) was transferred to them although they received hardly any budgetary sources for the maintenance of these ([1]). On the other hand, the power of counties was remarkably reduced, which practically made the regional level disappear and Hungary consisted of 'the alliance of 3200 settlements', or more precisely, 'the central power and its 3200 subjects'. The regional level was further weakened by the fact that larger cities (24) as cities of county rank are not members of the county councils, consequently, they often do not harmonize their development ideas with the county council representing the other cities of the given county.

Table 1. Territorial levels of Hungary after 2004

Level of territorial units	Number of territorial units
NUTS 2 = region	7
NUTS 3 = county	19 + Budapest (capital)
LAU 1 = subregion	167 + Budapest (capital)

In Hungary the Act on Regional Development, designed on the basis of the EU's regional policy and institutions, was passed in 1996. Each of the 19 counties established a 'Territorial Development Council', whose members also include the representatives of the larger cities (*Table 1*). These Territorial Development Councils coordinate the development concept and the development programmes of the different counties in compliance with the expectations of the EU's regional policy ([2], [3]). The establishment of regions and Regional Development Establishing Councils for neighbouring counties also became possible although their operation was formal since no institutions and budget belonged to them.

Figure 1 Regions and counties in Hungary

Presently, Hungary has 7 NUTS-2 level statistic regions, each consisting of 3 counties (*Figure 1*):

- Central Hungary region (Budapest and Pest county)
- Central Transdanubia region (Fejér, Komárom-Esztergom and Veszprém counties),
- Western Transdanubia region (Győr-Moson-Sopron, Vas and Zala counties),
- Southern Transdanubia region (Baranya, Somogy and Tolna counties),
- Northern Hungary region (Borsod-Abaúj-Zemplén, Heves and Nógrád counties),
- Northern Great Plain region (Hajdú-Bihar, Jász-Nagykun-Szolnok and Szabolcs-Szatmár-Bereg counties),
- Southern Great Plain (Bács-Kiskun, Békés and Csongrád counties).

The third phase of the transition, after 2004 is expected to bring about significant changes: planning and programming regions with real decision-making power must be created in Hungary as well, which means that process of decentralization must be started. This is required by the EU's regional policy and the criteria of assistance available from Structural Funds, but it is also needed for the economic processes. Today there is still debate on how regions should operate.

The EU's Structural Funds provide significant assistance for the development of Hungarian regions between 2007 and 2013 since in six regions the GDP per capita does not reach 75 % of the EU average, they are 'convergence regions' and Central Hungary is 'phasing-in region'. One of the EU's fundamental strategic goals is also defined by the Lisbon decree: to make the EU the most competitive and dynamic knowledge-based economy in the world. In supporting the underdeveloped regions, the major goal of the EU's regional policy is to improve the competitiveness of these regions in the short or long run. In 2004 Hungary also began designing its national development plan, including the preparation of the development concept and strategic programmes of the underdeveloped regions.

After reviewing the most important features of global competition, the present paper provides the standard concept of territorial competitiveness and gives the pyramidal model

serving the improvement of regional competitiveness. Based on this model it also outlines the development ideas aiming to improve the competitiveness of regions with different development levels.

2. Definition and modeling of regional competitiveness

In the economies developing and transforming, joined to EU in 2004 and 2007, as a result of *globalisation processes*, increasing localisation represents one of the most marked processes: while the importance of national economies (relatively) is decreasing, the economic role of regions and cities seems to grow. Global competition has intensified also in these countries, especially with the growing importance of knowledge-based economy. Territorial competition, which means the competition of regions and cities for scarce resources, global aims and so on, is increasingly prevalent. The economic characteristics of territorial competition differ form those of the competition of companies or on the labour market; consequently, the improvement of competitiveness can be described differently in the case of regions. Global competition processes undoubtedly define the economy of less developed countries including the economic structure in the regions of transition countries (so Hungary as well).

The *results of regional competition* are similar to those of the competition among countries: in the region successfully competing welfare (living standard) improves, employment and incomes (wages) are high, new investments take place, talented young people and successful businessmen move there, etc. ([4], [5]). Naturally, in the less successful regions just the opposite occurs: welfare (living standard) deteriorates or stagnates, incomes fail to increase, there is a reduction in the number of work places, no new investments occur, unemployment increases, talented young people and successful businessmen leave, the population grows older, etc. So the less favoured regions must work out *competitive development strategy* for improving their economic situation (Porter 2003b).

Successfulness in competition, or in other words, *competitiveness* has been one of the key concepts often used and quasi 'fashionable' in many areas of economics over the past two or three decades partly due to the acumination of global competition ([6]). It is a fashionable term the use of which seems nowadays to be nearly obligatory. In Iain Begg's ([7]) apt formulation: "improved competitiveness, as we all know, is the path to economic nirvana". Competitiveness as a *collective notion* has been in use for long, although it is difficult to define. It basically means the inclination and skill to compete, the skill to win position and permanently stay in the competition, what is marked primarily by successfulness, the size of market share and the increase of business success ([8]).

Two major issues emerged in the debates aiming at the interpretation of competitiveness: on one hand, *how to define regional competitiveness and what indicators to measure it with*? On the other hand, *how can regional competitiveness be improved*, which governmental interventions may be regarded as successful? These two questions usually lie in the background of other professional debates too; while representatives of academic economics concentrate on the first one, experts of regional policy tend to focus on the second one. Questions of interpretation, measurement and regional policy related to the concept of competitiveness receive much attention in countries and regions as well.

There were a number of attempts to define the new notion of competitiveness according to new global competition conditions in the mid 1990s. The most important findings of the abundant literature dealing with the competitiveness of countries may also be applied to interpret the competitiveness of regions ([4], [6], [8], [9], [10]). Particularly important examples include the proposals put forward by the US Competitiveness Council, the OECD

and the European Union. I am also going to rely on these suggestions when defining and developing a suitable model of regional competitiveness below.

The *standard notion of competitiveness* in the Sixth Regional Periodic Report of EU ([11]): 'The ability of companies, industries, regions, nations and supra-national regions to generate, while being exposed to international competition, relatively high income and employment levels'. In other words 'high and rising standards of living and high rates of employment on a sustainable basis' ([12]). In the European Competitiveness Report ([13]): "Competitiveness is understood to mean high and rising standards of living of a nation with the lowest possible level of involuntary unemployment, on a sustainable basis." In the report of Regional Competitiveness Indicators of UK ([14]): 'Regional competitiveness describes the ability of regions to generate income and maintain employment levels in the face of domestic and international competition'.

This standard definition refers to "relatively high income". This can be measured by means of the per capita GDP and the GDP growth rate. A high employment level is in turn indicated by the rate of employment. These two indicators can be measured independently from one another, but as is well known the per capita GDP can also be expressed as follows ([11], [15], [16]):

$$\frac{GDP}{total \cdot population} = \frac{GDP}{employment} \times \frac{employment}{working - age \cdot pop.} \times \frac{working - age \cdot pop.}{total \cdot population}$$

The first fraction on the right-hand side of the formula is approximately equal to labour productivity and the second to the *rate of employment*. The third fraction, the age distribution of the population only changes slowly. It can nevertheless play an important role in some regions with smaller populations.

Given the standard definition of competitiveness, no unique indicator of regional competitiveness can be found. It is interpreted rather as a combination of closely connected, well-measurable and unambiguous traditional economic categories:

- per capita GDP of the region (otherwise regional growth),
- labour productivity of the region,
- employment rate of the region,
- economic openness (international competition) of the region (exports and FDI).

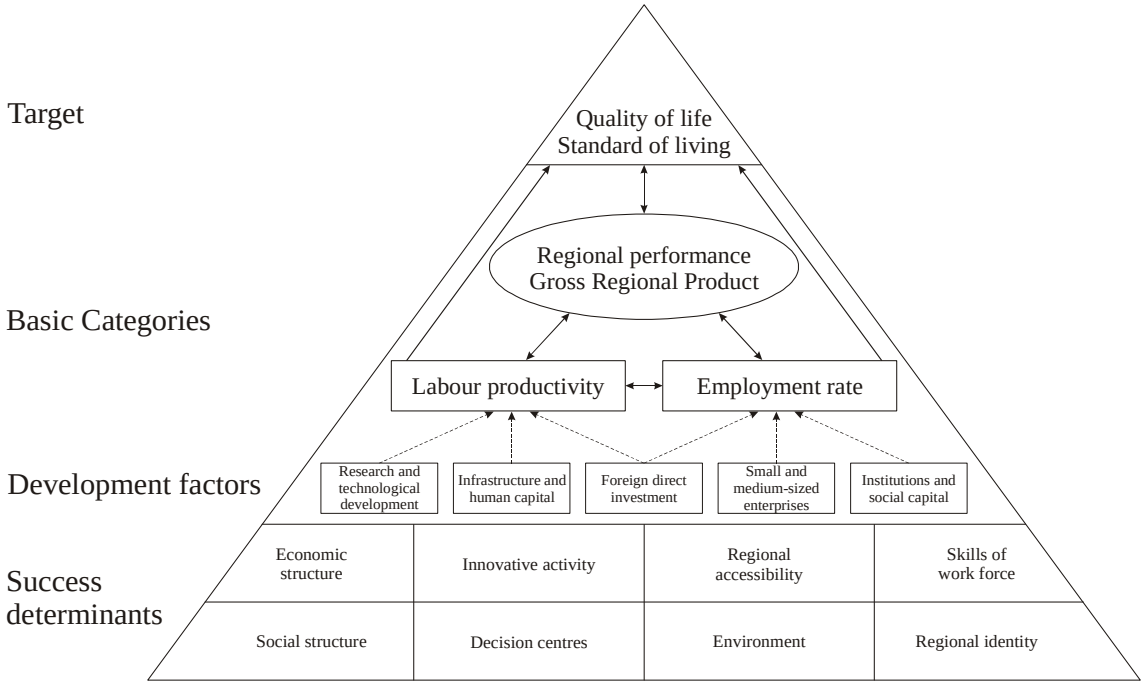
Hence the *substance of regional competitiveness*: the economic growth in the region, which growth is generated by both a *high level of labour productivity* and a *high level of employment*. In other words, competitiveness means *economic growth driven by high productivity and a high employment rate*. The standard concept of competitiveness basically expresses *balanced regional economic growth*. If the employment rate is high, then sooner or later the living standard will also increase.

Measuring *revealed regional competitiveness* has been traced back to four related economic categories: income generated in the region, labour productivity, employment rate and the openness. The notion of competitiveness obtained in this way cannot be used, however, to identify factors responsible for regional competitiveness or areas which are to be strengthened or developed by regional development policies and programmes for improved competitiveness. Since the notion of competitiveness can be seen as refining that of economic growth, it can often be observed that proposals for improved competitiveness combine traditional means of economic development with methods based on endogenous development.

The *pyramidal model of regional competitiveness* seeks to provide a systematic account of these means and to describe the basic aspects of improved competitiveness (*Figure 2*). 'This model is useful to inform the development of the determinants of economic viability

and self-containment for geographical economies' ([17] p. 26). 'This is an aggregate notion, …, in a regional context, labour productivity is the outcome of a variety of determinants (including the sort of regional assets alluded to above). Many of these regional factors and assets also determine a region's overall employment rate. Together, productivity and employment rate are measures of what might be termed 'revealed competitiveness', and both are central components of a region's economic performance and its prosperity (as measured, say, by GDP per head), thought obviously of themselves they say little about the underlying regional attributes (sources of competitiveness) on which they depend' ([10] p. 1049).

Figure 2. The pyramidal model of regional competitiveness



Source: [15], [16]

The standard of living, prosperity of any region depends on its competitiveness ([18], [19]). Factors influencing regional competitiveness can be divided into two groups of *direct* and *indirect* components. Of particular importance are programming factors with a direct and short-term influence on economic output, profitability, labour productivity and employment rates [16]). [20]). But social, economic, environmental and cultural processes and parameters, the so-called 'success determinants', with an indirect, long-term impact on competitiveness are also to be taken into account ([21], [22]).

Three levels can be distinguished with regard to the objectives of regional development programming and the various characteristics and factors influencing competitiveness (*Figure 2*):

- *Basic categories* of regional competitiveness, so called *revealed competitiveness* (*ex post* indicators; measuring competitiveness): these categories measure competitiveness of regions and include income, labour productivity, employment and openness.
- *Development (programming) factors* of regional competitiveness (*ex ante* factors; improving competitiveness): factors with an immediate impact on basic categories. These can be used to improve regional competitiveness by means of institutions in short-term programming periods.

– *Success determinants* of regional competitiveness (social and environmental conditions; explaining competitiveness): determinants with an indirect impact on basic categories and development factors. These determinants take shape over a longer period of time and their significance reaches beyond economic policy-making

When characteristics determining competitiveness are placed on a chart one obtains the 'pyramidal model' of regional competitiveness: the components of long-term success (or 'fundamentals') are to be found in the base, the middle layer is constituted by the development (programming) factors or 'key drivers". The basic categories included in the standard definition of competitiveness are located one level higher, while the standard of living and welfare of the region's population, the ultimate objective, forms the peak of the pyramidal ([23] p. 67).

Competitiveness depends on a wide range of factors and conditions. The five programming factors underlying competitiveness included in the Sixth Periodic Regional Report of the EU ([11]), however, exceptionally significant (*Figure 2*): research and technological development (RTD), small and medium-sized enterprises (SME), foreign direct investment (FDI), infrastructure and human capital, institutions and social capital. Improving individual programming factors forms the object of regional policies and regional development strategies. They are likely to improve the competitiveness of regions directly and in the short run by means of regional partners, local institutions.

There is abundant literature on competitiveness with certain well-known approaches, out of which especially the concept of standard competitiveness common in the European Union seems adequate in case of the regions not only for scientific analyses but also for economic political applications. The concept of standard competitiveness is partly linked to the thought of economic growth; therefore, it also leans on theoretical economics, although it also has strong regional political and economic development aspects that bring it close to the questions of business sciences as well. For the interpretation of regional competitiveness a pyramidal model was established that offers a complex frame for the measurement and improvement of regional competitiveness.

3. Economic growth and competitiveness of Hungarian regions

The basic categories can be used to measure regional competitiveness: GDP per capita, labour productivity, employment and openness. There are seven NUTS-2 regions in Hungary (*Figure 1*). Regional GDP at purchasing power parity (PPS) has been recorded since 1995 in Hungary.

Since 1995, the beginning of the second phase of the transition, Hungary has experienced significant economic growth; the average rate of growth is 4 % per year (*Table 2*). This rate of growth exceeds that of the annual average in the EU-15, which between 1995 and 2001 was 2.5 %. Owing to the fast development Hungary's GDP per capita (PPS) reached 62,3 % of the EU-27 average in 2003.

The regional distribution of *GDP per capita* has been strongly unequal (*Table 2* and *Figure 3*). Three regions (Central Hungary, Central Transdanubia, Western Transdanubia) actually began to reduce the gap between them and their Western European counterparts with a dynamic growth of approximately 4-5% a year before 2000. These three regions with dynamically growing economies constitute one block situated in the northwest of Hungary between Budapest and the Austrian border. The Central Hungarian region with Budapest almost reaches the EU-27 average since in 2003 its GDP per capita was 101,3 %. After 2000 the economic growth of the other two regions (Central Transdanubia, Western Transdanubia)

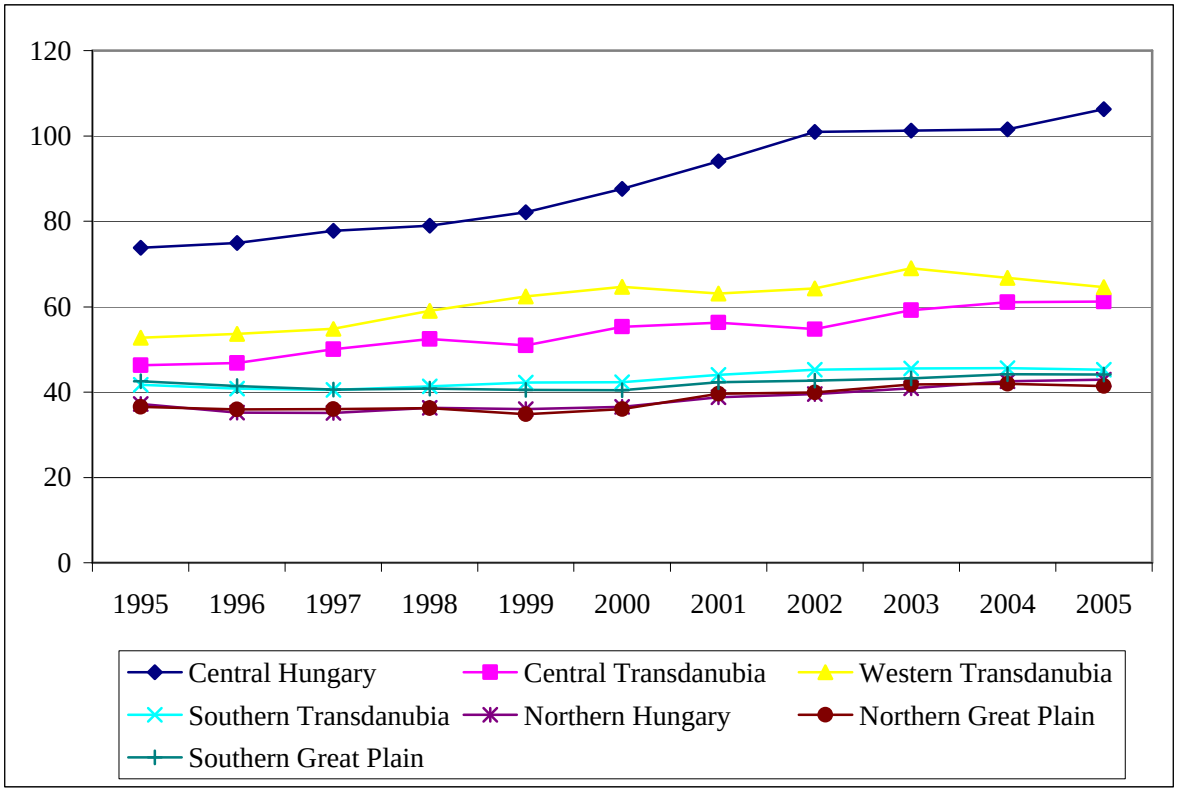
is slowly. The economic growth of the other four regions remained at a yearly 1.6-3%, which is more or less around the EU average or falling slightly below. These regions are situated south and east of this area. Regional data clearly show that in Hungary there are great and constantly existing territorial differences among the regions, and only one region, Central Hungary has continuous and fast growth.

Table 2 The purchasing power (PPS) adjusted GDP per capita relative to the EU-average in %

Region	EU15=100		GDP growth (annual average % change), 1995-2001	EU27=100		
	1995	2001		2003	2004	2005
Hungary	46.0	51,5	4.0	62,3	63,9	65,1
Central Hungary	66.4	94,1	5.2	101,3	101,6	106,3
Central Transdanubia	41.6	56,3	4.6	59,2	61,1	61,2
Western Transdanubia	47.4	63,1	4.3	69,0	66,8	64,6
Southern Transdanubia	37.6	44,0	2.6	45,6	45,6	45,2
Northern Hungary	33.5	38,8	2.3	40,9	42,5	42,9
Northern Great Plain	32.8	39,6	3.0	41,8	41,9	41,4
Southern Great Plain	38.3	42,3	1.6	43,2	44,2	44,1

Source: Eurostat

Figure 3. Regional per capita GDP in PPS (EU-27=100)



Source: Eurostat (http://epp.eurostat.ec.europa.eu.portal/)

Regional competitiveness depends on a combination of *employment rate* and the *labour productivity*. In Hungary the *employment situation* has improved parallel to the economic growth beginning in 1995 (*Table 3*). However, in 2004 the employment rate of 56.8

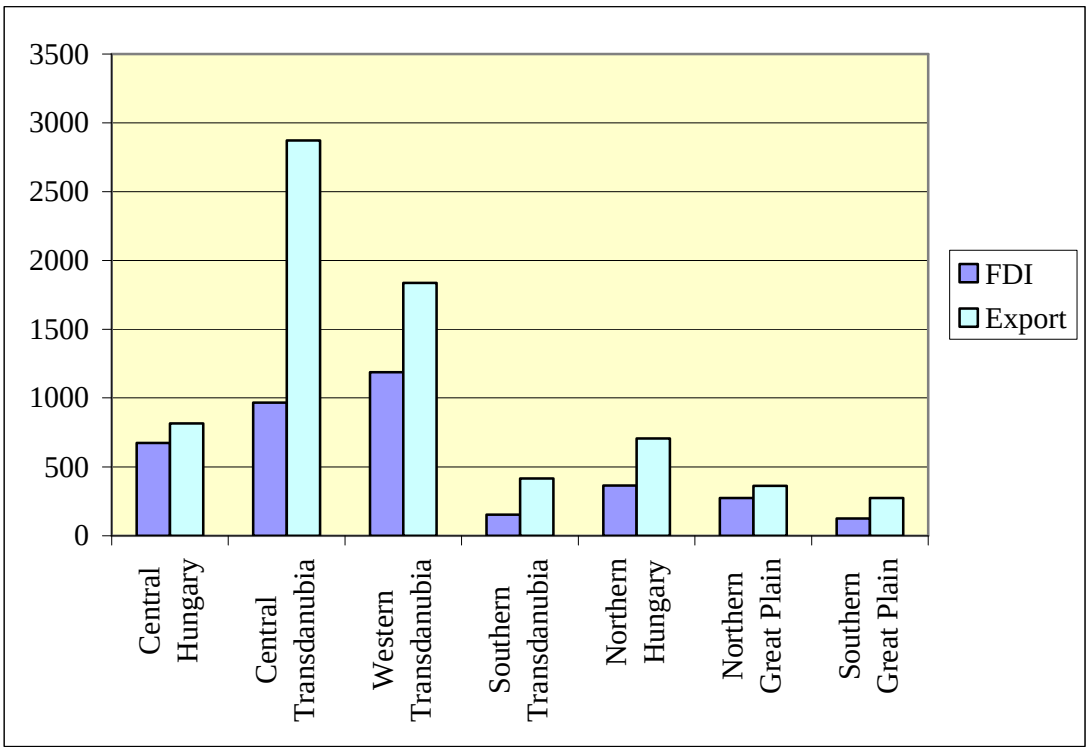
% shows considerable lag behind the EU-15 rate of 64.2 % and the EU-25 rate of 62.8 %. The regional differences within the country were similar in the case of employment as in terms of economic output (GDP per capita). In the three developed regions employment rate reached 60-63 % in 2005, while the same figure was 49-54 % in the four less developed ones. In the developed regions the rate of unemployment was approximately 5-6 % while in the less developed areas it is 8-10 %.

Table 3 Employment rate and unemployment rate of the regions

Regions	Employment rate (population aged 15-64, %)			Unemployment rate (%)		
	1998	2005	Differences between 2005 and 1998	1998	2005	Differences between 2005 and 1998
Hungary	53.6	57,1	+3,5	7.8	7,2	-0,6
Central Hungary	57.3	63,3	+6,0	5.6	5,2	-0,4
Central Transdanubia	55.7	60,2	+4,5	6.7	6,3	-0,4
Western Transdanubia	61.6	62,1	+0,5	6.1	5,9	-0,2
Southern Transdanubia	51.6	53,4	+1,8	9.4	8,8	-0,6
Northern Hungary	46.5	49,5	+3,0	12.0	10,6	-1,4
Northern Great Plain	46.7	50,2	+3,5	10.8	9,1	-1,7
Southern Great Plain	54.2	53,8	-0,4	7.0	8,2	+1,2

Source: Eurostat

Figure 4 FDI and industrial export per inhabitant (thousand HUF, 2005)



Source: own construction based on [24]

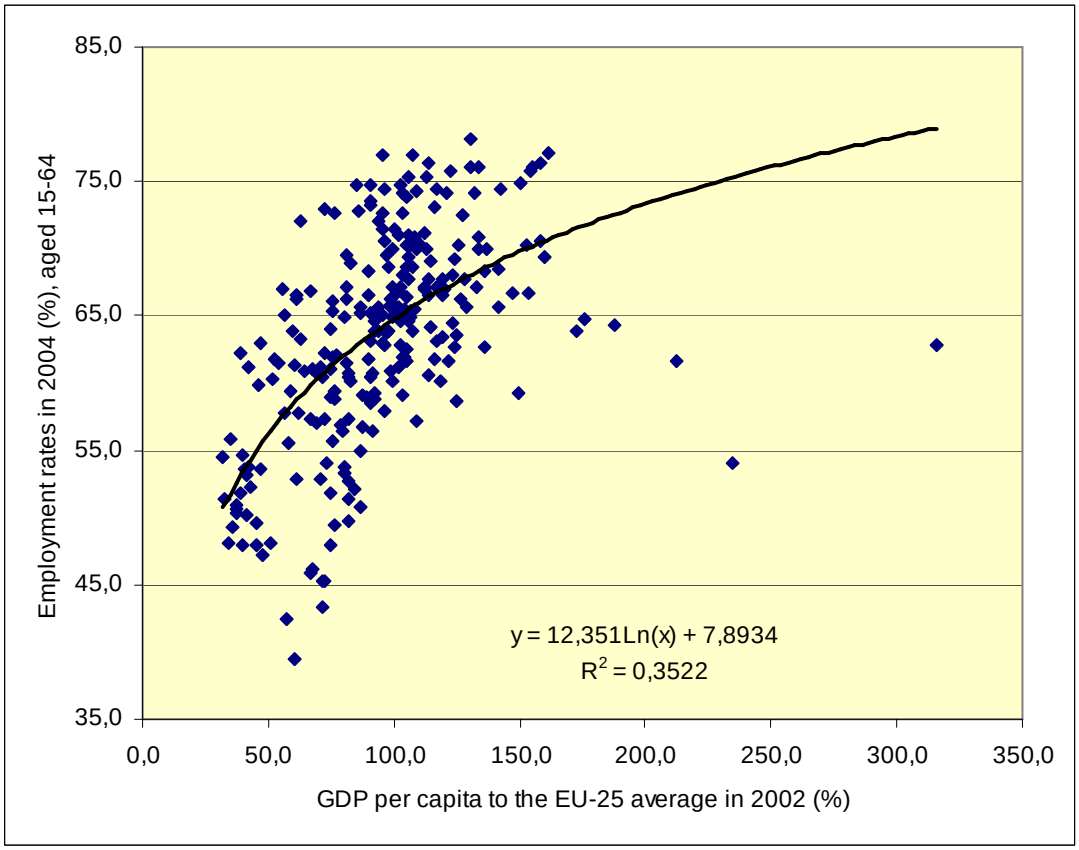
After 1995 *labour productivity* improved in all of the regions, almost parallel to the growth rate of the GDP per capita. Between 1995 and 2005 Central Hungary experienced a growth of 70 %, while in the Southern Great Plain this was 29 % and in the rest of the regions 35-52 %. So this growth was almost twice faster in the developed regions than in the less

developed ones. Consequently, the territorial differences apparent in labour productivity are rapidly increasing in Hungary.

Competitiveness is tied up with economic performance in the international (global) competition. The 'openness' (internationalization) of regions is best expressed in terms of *foreign direct investmenst* (FDI) and *exports* figures indicating the extent to which companies situated in the region have been able to produce globally marketable goods and services (*Figure 4*). Exports, which have greatly contributed to the rapid growth of the Hungarian economy, have been produced almost exclusively in three developed regions*:* Western Transdanubia, Central Transdanubia and Central Hungary. In 2005 the three developed regions produced 80 % of Hungarian manufacturing exports, while the contribution of the Southern Great Plain region was only 2 %. In short, these three regions are well 'embedded' in the European economy, while the other four regions cater mainly for domestic demand.

The four basic figures of regional competitiveness show that the growth and competitiveness of Hungary's economy depends on three regions and mainly on the economy of the capital. The growth of the other four regions is slow; their employment and labour productivity is equally low. And internationalization of the economy of these underdeveloped regions is weak.

Figure 5. Employment rate and GDP per capita (PPS) in the EU-25 NUTS-2 regions



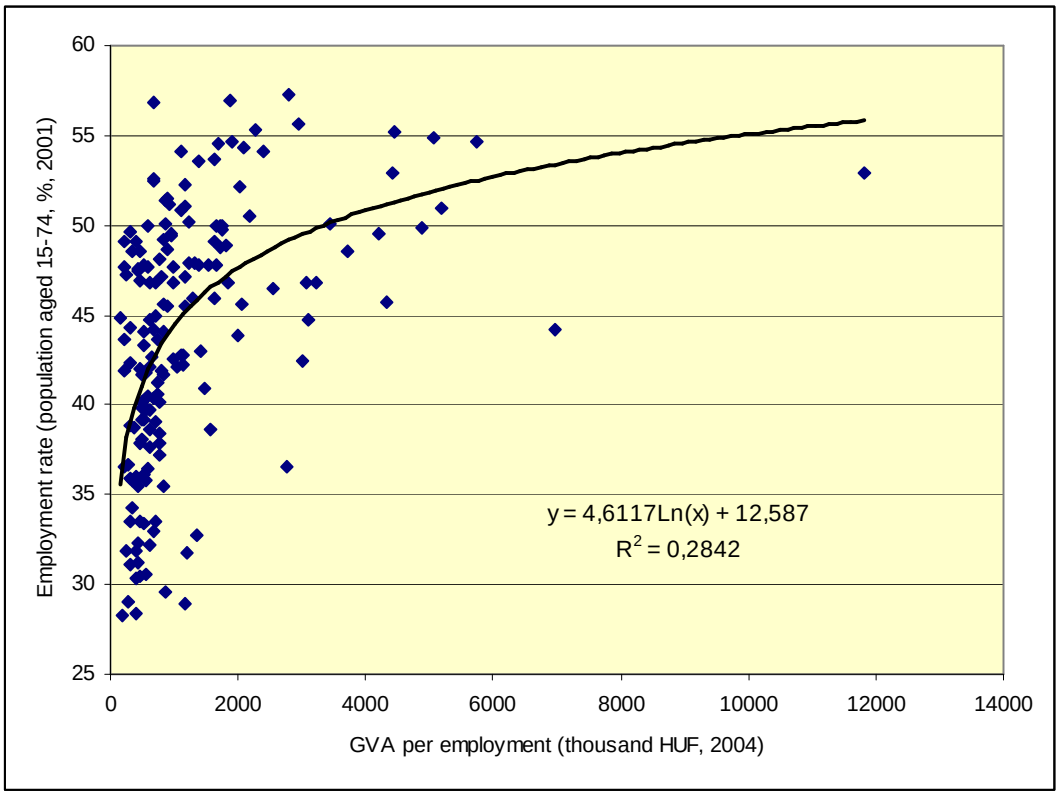
Source: own construction based on Eurostat (www.epp.eurostat.cec.eu.int/)

The competitiveness of the regions of the new EU-member states are the similar to Hungarian regions. The economic development of Hungarian regions (GDP per capita) is in harmony with the size of employment rate, all of them are situated close to the regression curve (*Figure 5*). Except for the Central Hungarian region the other six regions are among the EU's less developed regions with relatively low employment rate. Competitiveness of the capitals is strong, for instance, the GDP per capita (PPS, 2004, EU27=100) 129,3 % and

employment rate (2005) 69,6 % in Bratislavsky region (kraj), 157,1 % and 71,3 % in Praha, 106,3 % and 63,3 % in Budapest. Without Pest county the situation of Budapest is to similar to Bratislava.

In sum, there are significant differences in the competitiveness of Hungarian regions: three regions can be said to have displayed improving competitiveness, whereas the economies of the other four have stagnated. Both the absolute value and the growth rate of employment and labour productivity have contributed to leveraging the competitiveness of the three rapidly developing regions. They have already become an integral part of international trade, while the other four continue to export at relatively low levels.

Figure 6. Employment rate and GVA per employment of the sub-regions (LAU 1)



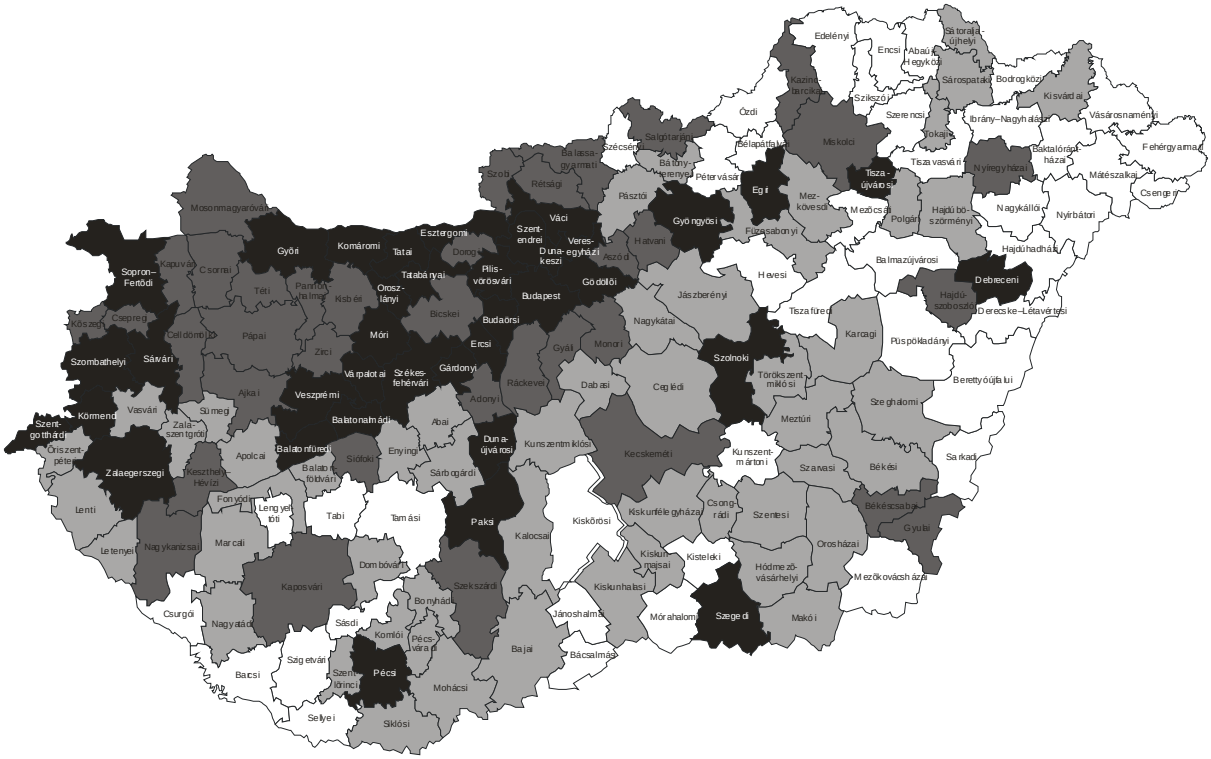
Source: own construction based on HCSO

In Hungary territorial differences among regions are great and stable. But every NUTS2 region is heterogeneous, it has developed urban districts and underdeveloped rural ones. Compared to regions in case of a transitional country's *LAU 1 sub-regions* differences in terms of development, especially those among towns and villages are obviously larger. In terms of *labour productivity* (GVA per employment) and *employment rate*, the two basic indicators of competitiveness, a distinct picture unfolds (*Figure 6*). The employment rate of the 168 sub-regions has an almost totally balanced distribution between 30-55 %. On the contrary, considering the values of GVA per employment sub-regions show a special picture: about three-fourths of them have identical values not reaching 1500 thousand HUF. The remaining one-fourth represented by the small regions of larger towns has strong variance.

The special features of the structure of settlements are also shown by the differences of sub-regions in terms of *personal income per capita* (*Figure 7*). In the capital, in regional centres and some county towns incomes are high, while in other areas they are almost equally low. The difference between the Western and Eastern regions is traceable among sub-regions too: in the capital and its surroundings and in Western Hungary incomes are higher, while

South of Lake Balaton and East of the Danube they are significantly lower. Continuous regions with especially low incomes are situated along the Hungarian-Romanian and Hungarian-Ukrainian borders.

Figure 7. Personal income per capita by sub-regions (2005, thousand HUF)



Note: Gross income serving as basis of the personal income tax per permanent population
Scale: 0-399, 400-499, 500-599, 600-

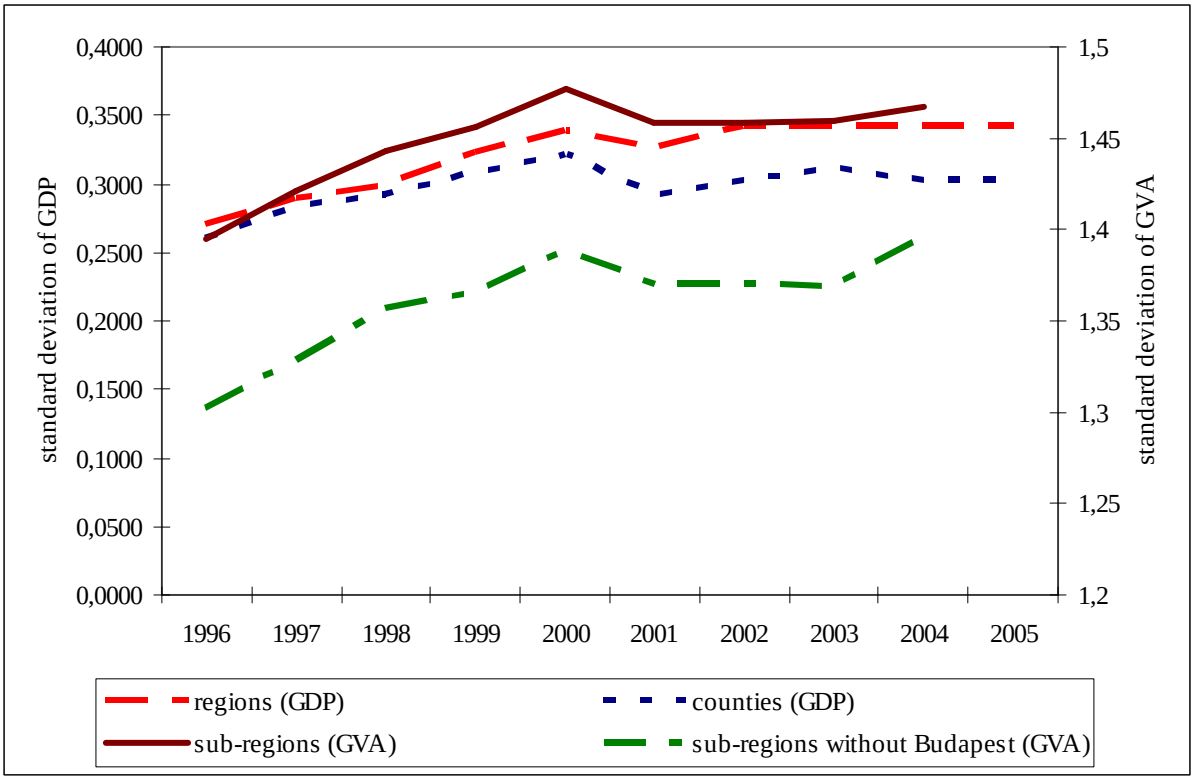
The differences of regions, counties and sub-regions experienced continuous growth from 1996 until 2000, and then this process slowed down (*Figure 8*). This means that *no signs of convergence* can be noticed on any of these territorial levels. There is development in each region, county and subregion, incomes are increasing, but in a particularly unbalanced manner.

Hungary's *structure of settlements* is characterised by the fact that except for Budapest having 2 million inhabitants together with its catchment area (together about 3.5 million habitants), no other large town exists; regional centres are towns with 150-200 thousand residents (Debrecen, Miskolc, Pécs, Szeged). Consequently, half of the population live in rural areas, villages or small towns. And the competitiveness of these rural subregions is poor.

We have analyzed the competitiveness of Hungarian regions on NUTS-2 and LAU-1 level. The most important findings have been that the economy of the Central Hungarian region has developed faster than the EU-average. The other two regions (Central and Western Transdanubia) have been found to catch up more and more with their Western counterparts. The economies of the other regions have stagnated. Consequently, statistical findings on Hungarian regions make it clear that the high economic growth of the Hungarian economy has been generated exclusively by the improving economic performance of one region. Only this region can be called competitive with a per capita GDP growth above the EU-average and labour productivity and employment rates exceeding the national average. After 2000 the economies of other two Transdanubian regions are stagnated, with strong figures. The

remaining four regions cannot be said to be competitive given their economic stagnation, insignificant growth rates, low levels of employment, and labour productivity and exports.

Figure 8. Standard deviation of GDP/GVA per capita



Source: Lukovics
Note: by natural logarithm

4. Enhancing regional competitiveness on different types of regions

As we note, two major issues emerged in the debates aiming at the interpretation of competitiveness: on one hand, *how to define competitiveness and what indicators to measure it with*? On the other hand, *how can competitiveness be improved*? It is not enough to measure the competitiveness of regions, but we also need to outline what can be done to improve competitiveness.

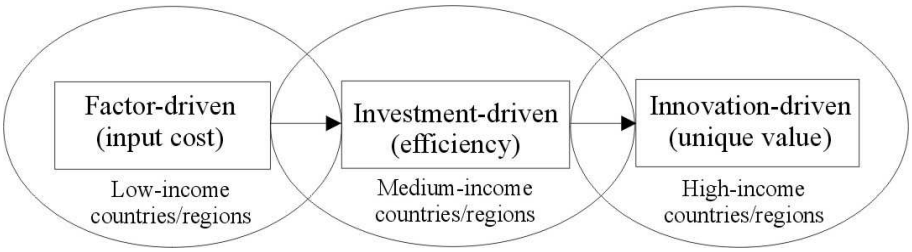
Measuring regional competitiveness has been traced back to four related economic categories: income generated in the region, labour productivity, employment rate and the openness. The notion of competitiveness obtained in this way cannot be used, however, to identify factors responsible for regional competitiveness or areas which are to be strengthened or developed by regional development policies and programmes for improved competitiveness. The *pyramidal model of regional competitiveness* seeks to provide a systematic account of these means and to describe the basic aspects of improved competitiveness of the different types of regions [10], [15], [16]).

Different 'market places' also occur in the global competition of countries, regions and cities. *Tödtling and Trippl* ([25], p. 1209) describe three types of regions by problem areas and regional innovation deficiencies: peripheral region (organisational thinness), old industrial regions (lock-in), and fragmented metropolitan regions. In 2003 one of the research project of EU analysed factors influencing regional competitiveness and how dominant the

elements determining competitiveness are in different region types in order to create the foundation of regional policy between 2007 and 2013. During the research four region 'theoretical' types were distinguished based on two dimensions, density of population and the growth rate of GDP ([26] p. 6-23): non-productive regions, regions as production sites, regions as sources of increasing returns, and regions as hubs of knowledge.

Based on the characteristics of *competitive advantages*, Porter distinguishes three phases in the development of countries built upon one another ([27]). According to the amount of specific GDP and the competition strategies of global industry branches these are (*Figure 9*): factor-driven, investment-driven and innovation-driven phases. The three phases of competitive development designed for countries can also be applied in the case of regions ([28]). And these types are very useful to underlie the bottom-up local development strategies of the subregions.

Figure 9. Stages of competitive development of countries/regions



Source: own construction based on Porter ([27], pp. 26-28)

Today, knowledge-based economy strongly transforms the specialization among a country's regions with different development levels also changing the former characteristics of territorial competition. Based on the differences among regions it is good to differentiate where knowledge is produced and where it is only adapted (([29]). ([30]). In the case of competitive regional development only in the innovation-driven phase can it be stated definitely that competitive advantages derive from knowledge creation, while in the investment- and factor-driven phases they originate from the mere adaptation of knowledge ([27]). Less developed, lagging regions are in an exposed situation, certain features of the knowledge-based economy are present, but neofordist characteristics are decisive ([31]).

In harmony with the phases of competitive development three types of postfordist regions must be distinguished ([28], [32], [33]):

- *Neofordist region*: factor-driven phase (regions with low income and input cost),
- *Knowledge transfer region*: investment-driven phase (regions with medium income and efficiency) and
- *Knowledge creation region*: innovation-driven phase (regions with high income and unique value).

Neofordist and knowledge transfer regions differ from knowledge creation regions not only in terms of the sources of competitive advantages, but also because they are economically exposed and fragile. The decision centres of global companies hardy occur in less developed regions, so they demand knowledge less; rather the executive type activities of global companies are present here. Besides assembly plants, units of global companies selling products and performing service activities on the local market, local branches of international banks and insurance companies, and sometimes subsidiaries engaging in minor research activities also operate here. Naturally, most regions are 'mixed', but while neofordist and

knowledge transfer activities and companies also exist in knowledge creation regions, the number of firms based on knowledge creation is close to zero in neofordist regions.

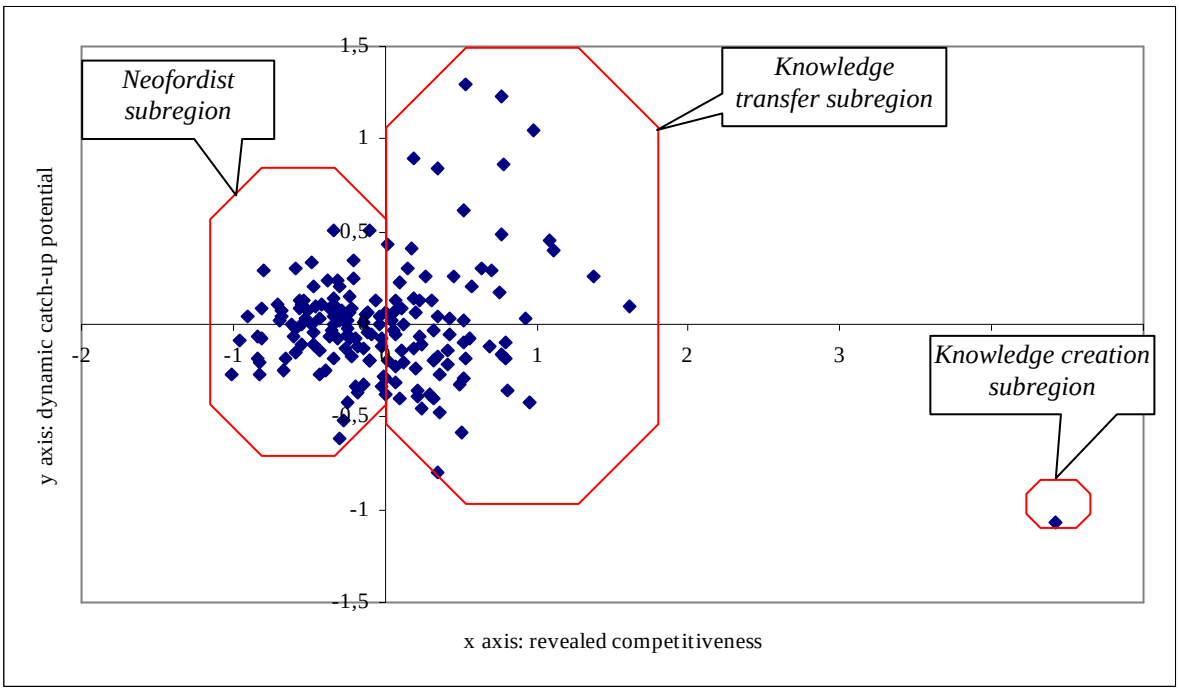
Concerning the three region types reviewed above, different development strategies must be applied, which means that *the improvement of competitiveness demands different measures based on the different types of regions*. These steps correspond to the phases of competitive regional development and at the same time indicate that competitiveness can be improved only with the help of complex programmes. The pyramidal model systematise those economic development priorities that adjust to the real social-economic situation and the achievable aims of the different region types. The improvement of regional competitiveness depends on the consistent realisation of these development strategies.

Most important conclusions of the empirical analysis and discusses on the *competitiveness types of the Hungarian regions* that there are three types in Hungary ([34]):

- Central Hungary (Budapest): *transition from knowledge transfer to knowledge creation* region,
- Central Transdanubia and Western Transdanubia: *transition from neofordist to knowledge transfer* region
- Southern Transdanubia, Northern Hungary, Northern Great Plain, and Southern Great Plain are *neofordist* regions.

During another empirical analysis, the *measurement and typisation of competitiveness in LAU-1 level subregions* is performed with a complex system of indicators ([33]). In choosing indicators we follow the logic of the pyramidal model and perform a complex analysis with the help of multivariate data analysing methods. According to our expectations the statistical data base defined by basic categories, basic elements and success factors can be used to analyse the complex competitiveness of small regions.

Figure 10. Types of sub-regions by MDS



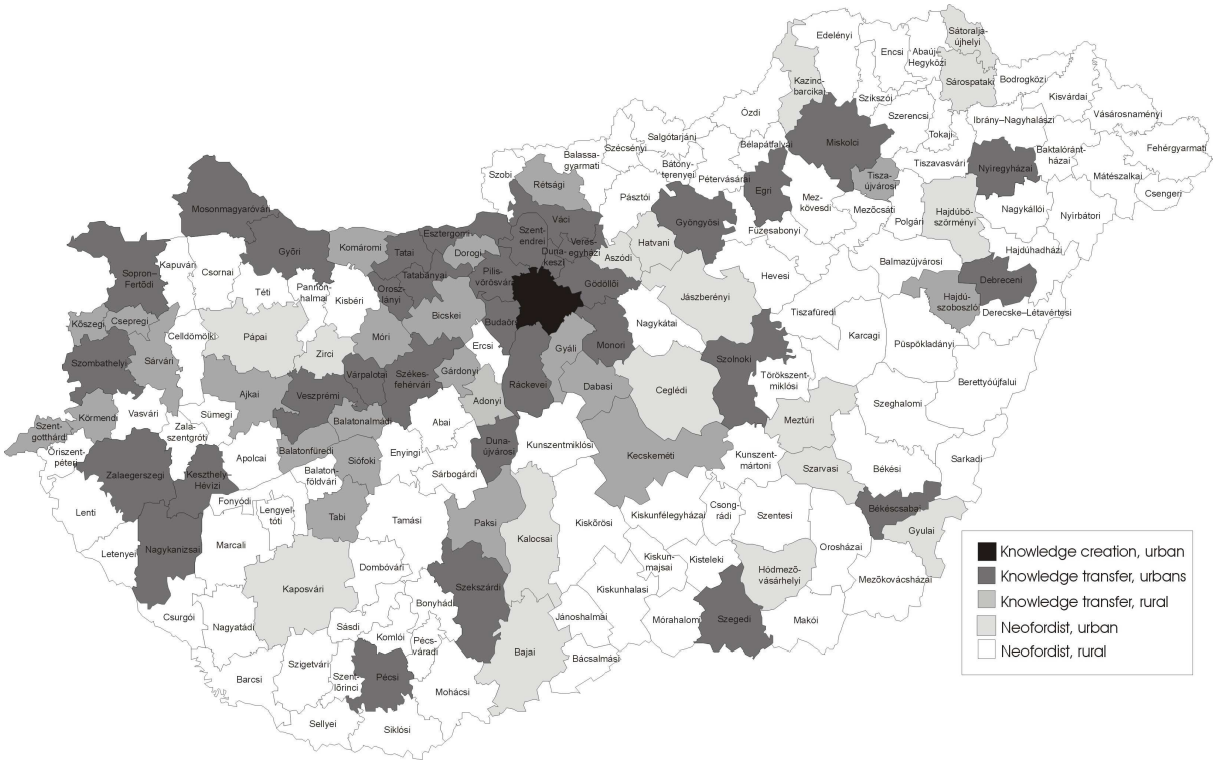
Source: [33]

We attempt to use pyramidal model and describe each basic category, development factor and success determinant with at least three or four variables. Date collection was performed using the Hungarian Central Statistical Office's database. The favoured indicators of the basic categories and the indicators of development factors and success determinants were selected based on the concept of standard competitiveness, what resulted in *63 indicators* by subregions.

In the next step of the analysis, using the system of indicators we organized the 168 Hungarian sub-regions in homogeneous groups based on their competitiveness level. Out of the available statistical multivariate analysis techniques two methods were applied: *multidimensional scaling* and *cluster analysis*.

Using multidimensional scaling, regions above axis *x* are capable of fast catch-up, while the ones below axis *x* do not have this potential (*Figure 10*). The geometric representation established by MDS may include the possibility to identify groups and types. In the two-dimensional chart Budapest in itself forms a group positioned quite far from the other two types. Examining the final coordinates of each object shows that knowledge transfer (medium developed) regions are concentrated on the right side of axis *y* in the first and fourth quadrants. In terms of competitiveness these sub-regions lag behind Budapest, but are ahead of relatively underdeveloped (neofordist) regions, furthermore, they also carry catch-up potentials. The third (neofordist) group is situated in the second and third quadrants, as the concentration of the regions ranking lower in terms of competitiveness. Part of these (above axis *x*) carry catch-up potentials, while going down from axis *x* the danger of further lag increases.

Figure 11. Hungarian sub-regions by competitiveness types



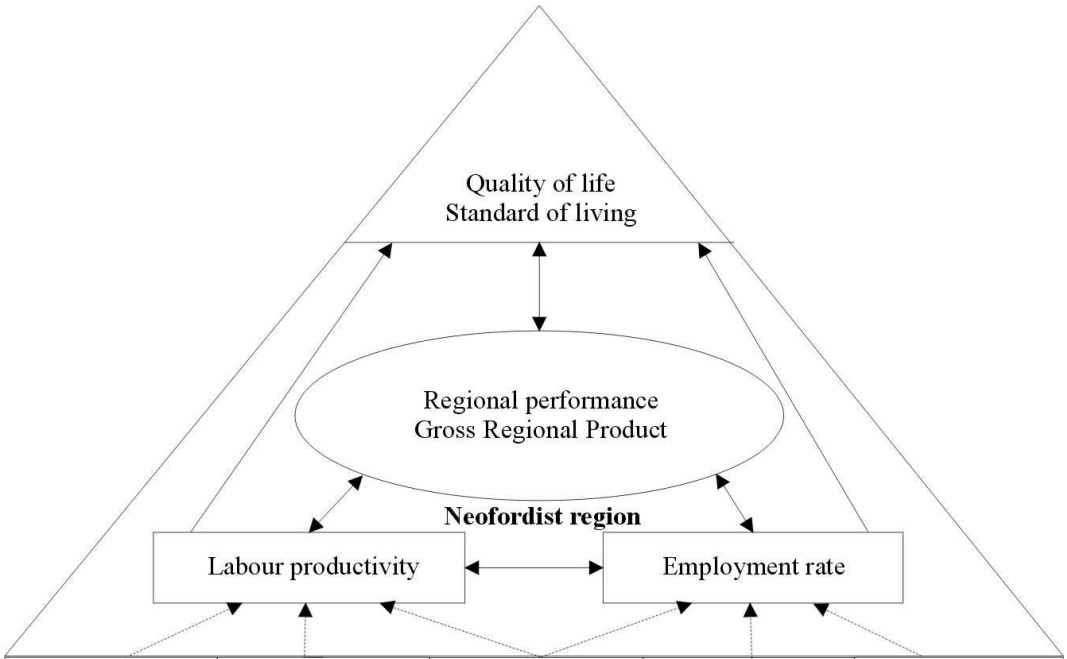
Source: [33]

We classified sub-regions by 63 figures and based on the three region types above and on *urban-rural* aspects within each type (*Figure 11*). Out of the 110 sub-regions falling in the

neofordist region type according to the above, 17 sub-regions (15,4%) may be regarded as urban, out of the 57 sub-regions classified in the category of knowledge transfer this number is 35 (61%), while the only sub-region (Budapest) in the knowledge creation region type is urban. Consequently, in more developed region types the proportionate share of urban regions is higher; while that of rural regions filling the less developed space among them is lower. It is also noticeable that the more developed region type a sub-region is classified in, the more it fulfils out of the four above mentioned criteria necessary for the classification as urban.

At the same time, it is not enough to measure the competitiveness of regions, but we also need to outline what can be done to improve competitiveness. As shown, according to the theory of regional competitive development, today the regions and subregions participating in global competition can be classified in three types: neofordist, knowledge transfer and knowledge creation. Based on these three types regions can also be classified in groups. Furthermore, a special version of the pyramidal model can be designed, the elements of which are built upon the real opportunities of the given region type and may contribute to improving the competitiveness of the region. Specifying the pyramidal model by region type three 'sub-pyramids' can be established based on the competitive development: the *mastabas*. (Mastaba an ancient Egyptian mudbrick tomb, the pyramids developed form the mastaba.) In each region type the basic categories and success factors of competitiveness are the same, however, the elements of the basic factors are different in each sub-type.

Figure 12. Enhancing competitiveness: the mastaba of neofordist region



Source: [28]

The *neofordist region* is underdeveloped, it corresponds to a semi-periphery, the generated income (GDP/habitant) is low, and the economy is typically in the factor-driven phase. The development of infrastructure is insufficient, the education level of the labour force is low, the members of company management are not competitive internationally and part of the qualified labour force and talented young people leave the region. The major goal focuses on developing the technical infrastructure (transportation network, energetics, etc.) and attracting the sites of global companies with prepared industrial areas, low local taxes, low wages, etc.

Local companies do not need *research and technologocal development* in neofordist regions, but as already mentioned, all of them purchase older technologies from abroad (*Figure 12*). Therefore, these companies do not have R&D units and they are not closely linked to development institutions either. Since there are no local company assignments, local university research and the related laboratories and equipment must be financed from governmental funds. In such regions support should target basic research, especially at local universities, and certain outstanding research laboratories to solve minor applied R&D tasks.

Regarding the elements of *infrastructure and human capital* as development factors, such regions should concentrate on developing the transportation networks that are usually less established and of low quality. Mainly motorways, airports, railroad systems, ports, logistic centres must be created that are essential for making the divisions of global companies targeting cost advantages settle. It is also advisable to design industrial areas (industrial parks) containing concentrated infrastructure, partly owing to environmental reasons. Vocational training cannot be transformed based on special company needs, but rather the quality of task-oriented schemes offering wide basic training in existing institutes must be improved.

In the case of *investments coming from outside the region*, the divisions of companies must be attracted that are able to generate regional multiplicator effects by establishing a new activity. In the region these divisions and activities can work as the starting points of a structural change, which the local economic sphere is unable to achieve by itself. The embedment of global companies' divisions, the development of local business and personal relations must be encouraged with the help of various events, forums to enable information flow that can also be followed by business transactions later on.

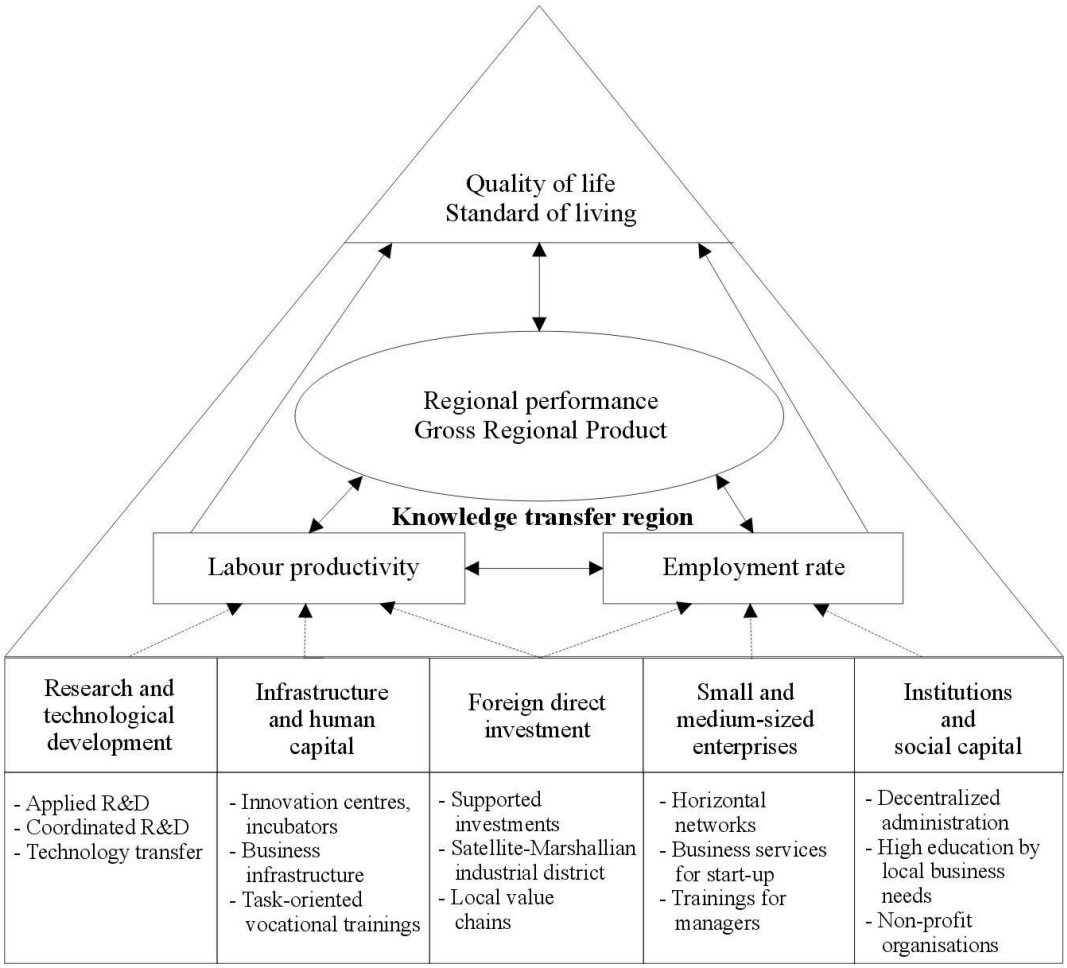
In neofordist regions very few *small and medium-sized enterprises (SMEs)* are present in the traded sector, neither the business environment, nor the preparation level of these companies is enough for global competition. SMEs have insufficient international knowledge; therefore, the wide dissemination of modern entrepreneureal skills and enterprise culture is essential for their development. This should be understood as a *learning process*, SMEs can learn not only at courses but also from one another and from global companies too. One of the most important objectives is for SMEs to become the business partner or contracted supplier of settled global company units, because this way they can win a stable market and gain modern knowledge and business experience.

In a neofordist region the *institutions and social capital* are not market-friendly enough. Public administration organisations must be made to have 'enterprise-friendly' customer services. As for training programmes available in higher education institutions, the technical, business, economic training necessary for the successful operation of enterprises is either missing or is of poor quality, so support must be lent to launch, strengthen and disseminate these programmes, so that modern business training can become part of the curriculum in each higher education scheme.

Knowledge transfer regions are usually medium developed, the most important goal of economic development lies in continuing the structural change by keeping existing companies and creating work places with higher added value. These regions are in the investment-driven

phase, they have traded large companies with local headquarters, which already have a network of local SMEs as their contractors. Transportation infrastructure is developed; therefore, the *improvement of the local business environment* is in focus. The education level of the labour force and the training structure already correspond to the needs of the economic sphere, retraining programmes and courses to improve managerial skills are frequent.

Figure 13. Enhancing competitiveness: the mastaba of knowledge transfer region



Source: [28]

In knowledge transfer regions the need for *research and technological development* has already emerged, local traded companies also create development units assigning an increasing number of applied research part-tasks to local development companies and research institutes (*Figure 13*). In the course of economic development, the harmonised research and development activity of companies and institutes must be encouraged. In order to assist smaller companies the establishment of agencies, institutes and other bodies dealing with technology transfer must be facilitated.

Infrastructure and human capital are relatively developed and the transportation network has been established. Support must focus on the institutions and agencies of the business infrastructural background (training institutions, consulting companies, etc.) that satisfy actual company expectations. In harmony with the emerging R&D needs, institutions contributing to the improvement of innovation capacity (innovation centres, incubators) must be created. Strengthening local strategic industry sectors can define their needs precisely

concerning the qualification of the labour force, so special training programmes related to these must be developed.

Among the *investments coming from outside* knowledge transfer regions, only those need promotion, whose activities are in harmony with the developing regional strategic industry sectors already present. The embedment of companies with bases outside the region must be encouraged by increasing the circle of SMEs acting as local contractors. This way more and more elements of the global companies' value chain can be present in the region, what not only stimulates the economic growth, but also helps to improve employment.

In knowledge transfer regions more and more *small and medium-sized enterprises* (SMEs) operate in the traded sector, and are prepared for global competition. In order to strengthen these SMEs, the development of their horizontal networks, clusters must be helped. The formation of start-up companies related to the activities of developing strategic industry sectors must also be encouraged mainly with business incubator programmes.

In these regions the role of *institutions and social capital* is increasingly important. Fast and reliable public services are essential for the successful global competition of developing strategic industry sectors and strengthening SME networks. Therefore, it is necessary to decentralise administration, since only regional and local governments present in the region can take measures effectively and flexibly. Local higher education must be encouraged of design training modules corresponding to the labour force needs of strengthening local strategic sectors this way ensuring the prepared labour force supply for companies.

Concerning the three region types reviewed above (without knowledge creation region), different development strategies must be applied, which means that *the improvement of competitiveness demands different measures based on the different types of regions*. These steps correspond to the phases of competitive regional development and at the same time indicate that competitiveness can be improved only with the help of complex programmes. The pyramidal model and the mastabas systematize those economic development priorities that adjust to the real social-economic situation and the achievable aims of the different types. The improvement of regional competitiveness depends on the consistent realization of these developments.

The economic development strategy of Southern Great Plain region between 2007 and 2013 was established by element of pyramidal model. In this region there are two knowledge transfer urban subregions, others are neofordist urban or rural subregions.

5. Summaries

The present paper reviewed the most important questions related to regional competitiveness. Globalisation processes, their territorial characteristics and global competition lead to the development of a 'new economic space'. With the emergence of the knowledge-based economy the international division of labour also transforms and the role of regions in the postfordist economy must be reconsidered. Three basic region types can be distinguished that participate differently in the international division of labour. The acceleration of global competition has resulted in the increase of competition among regions, or more precisely, territorial units.

Due to the special characteristics of global competition, the concept of territorial competitiveness must also be defined. There is abundant literature on competitiveness with certain well-known approaches, out of which especially the concept of standard competitiveness common in the European Union seems adequate in case of the regions not only for scientific analyses but also for regional economic political applications. The concept of standard competitiveness is partly linked to the thought of economic growth; therefore, it also leans on theoretical economics, although it also has strong regional political and

economic development aspects that bring it close to the questions of business sciences as well. For the interpretation of regional competitiveness a pyramidal model was established that offers a complex frame for the measurement and improvement of competitiveness. It not only makes a proposal concerning the indicators applicable for measuring competitiveness, but also systematises economic development ideas depending on the types of regions.

In the period of transition from a centrally planned economy towards the market economy and under the pressure of globalization and Europeanization, the Hungarian system was restructured not only in terms of linkages within the production system, but also in relation to its relevant environments. During this process the internal linkages were weakened and external linkages asynchronously reinforced. Budapest and the north-western part of the country could find a way to the European market more easily than the eastern part.

In sum, there are significant differences in the competitiveness of Hungarian regions: three regions can be said to have displayed improving competitiveness, whereas the economies of the other four have stagnated. Both the absolute value and the growth rate of employment and labour productivity have contributed to leveraging the competitiveness of the three rapidly developing regions. They have already become an integral part of international trade, while the other four continue to export at relatively low levels.

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