

## **TERRITORIAL DIFFERENTIATION OF THE DEVELOPMENT OF HUNGARY**

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### **Biographical Note**

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### **Abstract**

One of the main objectives of the regional policy of Hungary and of the European Union is to reduce regional disparities. For this reason, the elimination of backwardness, the development and the catching-up of the regions is a key strategic task of the Member States. The effective use of development-aid based on the principles of regional policy can help to prevent or re-invigorate the irreversible breakdown of certain areas. The differences between the development of the various regions are influenced by socio-economic factors, as well as by natural conditions. After the regime change and later, following the accession to the European Union, there were significant regional development differences in Hungary. For this reason, analyses are needed to answer what positive or negative changes occurred in this field in recent years. The analysis examines the differentiated development of the 20 territorial units of Hungary (19 counties + Budapest), as well as the

development level of Hungary. Mathematical-statistical methods (rang-ratio, relative rank, correlation) were applied to present the changes in recent years with special regard to the extent and the direction of change.

**Keywords:** gross domestic product (GDP), investment, industrial production, territorial development, Hungarian counties, development level

**JEL Classification:** E22, E23, O18, R10, R58

## 1. Introduction

Over the past decades, especially after the regime change, and then the accession to the European Union, the analysis of the territorial development has been increasingly emphasized in Hungary. Due to the importance of this topic, many researchers working in the field of regional science have dealt with the various aspects of development. Investigations on territorial development play an important part in regional research today (Abonyiné and Komarek, 2005, 2007, 2009).

Due to the appreciation of territorial analyses, the methods of measuring development have changed over the last decades. The change in methods followed the global economic and social processes, the Hungarian and international trends and the development of statistical databases. Development-related analyses continue to focus on territorial differences, the exploration of the factors of development and the suggestions to reduce territorial differentiation (Abonyiné and Komarek, 2010; Tóth, 2013).

There have been numerous studies in Hungary concerning territorial development in the past few decades. At the same time, the level of development of the individual regions was a topical issue also in the years preceding the regime change, and since the 1990s the territorial economic and social issues got even more into the focus of regional science (Abonyiné and Komarek, 2015).

In our globalized world, thanks to the socio-economic factors and the appreciation of territorial features, the earlier classical development theories in the international literature were de-emphasized as new approaches appeared. Since the Hungarian experts in the field of regional science have continuously monitored the international results of the study of territorial development, the new methods of analysis have been taken over in the short term and are most often applied in Hungary, in the context of demonstrating differences in territorial development (Lados and Rechnitzer, 2004).

During the period since the regime change, the issues of regional politics, regional development, urban development and territorial development became more and more important for Hungarian regional science practitioners (Enyedi, 2000, Horváth, 2004, Nemes Nagy, 2009).

Nowadays, theoretical and empirical research related to territorial development is of great interest among Hungarian "regionalists". It can be stated that analyses on the development rankings of the Hungarian (county, settlement) and the evaluation of development tendencies are increasingly focusing on territorial competitiveness, taking into consideration human and ecological aspects, the development of the internal (endogenous) resources or the innovation potentials and renewal skills (Ács and Varga, 2000; Dóry and Rechnitzer, 2005; Grosz and Rechnitzer, 2005; Horváth, 2006; Lengyel, 2010; Varga, 2009).

The gross domestic product (GDP) per capita is often used to analyse territorial development (Bruckner et al., 1999; Farkasházi, 1998; Kovács, 2002; Nemes Nagy, 1995). Many Hungarian researchers have analysed territorial differences based on gross domestic product (GDP) per capita, and the order of development of the counties and regions of Hungary (Bruckner and Gether, 2003; Cserháti, et al., 2005; Kása, 2006).

Concerning the territorial analysis of gross domestic product (GDP) per capita, Hungarian researchers conducted in-depth analyses of the regions of the European Union, the Central and Eastern European region and the territorial levelling of post-socialist countries (Horváth, 1998, 2004; Nemes Nagy, 2005; Szabó, 2008). Analyses related to this indicator show that the methodological examinations are extremely varied. They ranged from various statistical analyses (mean, standard deviation, relative scattering) through the Hoover index up to the topological demonstration (Kiss and Németh, 2006; Kuttor, 2012; Major and Nemes Nagy, 1999; Nemes Nagy and Tagai, 2009). In addition, there are many examples of correlation and regression calculations (Hahn, 2004; Nemes Nagy, 2000).

To illustrate the regional differences, Hungarian experts often use the development of investments by area units, which can be studied in many aspects. We can analyse the volume, sector, product group, product structure, territorial structure, or the distribution by capital, by size and by sector (Abonyiné and Komarek, 2011).

Out of the Hungarian researches, there are several analyses focusing on the spatial issues of the secondary sector (Komarek, 2011, 2012a). These analyses apply a wide range of mathematical and mathematical-statistical methods used in the industry in order to carry out detailed analyses and to get a clear picture of the regional differences in the sector and the main direction and extent of changes in recent years (Komarek, 2012b, 2013a). The analyses partly go from one point to the general (specific industrial sectors, changes in the role of the sub-sectors, etc.) and partly from generalization to one point and examine how problems affecting the national economy come from different aspects at a regional level in the industry (Komarek, 2013b, 2013c, 2017).

Research and analysis confirm that the socio-economic spatial structure of Hungary shows significant differences in the several decades since the regime change. Consequently, irrespective of the number of indicators included in the analyses and the methodology of the examinations, similar spatial structure conclusions have been drawn by the experts of the spatial analysis and science. The GDP-based analyses have drawn attention to strong differences in Hungary. At the same time, the analyses did not judge the mitigation and the effective management of territorial differences uniformly. Proposals to alleviate regional disparities ranged from intervention in the macroeconomic structure (Horváth, 2004) to the utilisation of the full potential of the structure of microsphere and competitiveness (Illés, 2009). Researchers evaluated the issue of differentiation-levelling in various ways. Analyses of major regional relations conclude that although the developmental differences between the countries of the region have gradually decreased, the territorial differences in the country have barely diminished (Nemes Nagy, 2009).

In contrast, the works analysing specifically Hungarian relations reflect that the regions of Hungary show a well-defined territorial pattern according to the direction and magnitude of inequality (Kiss and Németh, 2006). Most analyses also drew the attention of the specialists to the threefold division of the spatial structure, which permeate the capital-city-rural areas and the west-east dichotomies (Enyedi, 2000; Nemes Nagy, 1995). Also, there are examples for analyses focusing mainly on the monocentric nature of the spatial structure (Nemes Nagy and Tagai, 2009; Rechnitzer and Smahó, 2005).

Regarding the multivariate analyses, it was found that the regional inequalities were most pronounced in the capital region and in the parts of the western-eastern part of the country. In these analyses, most researchers concluded that the advantage of Central Hungary compared to the other regions is constantly increasing, and while the performance of Western and Central Transdanubia lags slightly from the average, the rest of the region is increasing in magnitude. In most of the analyses, the great development of the capital and a strong west-east opposition appeared, however in the examination of the micro-regions and then the districts, the lagging of the boundaries and the convergence of the areas close to the motorways were even more pronounced. For example, analyses using scoring and factor analysis mutually reinforce which are the dynamically developed regions of the country (usually Central Hungary, Western Transdanubia, Northern Transdanubia districts, Austrian borders), regions with balanced development (usually in the districts of Central Transdanubia) (in general, the districts of Southern Transdanubia, Northern Great Plain, Southern Great Plain and Northern Hungary).

The research, compared to analyses based on gross domestic product per capita, did not show any significant difference, a large part of Eastern Hungary and the Croatian border regions

can be classified in the stagnant and lagging categories, but the so-called “outer regions” (the north-eastern border regions) and the inner peripheries (the central areas of the Great Hungarian Plain and Transdanubia) can be distinguished as well. At sub-regional level, micro-regions with a significant city or cities showed a better or superior performance than the average, irrespective of their location within the region (Dobosi, 2003; Jakobi, 2007).

Analyses on development dynamics indicated favourable values in the capital and in the micro-regions with major settlements, although some studies have also shown that relative progress was made in the Central Transdanubian region, near Lake Balaton and the capital, compared to other regions (Bíró and Molnár, 2004). At the same time, the presence of more dominant, higher levels of development levels can be observed around the motorways and some major main roads (Bíró and Molnár, 2004; Tánczos, 2010). Analysing the historical determinants of the development spatial structure, it was found that inequalities that can sufficiently be estimated, sometimes even precisely measured in the longer term, essentially remained. Competitiveness studies in Hungary did not reveal any significant deviations compared to the spatial structure outlined above (Tóth, 2013).

All in all, the regional development surveys always claim that there is a west-east “slope” and the capital-county (rural areas) opposition, and the analyses mostly confirmed each other and demonstrated the development of Western and Northern Transdanubia, at the same time the mixed picture of the Great Plain, and the unfavourable position of South Transdanubia and Northern Hungary (Abonyiné and Komarek, 2015; Tóth, 2013).

## **2. Material and methods**

For the analysis, the statistical data of the Hungarian Central Statistical Office (KSH) were used as a data source. From the data, indicators were developed that allowed us to make time and territorial comparative analysis of Hungary's development and the presentation of the main trends of the changes that took place. The analysis focuses on the territorial development of investments, industrial production and gross domestic product (GDP) per capita.

After the regime change and later, following the accession to the European Union, there were significant regional development differences in Hungary. These changes make it necessary to carry out studies and analyses that give answers if there were positive or negative changes in the regional (county) level of development and the extent and role of which unit or units increased or decreased in recent years. To answer these assumptions, mathematical-statistical methods were used for the analysis (rank-ratio, relative rank, correlation).

The range-ratio shows the number of differences between the two extreme values of our data line.

$$K = \frac{X_{\max}}{X_{\min}}$$

The index number is usually used for data only on a ratio scale (where the minimum is not 0 and there is no difference in the sign (plus or minus) in the data).

The relative range compares the difference between the largest and smallest values in the dataset and the average of the data series, therefore it is also suitable for comparing the range of different data series. It is the most commonly used out of the indexes in this group.

$$Q = \frac{X_{\max} - X_{\min}}{\bar{X}}$$

The relative range is not sensitive to the minimum set of data, so it can be equal to zero. The relative range can also be used to compare data series with different units of measure by means of comparison to the average.

Correlation is used to examine the stochastic relationship between two quantitative criteria. The correlation coefficient ( $r$ ) is always between -1 and +1.

$$r = \frac{\sum(X - \bar{X})(Y - \bar{Y})}{\sqrt{\sum(X - \bar{X})^2 \sum(Y - \bar{Y})^2}}$$

When describing the correlation relationship, if the points are not lying along a straight line, we say that there is no correlation between the two variables ( $r = 0$ ) or there is a weak correlation between them ( $r$  is close to 0). If the points lie along a straight line, then  $r$  is close to +1 or -1, then we say that there is a close correlation between the two variables. If the points are exactly on an ascending straight, then  $r = +1$ , and if a decreasing straight is the same, then  $r = -1$ .

### 3. Results

The development of a region is significantly influenced by the volume of investments. Investment is the main source of economic growth, development, competitiveness, sectoral and territorial structure change. Due to the multiplier effect of the investment, its size, time distribution and territorial development are not indifferent. Areas that enjoy a long-term privileged position due to the long-lasting, dynamic development and expansion of investments tend to become dynamic areas, while those not receiving anything from these development resources or just to a limited extent, or perhaps less effectively, will permanently lag behind. It is also very important that

economic policy and (or) economic practice prefer the most optimistic, prospective branches of industry.

In case of investments, it can be stated that the leading role of the capital has been steadier, based on the range-ratio and the relative range. There are more significant differences between the two indicators. In case of the range ratio and the relative range, the capital Budapest had the maximum results, while the minimum was changing alternately between Budapest and Zala County ( $K_{2001} = 25.52$ ;  $K_{2016} = 17.10$ ;  $Q_{2001} = 5.80$ ;  $Q_{2016} = 5.15$ ). If we look at the volume of investments, it can be concluded that in 2001, 30% of the investments was concentrated in the capital city and in the 15-year perspective, this situation changed only slightly, as in 2016, 27% of the investments were in Budapest.

The upper extreme of the counties was reached by Pest County. The Transdanubian counties were the most prominent (e.g. Győr-Moson-Sopron, Fejér). In addition to the Transdanubian counties, significant investments took place in Borsod-Abaúj-Zemplén County during the examined period.

There was no significant change in the lower extremes group in this area. During the examined period, Nógrád County was the last one, followed by Somogy and Tolna, with Zala and Békés Counties in the end.

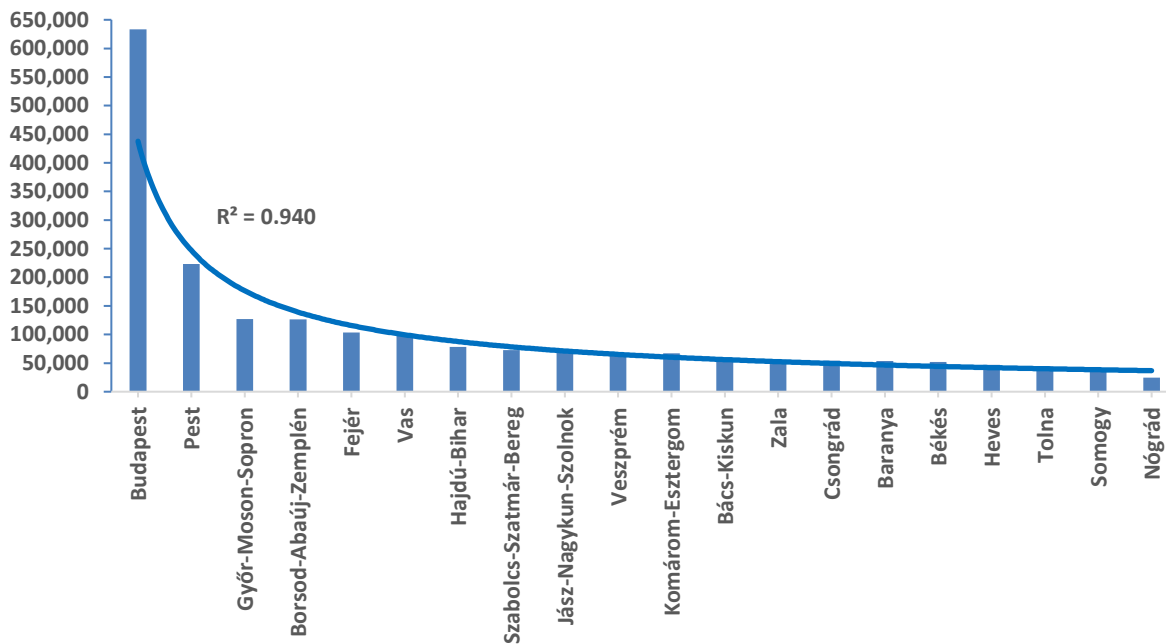
Of the six counties in the Great Plain, only Bács-Kiskun County was able to move forward. The rest of the counties were mainly characterized by stagnation after a short boost, and in some cases a decline in investment.

If the range-ratio and the relative range are examined without the capital, Budapest, regarding the 19 counties, then significant territorial differences can be observed. In this case, Pest county represented the maximum, while Nógrád and Zala County alternately had the minimum ( $K_{2001} = 8.99$ ;  $K_{2016} = 5.98$ ;  $Q_{2001} = 1.89$ ;  $Q_{2016} = 1.59$ ). In this case, there is also a significant difference between the two extreme values.

In Hungary, the most recent large-scale (primarily) productive investments (e.g. Hamburger Hungaria-Dunaújváros, Mercedes-Benz, Knorr-Bremse-Kecskemét, Audi Hungaria Motor-Győr, Linamar Hungary-Orosháza, Csaba Metál - Békéscsaba and Szeghalom) can create a new situation and have a beneficial effect on the level of development of each region (counties).

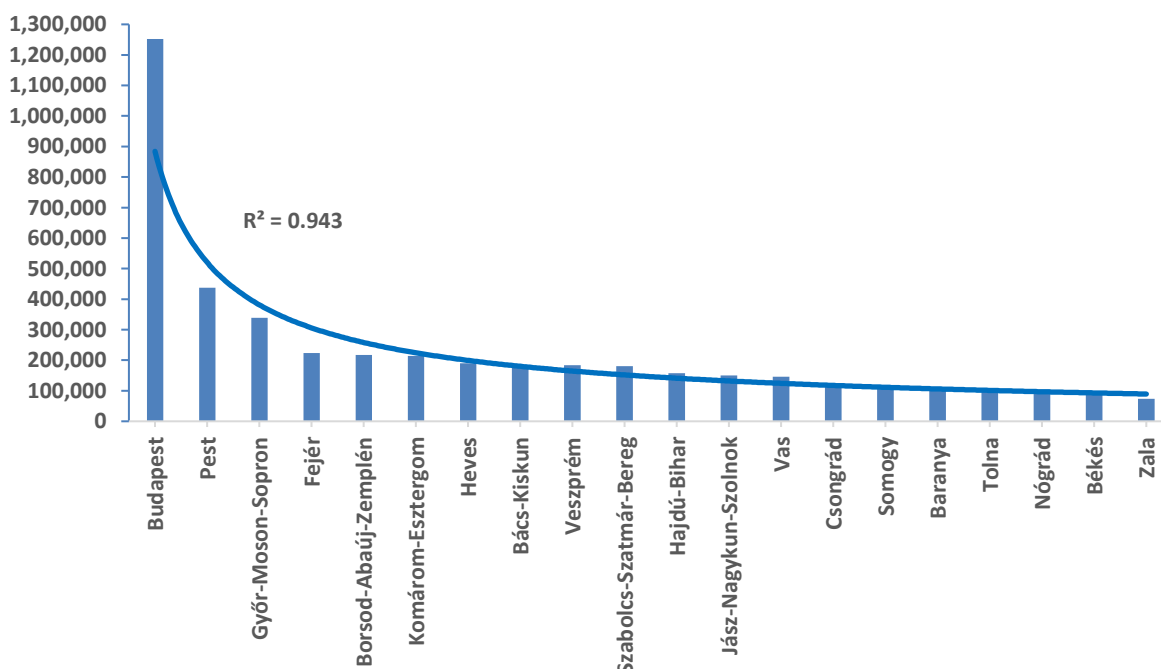
The manufacturing industry played an important part in the development of investments by sectors of the national economy. In addition to the manufacturing industry, the importance of the service sector has also gradually increased. The performance value of the investments during the period under review, based on their material-technical composition, was given by buildings and other structures, as well as by machinery, equipment and vehicles. (Figures 1 and 2)

**Figure 1.** Ranking of investment volumes by counties (million HUF) (2001)



Source: Own representation based on Hungarian Central Statistical Office database

**Figure 2.** Ranking of investment volumes by counties (million HUF) (2016)



Source: Own representation based on Hungarian Central Statistical Office database

The degree and timing of the differentiated investments by sectors show that at the beginning of the 21st century, in the field of Hungarian industry, the most dynamic and strongest investment took



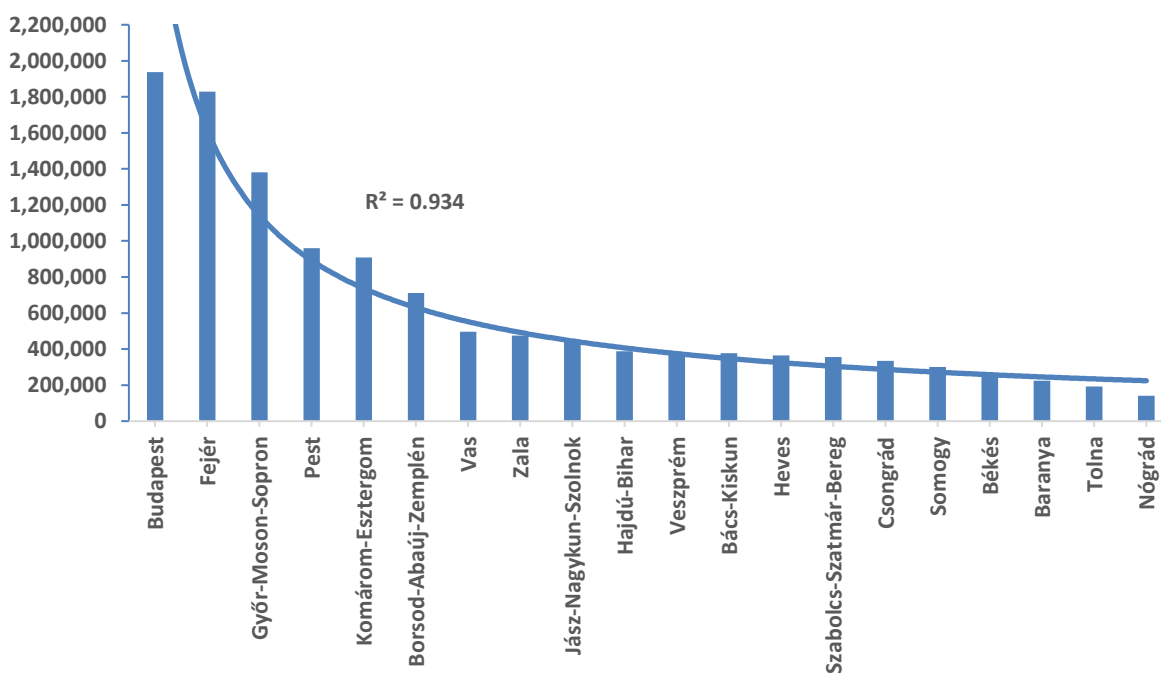
place in mechanical engineering (including primarily road vehicle manufacturing) and in the chemical industry. It is clear that both today and in perspective, it is the machinery industry and the chemical industry that are the main driving sectors. If we take into consideration ongoing or recent investments, or even the more cumulative values after the regime change, then we see the unprecedented degree of specialization in the sector. At present, transnational corporations with large foreign capital play a key role in motor vehicle industry. However, more and more Hungarian small and medium-sized enterprises are expected to grow up to expectations, and with their deliveries they will become an integral part of the dynamically growing production of motor vehicle industry.

Industry and, through that, industrial production have an impact on the development of a region. Over the past few years, the issues of regionalization of the industry have become increasingly important in the European Union and Hungary. Today, different industrial structures have emerged in some areas of Hungary, and different industries have become dominant in different regions. The geographical location and development of the industries are influenced by several socio-economic factors (historical traditions of production, ownership, labour and asset management, resources, etc.). In case of territorially differentiated industrial structures, varying profitability, human resource use, technical level, different risk factors and market opportunities must be considered in each region. The change in the regional and sectoral structure of the industry may induce a lot of positive economic processes (increasing efficiency, competitiveness, deepening cooperation), and can greatly facilitate the prosperity of the region and the entire national economy. Besides the many positive effects, it may also have negative impacts (e.g. unilateral industrial structure, deep crisis during recession, industrial depression), which might push back the dynamic development of a given area for a shorter or longer period.

In case of industrial production, it was the capital (Budapest) that had a decisive role during the examined period. The capital (Budapest) and Győr-Moson-Sopron County formed the maximum in the range ratio and the relative range, while Nógrád County had the minimum ( $K_{2001} = 13.71$ ;  $K_{2016} = 7.73$ ;  $Q_{2001} = 2.88$ ;  $Q_{2016} = 2.28$ ).

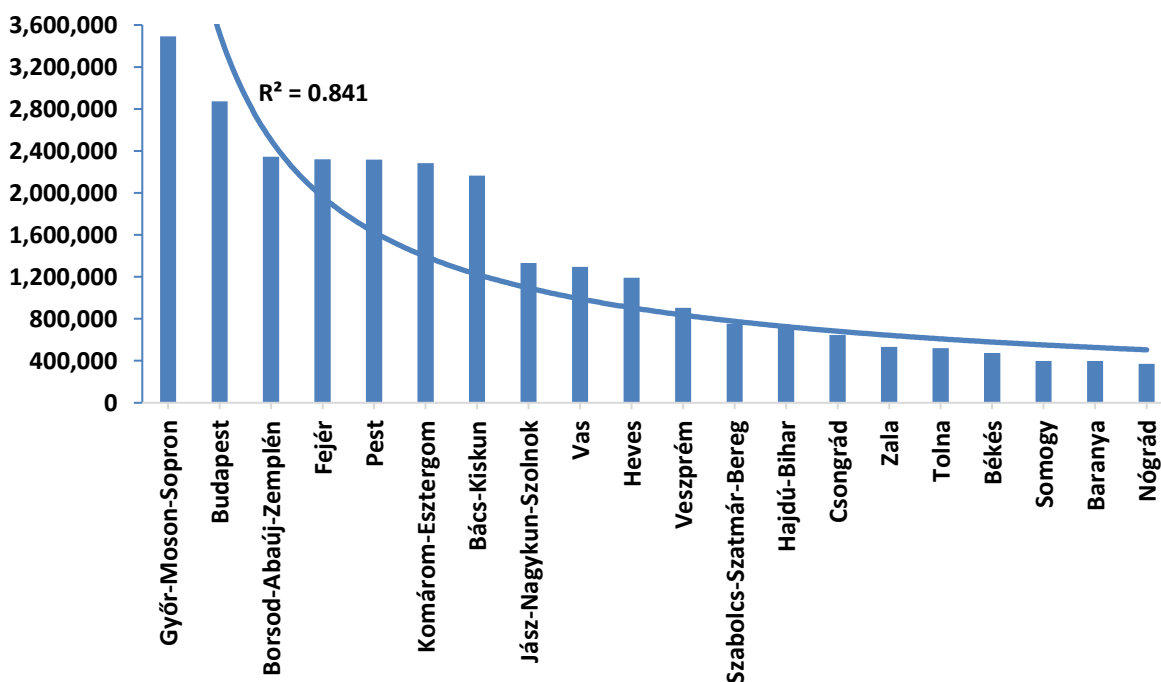
The upper extremity was represented by Győr-Moson-Sopron, Fejér and Borsod-Abaúj-Zemplén Counties together with the capital. In the lower extremities, Nógrád, Tolna, Baranya and Somogy Counties were the last ones. (Figures 3 and 4)

**Figure 3.** Ranking of industrial production volumes by counties (million HUF) (2001)



Source: Own representation based on Hungarian Central Statistical Office database

**Figure 4.** Ranking of industrial production volumes by counties (million HUF) (2016)



Source: Own representation based on Hungarian Central Statistical Office database

If we examine the range ratio and the relative range without the capital city on the 19 counties, it can be concluded that there is a significant differentiation among the counties. In this case, Fejér and Győr-Moson-Sopron counties were alternating the maximum and Nógrád county the minimum

( $K_{2001} = 12.95$ ;  $K_{2016} = 9.40$ ;  $Q_{2001} = 2.71$ ;  $Q_{2016} = 2.28$ ). Although the difference between the two extreme values shows a decreasing tendency over the past 10 years, there are still significant differences in regional (county) level regarding industrial production.

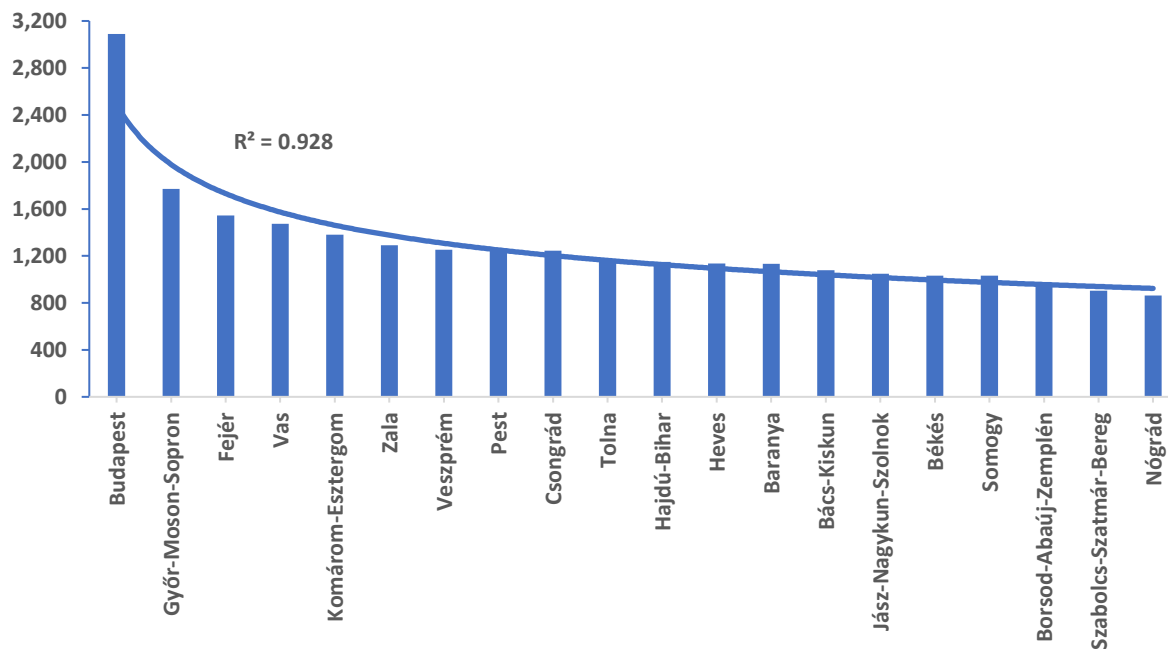
The continuous expansion of industrial production can have a positive effect on the development of a given region (county), thus spreading and having a multiplicative influence. In 2016, the metal processing industry and machinery industry accounted for 57.6% of industrial production while chemical industry had a share of 15.7% in the. These two sectors together accounted for 73.3% of industrial production in 2016, so we witnessed a very intense specialization.

Differences in territorial development can be characterized by several statistical indicators. Of these indicators, the most commonly used is the development of gross domestic product (GDP) per capita at territorial level. When analysing the volume and the specific values of gross domestic product (GDP), several critical observations arise as to its objectivity. At the same time, there are no better indicators for determining the complex development of the regions. During the examined period, the prominent role of Budapest has not only been stabilized, but also increased dynamically. The range ratio and the relative range increased, where Budapest had the maximum and Nógrád County had the minimum ( $K_{2001} = 3.58$ ;  $K_{2016} = 4.65$ ;  $Q_{2001} = 1.72$ ;  $Q_{2016} = 1.90$ ). It was not only due to the very dynamic development of the capital, but also to the slow advancement of the lagging regions.

Out of the counties, the upper extremity was formed by Győr-Moson-Sopron County. The Western and Northern Transdanubian counties (Győr-Moson-Sopron, Vas, Fejér, Komárom-Esztergom) have always been in the lead. There was no significant change in the lower extremity groups either. During the examined period, Nógrád County was always the last one. In addition to Nógrád County, Borsod-Abaúj-Zemplén, Békés and Szabolcs-Szatmár-Bereg Counties were also lagging when regarding gross domestic product (GDP) per capita. Except for Bács-Kiskun County, the other six counties on the Great Plain stagnated or slid backwards in the national field. The biggest downturn was Hajdú-Bihar County, which was in 11th place in 2001, and dropped to 14th in 2016.

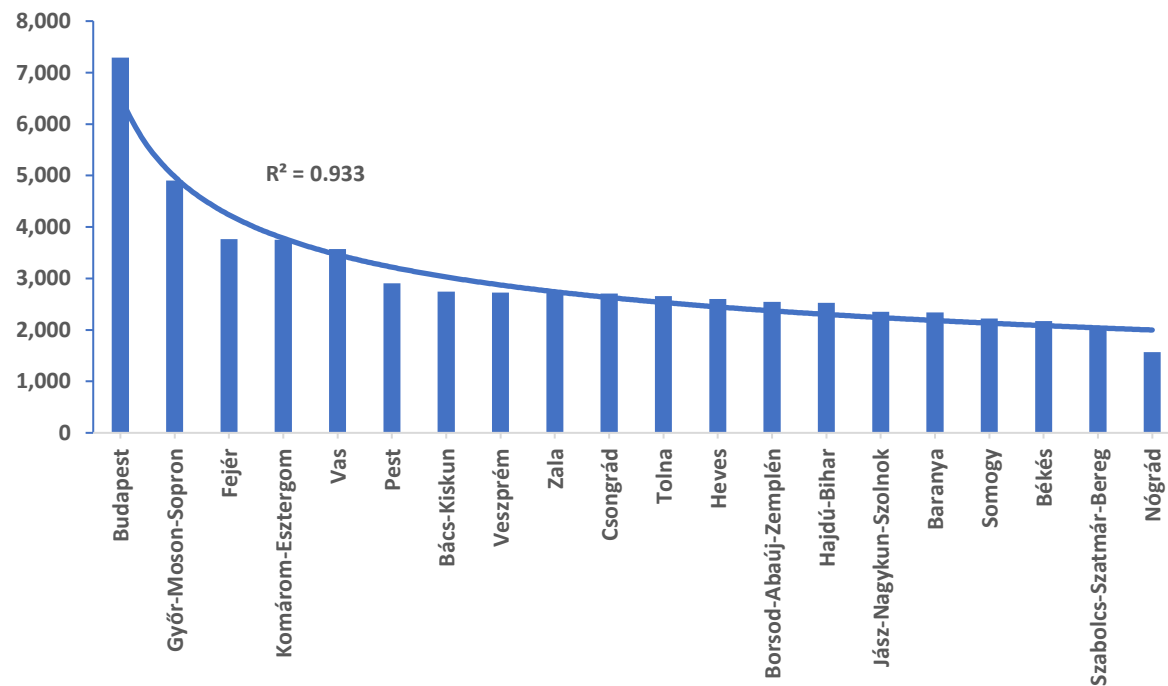
When the range ratio and the relative range are analysed for the 19 counties without Budapest, a strong differentiation can be identified. In this case Győr-Moson-Sopron County had the maximum, while Nógrád county had the minimum ( $K_{2001} = 2.05$ ;  $K_{2016} = 3.13$ ;  $Q_{2001} = 0.70$ ;  $Q_{2016} = 1.11$ ). In this case, the dynamic growth between the two extremes is also noticeable. Concerning the regional development of gross domestic product (GDP) per capita it was found that developed counties have become more advanced, while those lagging behind have dropped more and more in the examined period. (Figures 5 and 6)

**Figure 5.** Ranking of per capita gross domestic production (GDP) volumes by counties (1000 HUF) (2001)



Source: Own representation based on Hungarian Central Statistical Office database

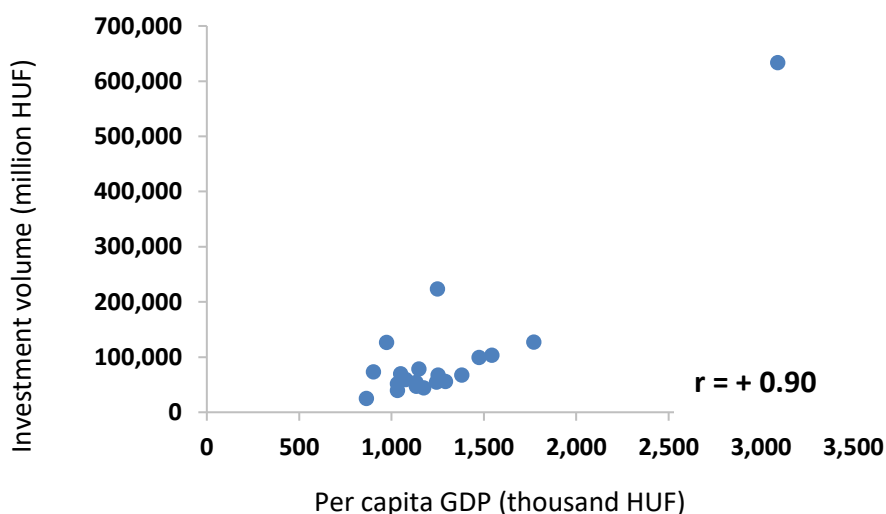
**Figure 6.** Ranking of per capita gross domestic production (GDP) volumes by counties (1000 HUF) (2016)



Source: Own representation based on Hungarian Central Statistical Office database

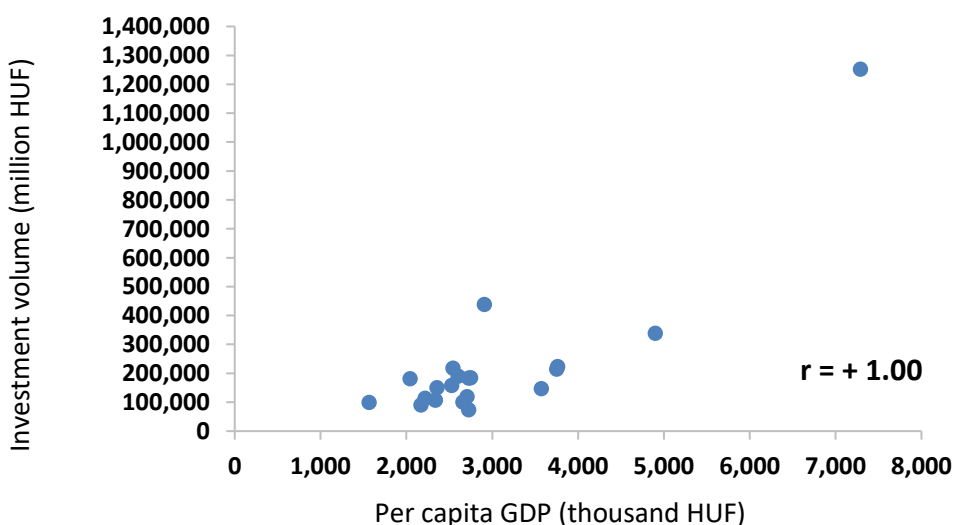
The processing industry played a decisive role in the formation of per capita gross domestic products (GDP). In addition to the manufacturing industry, the importance of the service sector has gradually increased as well. We have also examined the correlation between the gross domestic product (GDP) and the volume of investments, and as a result, one can conclude that there was a close positive correlation between the two quantitative criteria ( $r_{2001} = +0.9$ ;  $r_{2016} = +0.72$ ). Consequently, in regions (counties) where the volume of investment is high there is usually a high GDP per capita (GDP) as well. (Figures 7 and 8)

**Figure 7.** The relationship between the per capita gross domestic product (GDP) and investments by counties (2001)



Source: Own representation based on Hungarian Central Statistical Office database

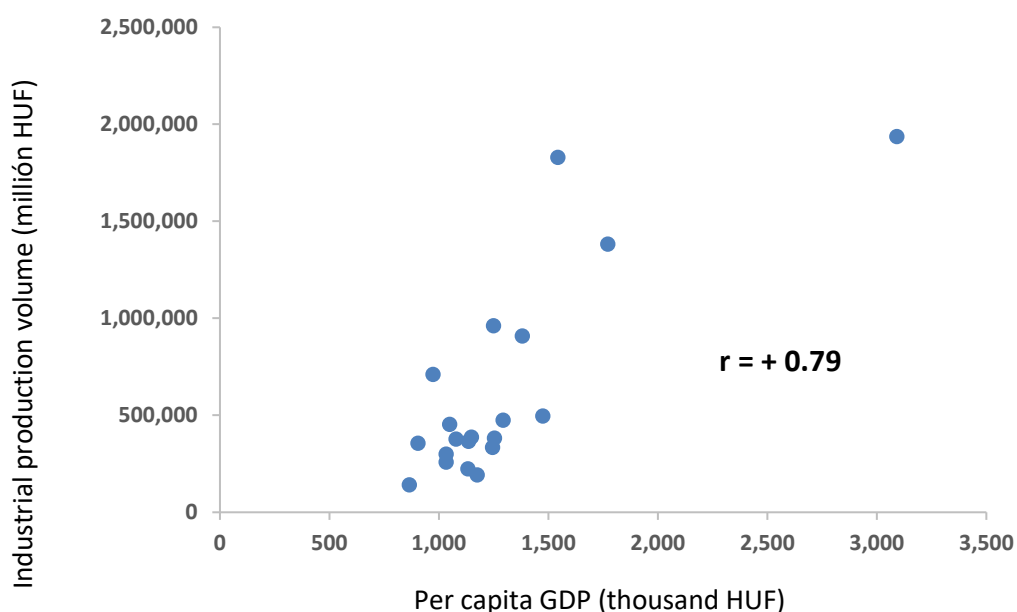
**Figure 8.** The relationship between the per capita gross domestic product (GDP) and investments by counties (2016)



Source: Own representation based on Hungarian Central Statistical Office database

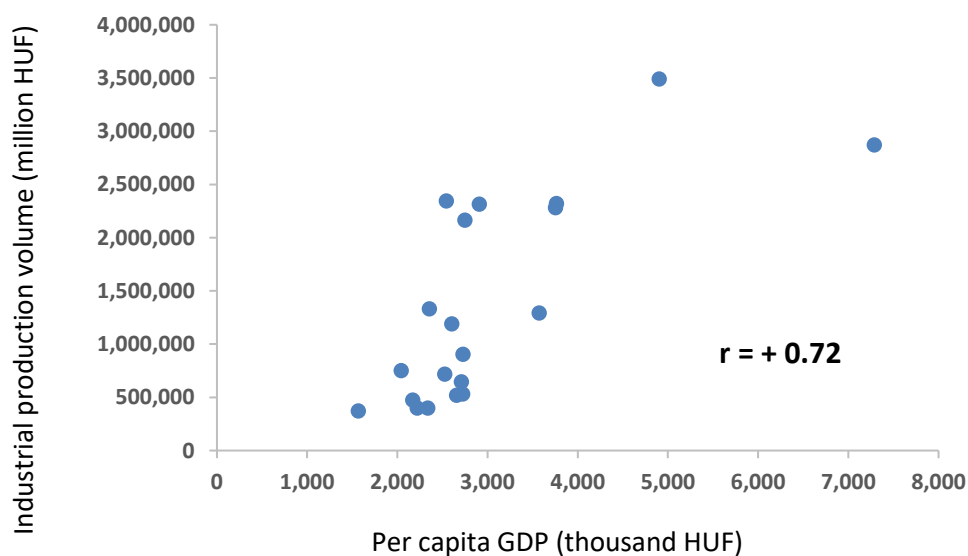
We compared the industrial production to the per capita gross domestic product (GDP) and found that there is a close positive correlation between gross domestic product (GDP) and the industrial production per capita ( $r_{2001} = +0.79$ ;  $r_{2016} = +0.72$ ). It means that those areas where there is a significant industrial production, there is usually a high gross domestic product per capita (GDP). (Figures 9 and 10)

**Figure 9.** The relationship between the per capita gross domestic product (GDP) and industrial production by counties (2001)



Source: Own representation based on Hungarian Central Statistical Office database

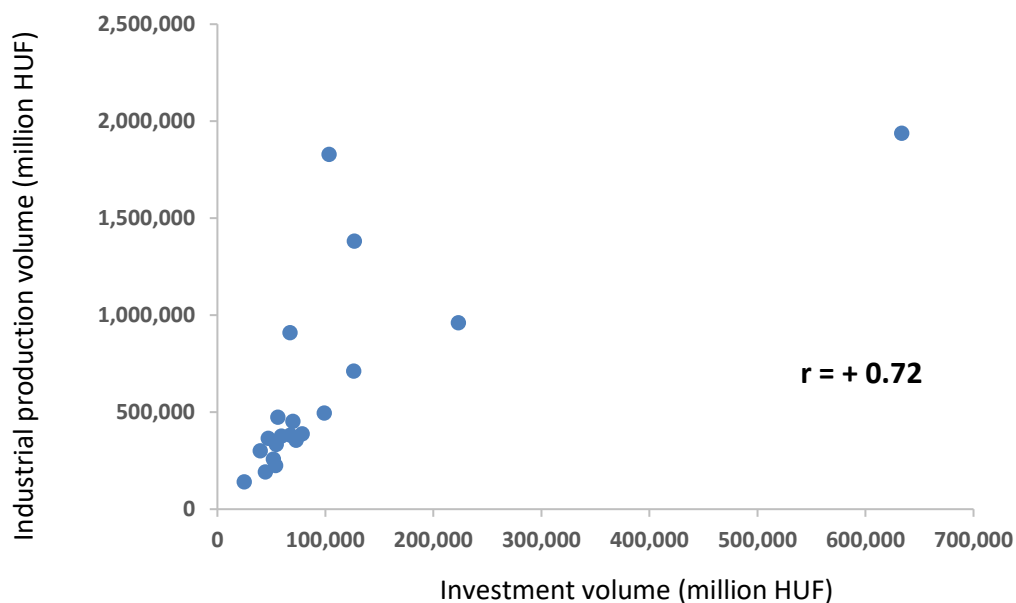
**Figure 10.** The relationship between the per capita gross domestic product (GDP) and industrial production by counties (2016)



Source: Own representation based on Hungarian Central Statistical Office database

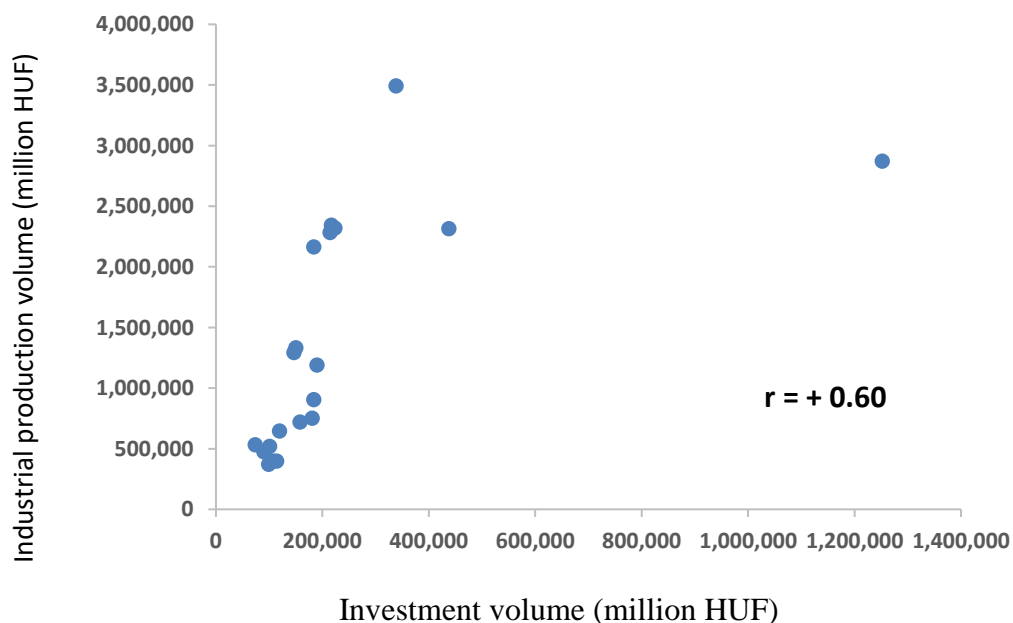
When examining the relationship between industrial production and investments, it can be concluded that there is also a close positive correlation between the two quantitative criteria ( $r_{2001} = +0.72$ ;  $r_{2016} = +0.60$ ). Therefore, the areas in which major investments (particularly industrial) are realized, there is a higher volume of industrial production. (Figures 11 and 12)

**Figure 11.** The relationship between investments and industrial production by counties (2001)



Source: Own representation based on Hungarian Central Statistical Office database

**Figure 12.** The relationship between investments and industrial production by counties (2016)



Source: Own representation based on Hungarian Central Statistical Office database

#### **4. Conclusions**

Over the past 15 years, development disparities became permanent in case of investments, industrial production and per capita gross domestic product (GDP) at county level in Hungary. Based on the analysis, it can be concluded that the dominant position of the capital and primarily the West and Central Transdanubian counties remained. By contrast, most of the counties in Northern Hungary and the Great Plain have suffered from backlogs and disadvantages. The examined criteria play an important role in determining the territorial development, affecting each other. In regions where there is significant investment, industrial production is higher, there is usually higher GDP per capita, resulting in dynamic development in these areas.

It can be concluded that investments have a very significant impact in the present and future development of an area. Therefore, when the regions strive for equalization in their territorial development level, attention must be paid particularly to capital investments. The underdeveloped regions possibly can catch up only by receiving more intensive development resources. If the investment is territorially uneven, the regions that have a long-term privileged position as a result of the long-term expansion of investment, generally become a dynamic area, while those having fewer or less efficient sources are permanently lagging. Krugman (2003) says that there is tugging between the centripetal and centrifugal forces of the spatial concentration of the economy and its spread. There are winners and losers of this development in opposite directions. Winners of the coming years include the counties of Transdanubia (e.g. Komárom-Esztergom-Tatabánya-Doosan, Zala-Zalaegerszeg-Flex), and Bács-Kiskun and Hajdú-Bihar Counties from the Great Plain counties. The former is Mercedes (Kecskemét) and the latter thanks to the billions of HUF investment of BMW and Continental (Debrecen). The completed, new investments and those that will be realised soon can help to advance the dynamic development of the given areas.

The rationalization of the development and structure of industrial production is an important issue nowadays. The economic "openness" of Hungary and thus the changes of international division of labour have had a great impact on the development of certain areas (counties) and in many cases the direction of the regional specialization of the industry. For decades, the division of labour between the regions was characterized by the fact that developed areas generally sold various manufactured products to less developed areas, in return for agricultural products mainly. In the years following the regime change and even today, in different regions (regions, counties) different industries have come to the forefront and have become decisive. That is why new division of labour between the developed and the less developed regions is beginning to emerge. Due to global economic trends, the nature of territorial division of labour and new challenges in this field will also affect the development of territorial specialization. The large-scale production investments



realized in the Hungarian industry recently and those that will be realised in the future will create a new situation in the regional specialization and sectoral concentration of the industry. Both the territorial and structural transformation of industry is a result of continuous development. Therefore, the structural and territorial changes of the current industry (depending on the current market conditions) are expected to continue in the future.

Overall, the territorial differentiation sometimes increased instead of being equalised, even in the period under consideration. The development resources, which have been used in recent years, especially since the accession to the EU, would have allowed some territorial convergence. With more rational use of our development resources, more innovative and more competitive production sectors could have prevented the regions to lag, which could have reduced the gap between developed and underdeveloped regions. By contrast, developed areas are becoming more and more developed, while the underdeveloped areas although to a lesser extent, unfortunately continue to lag.

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