

SPATIAL DIFFERENTIATION OF FOREIGN DIRECT INVESTMENTS AND ITS IMPACT ON GROSS DOMESTIC PRODUCT (GDP) PER CAPITA IN HUNGARY

Levente KOMAREK

***Abstract:** In Hungary, foreign direct investments have played a significant role in the structural reconstruction and modernization of the transforming economy, thus contributing to economic development. In order to determine the economic development of a given country and region, we need to know its main economic indicators. These data provide a realistic picture of the level of development of each country and its importance and role in the economy. Hungary is an open, capital-deprived small economy, which is why foreign capital investments have always played a decisive role for it. In addition to capital, of course, in recent decades, we have gained access to advanced techniques, new markets have opened up, and the interest of world economies has in other ways stimulated the economic development of the country and certain regions.*

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

***Keywords:** foreign capital, capital investment, gross domestic product (GDP) per capita, spatial differentiation, Hungary*

INTRODUCTION

In the years prior to the regime change, the Hungarian economy was hit by serious imbalances and immense debt burdens. The fixed-price commodity trade, built on the socialist economy for four decades, suddenly declined due to the disintegration of the COMECON-market, and inflation has broken loose. Capital investments through privatization laid the

foundations for growth (Ligeti 2010). Foreign direct investments have played a decisive role in the successful restructuring of the Hungarian economy since 1990. In Hungary these foreign capital investments appeared in the 1990s, and since then the value of their portfolio has steadily increased. Thanks to the inflow of foreign direct investments, productivity has also started to increase, contributing to the modernization of technology, the creation of new export capacities, the creation of new jobs and the improvement of the external financial balance of the country (Fábián 2012).

Today, there is a constant need for capital in order to develop, and to create and increase competitiveness. This capital can come from internal and external sources. However, since our internal resources have always been scarce and still are, we must also rely on external sources. External sources may be foreign loans, non-repayable grants, grants and foreign working capital. Recourse to the latter has been important in many stages of our economic development and is still essential today (Abonyiné 2006, Abonyiné et al. 2005).

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 (Abonyiné et al. 2007, Dobosi 2003).

Due to the appreciation of territorial analyses, the methods of measuring development have been changing 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 made to reduce territorial differentiation (Abonyiné et al. 2009, 2010, Tóth 2013).

The gross domestic product (GDP) is often used to analyse territorial development (Bruckner et al. 1999, Farkasházi 1998, Kovács 2002, Nemes Nagy 1995 2009). 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 et al. 2003, Cserhádi et al. 2005, Kása 2006).

To illustrate the regional differences, Hungarian experts often use the development of foreign direct 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 et al. 2011, Komarek 2011, 2012a, 2012b, 2013a, 2013b, 2013c, 2017).

All in all, the regional development surveys always claim that there is a west-east “slope” and the capital-country (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 et al. 2015, Tóth 2013).

MATERIAL AND METHOD

For the analysis, I used the statistical data available by the Central Statistical Office (KSH) as a data source. From the data, I developed indicators 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 spatial differentiation of foreign direct investments and the 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, I applied mathematical-statistical methods (rank-ratio, relative rank, correlation) for my analysis.

RESULTS AND DISCUSSION

The development of a region is significantly influenced by the volume of foreign direct investments. Foreign direct investment is the main source of economic growth, development, competitiveness, sectoral and territorial structure change. Due to the multiplier effect of the foreign direct 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.

In case of foreign direct 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 Tolna and Somogy County ($K_{2008} = 448.1$; $K_{2017} = 138.3$; $Q_{2008} = 11.9$; $Q_{2017} = 9.6$). If we look at the volume of foreign direct investments, it can be concluded that in 2008, 59.0% of the investments was concentrated in the capital city and in the 9-year perspective, this situation changed only slightly, as in 2017, 47.5% of the investments were in Budapest (Figure 1, Figure 2).

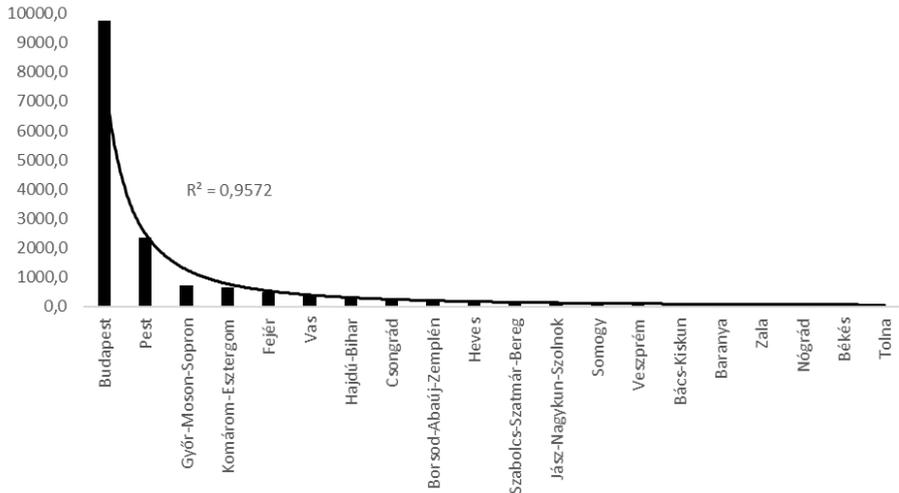


Figure 1. Regional rank of foreign direct investments (billion HUF) (2008)
 Source: Author's calculations, based on KSH data

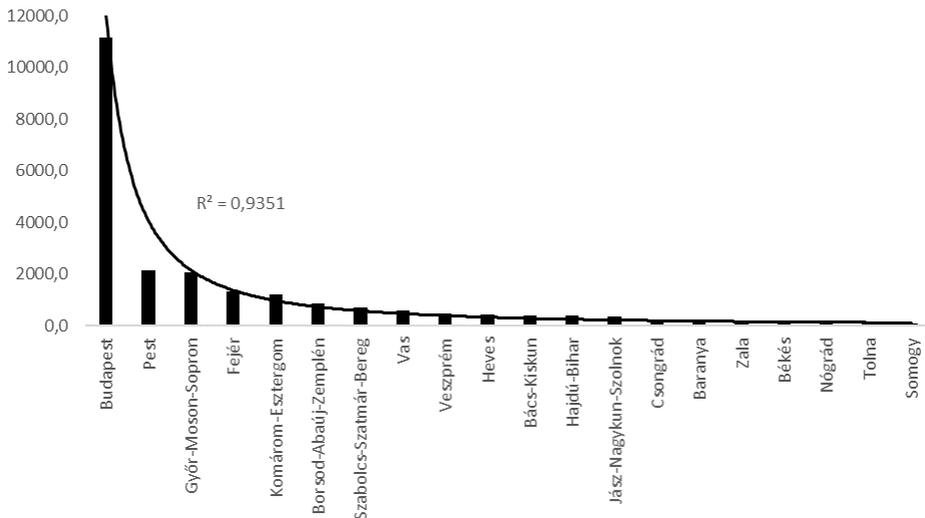


Figure 2. Regional rank of foreign direct investments (billion HUF) (2017)
 Source: Author's calculations, based on KSH data

The upper extreme of the counties was reached by Pest County. The Transdanubian counties were the most prominent (e.g. Győr-Moson-Sopron, Fejér, Komárom-Esztergom). 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, Tolna and Somogy Counties was the last one, followed by Békés and Nógrád, 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 foreign direct 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 Tolna and Somogy Counties alternately had the minimum ($K_{2008} = 108.3$; $K_{2017} = 26.6$; $Q_{2008} = 2.9$; $Q_{2017} = 1.8$). In this case, there is also a significant difference between the two extreme values.

The most important domestic foreign direct investment countries are Germany, the Netherlands and Austria. Today, more than 50% of foreign direct investments (FDI) comes from these three countries, and almost 70% from all EU countries. Foreign direct investments in Hungary appears in the manufacturing industry, within that the automotive, electrical, chemical and pharmaceutical industries. Major investors include Audi Hungária, Bosch, Siemens and Knorr-Bremse.

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 increased, and the relative range is decreased, where Budapest had the maximum and Nógrád County had the minimum ($K_{2008} = 4.8$; $K_{2017} = 4.8$; $Q_{2008} = 2.1$; $Q_{2017} = 2.0$) (Figure 3, Figure 4).

Out of the counties, the upper extremity was formed by Győr-Moson-Sopron County. The Western and Northern Transdanubian counties

(Győr-Moson-Sopron, 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, Szabolcs-Szatmár-Bereg, Békés and Somogy 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 (e. g. Békés and Jász-Nagykun-Szolnok Counties) or slid backwards (e. g. Hajdú-Bihar and Csongrád Counties) in the national field. The biggest downturn was Hajdú-Bihar County, which was in 11th place in 2008, and dropped to 13th in 2017.

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 ($K_{2008} = 2.4$; $K_{2017} = 3.0$; $Q_{2008} = 0.8$; $Q_{2017} = 1.0$).

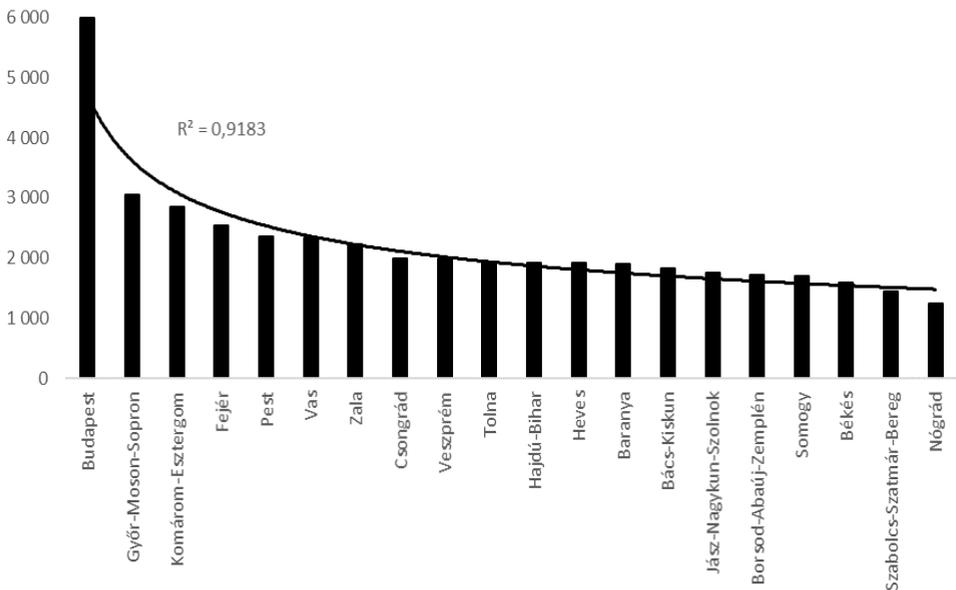


Figure 3. Regional rank of domestic GDP per capita (thousand HUF) (2008)

Source: Author's calculations, based on KSH data

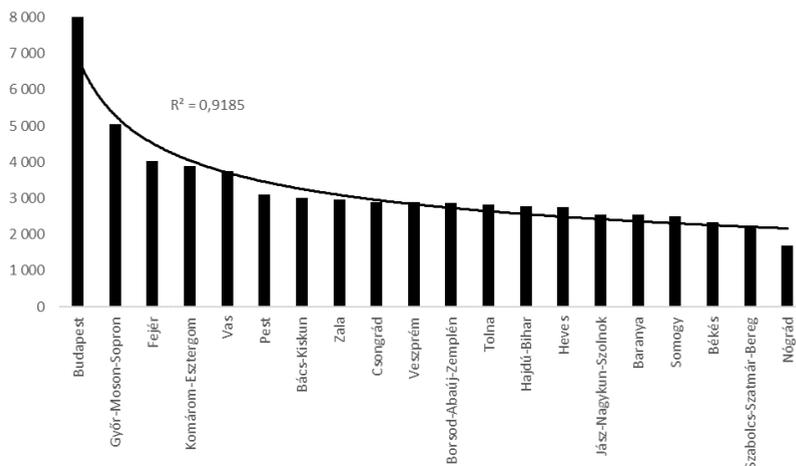


Figure 4. Regional rank of domestic GDP per capita (thousand HUF) (2017)
 Source: Author's calculations, based on KSH data

I also examined the correlation between the gross domestic product (GDP) per capita and the volume of foreign direct investments, and as a result, I can conclude that there was a close positive correlation between the two quantitative criteria ($r_{2008} = +0.93$; $r_{2017} = +0.91$) (Figure 5, Figure 6). Consequently, in regions (counties) where the volume of foreign direct investment is high there is usually a high gross domestic product (GDP) as well.

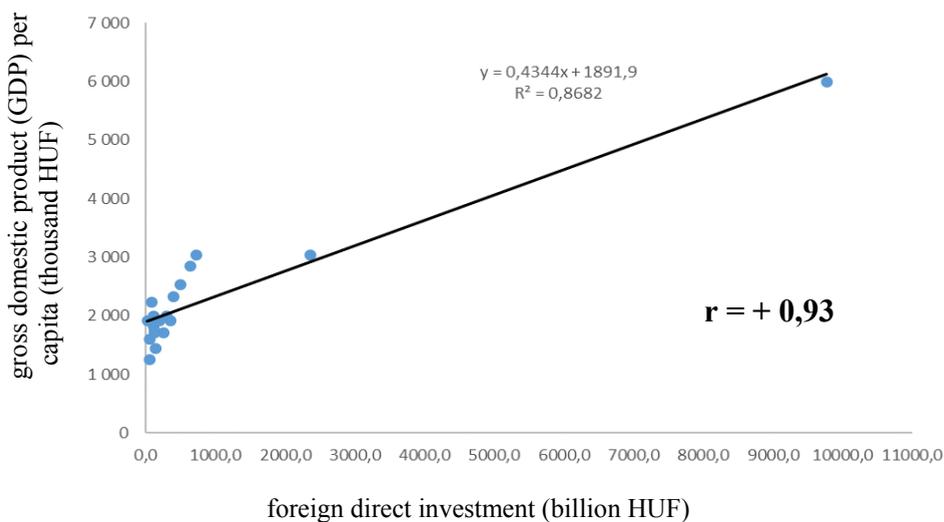


Figure 5. Regional relationship between domestic GDP per capita and foreign direct investments (2008)
 Source: Author's calculations, based on KSH data

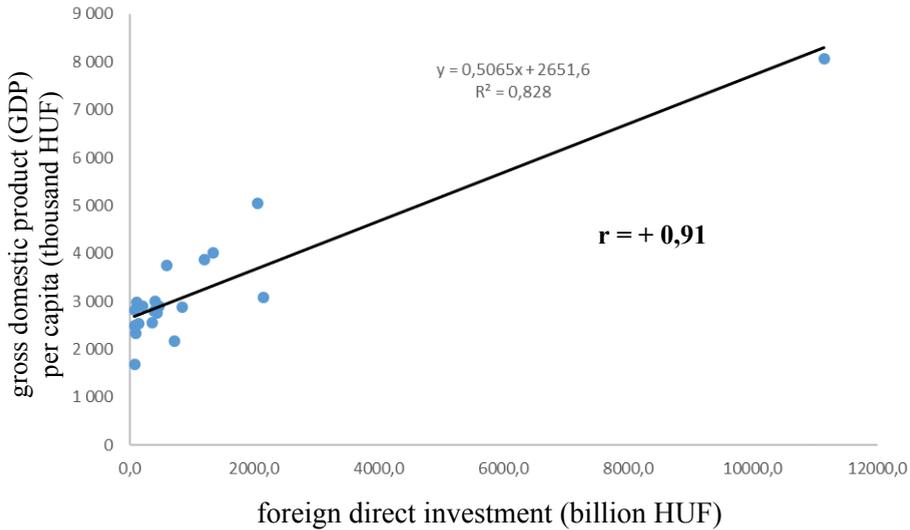


Figure 6. Regional relationship between domestic GDP per capita and foreign direct investments (2017)

Source: Author's calculations, based on KSH data

CONCLUSIONS

Based on the analysis, it can be concluded that the dominant position of the capital and primarily the West and Central Transdanubian counties remained.

Table 1 shows the development of foreign direct investments by region and the rate of change over time. According to the data, despite the decline, the role of the capital is still decisive in this area. With the exception of South-Transdanubia, there is an increase in the Transdanubian regions. The situation is similar for the regions east of the Danube. It is true that the level of foreign direct investments is much more modest here, and these investments are heavily concentrated in larger settlements. In addition, the volume of foreign direct investments in Hungary increased by 41.8% from 2008 to 2017.

Territorial unit	2008	2017	Rate of change (%)
Budapest	59.0	47.5	-11.5
Pest	12.7	9.1	-3.6
Middle-Transdanubia	7.6	12.9	+5.3
West-Transdanubia	7.3	11.8	+4.5
South-Transdanubia	1.4	1.3	-0.1
North-Hungary	3.1	5.8	+2.1
North-Great Plain	3.7	6.3	+2.6
South-Great Plain	2.7	3.0	+0.3

Table 1. Foreign direct investments by regions (%)
Source: Author's calculations, based on KSH data

It can be concluded that foreign direct 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 foreign direct investments are 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. 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 foreign direct investments of BMW and Continental (Debrecen). The completed, new foreign direct investments and those that will be realised soon can help to advance the dynamic development of the given areas.

In regions where there is significant investment higher, there is usually higher gross domestic product (GDP) per capita, resulting in dynamic development in these areas. The growth of investing willingness and its efficiency can further increase the growth of gross domestic product (GDP) per capita in the counties, thus contributing to the development of the regions.

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NOTES ON THE AUTHORS

LEVENTE KOMAREK (Dr. habil. PhD. PhD) associate professor, University of Szeged, Faculty of Agriculture, Institute of Economics and Rural Development, Andrassy street 15. 6800 Hódmezővásárhely, Hungary; e-mail: komarek@mgk.u-szeged.hu