

# Post-crisis Economic Environment of Two Central and Eastern European Regional Centres: A Comparative Approach

Zsuzsanna Zsibók  <https://orcid.org/0000-0001-9383-1134>

Research fellow, Centre for Economic and Regional Studies, Institute for Regional Studies, Hungary  
e-mail: [zsibok.zsuzsanna@krtk.hu](mailto:zsibok.zsuzsanna@krtk.hu)

Ildikó Egyed  <https://orcid.org/0000-0002-8711-6270>

Research fellow, Centre for Economic and Regional Studies, Institute for Regional Studies, Hungary  
e-mail: [egyed.ildiko@krtk.hu](mailto:egyed.ildiko@krtk.hu)

## Abstract

Our research studies the economic background of recovery and catching-up after the global financial and economic crisis, comparing the case study areas of Cluj-Napoca in Romania and Pécs in Hungary. We use explorative statistical data analysis to describe the post-crisis regional economic environment in the context of the differential outcomes of the high-pressure economy in these two countries. Then, we analyse the evolution of the per capita gross domestic product in a decomposed form which provides insights into the main challenges of regional development in the two regional centres. The results show that long-run economic challenges must be handled with an efficiency-oriented regional policy that relies upon capital and knowledge-intensive growth.

**Keywords:** regional development, economic growth, Hungary, Romania, comparative analysis

**JEL:** O47, P25, R12



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## Introduction

It is commonly accepted in the literature that cities are the engines of economic development due to their important role as centres of population, economic activity and employment; their advantage lies in innovation, specialisation and better access to local and global markets (European Commission 2016, p. 11). Central and Eastern European (CEE) countries are characterised by the dominance of capital cities, while the gap between the capitals and the second-tier cities is large and growing, especially in terms of an EU-wide comparison (ESPON 2013, pp. 21–23; Rácz 2019, pp. 94–96; Szakálné Kanó and Lengyel 2021, pp. 833–837). Generally, second-tier cities make a significant contribution to the national economy (Camagni, Capello, and Caragliu 2015, p. 1070). However, in many CEE countries, secondary cities are stagnating or even shrinking in population and economic performance (Cardoso and Meijers 2016, pp. 1011–1012; Hajdú, Horeczki, and Rácz 2017, pp. 124–130). These cities can usually be found in left-behind places which lack economic dynamism and are unable to reap the benefits of globalisation. These places are mainly de-industrialised and rural regions which were not able to renew their capacities after the economic crises such as the transition crisis and the global financial and economic crisis (Lux 2021, pp. 2–3).

Although the post-transition era brought several novel trends in the development of urban networks of the CEE countries, there are signs of a large degree of path-dependence in it, especially regarding the spatial distribution of capital investments and its multifaceted corollaries. As a result, the dominance of capital cities in the CEE macro-region increased, while non-capital regions are not able to improve their development ranking (Hajdú, Horeczki, and Rácz 2017, pp. 130–137). This means that local economic development is both regionally and historically embedded (Lux 2017, pp. 15–17).

This research is part of a wider project that focuses on analysing local resources and circumstances, as the basis of place-based local development concepts in the case study areas of Cluj-Napoca, in Romania, and Pécs, in Hungary, in a comparative way. The article aims to draw lessons from a comparative analysis of the post-crisis economic environment in these two CEE regional centres. We intend to shed light on the similarities and differences in their economic context based on selected indicators. The analysis of regional differences concerning labour productivity is an important, though somewhat neglected topic in the regional development literature in CEE. The novelty of our article lies in the fact that we examine the differential impact of the post-crisis growth cycle on two selected secondary cities and their hinterland, focusing on labour productivity and employment.

Initially, we can point out that Cluj and Pécs are both located in ‘hollowing-out’ regions, as described by Lux (2017, p. 23). That is, they are considered nationally important development poles with several competitive sectors, but they are economically isolated from

their underdeveloped environment and are remote from the capital cities and other economic hubs, too. Therefore, synergies with their wider hinterland remain unrealised, and their international embeddedness is weaker.

The remainder of this article is organised as follows: the next section introduces the general post-crisis economic environment in Hungary and Romania. The focus then turns to the sub-national level, followed by a description of the methods and data used. The third section presents the results of our empirical analysis, while the last section provides concluding remarks.

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## Post-crisis recovery in the high-pressure economy in Hungary and Romania in the 2010s

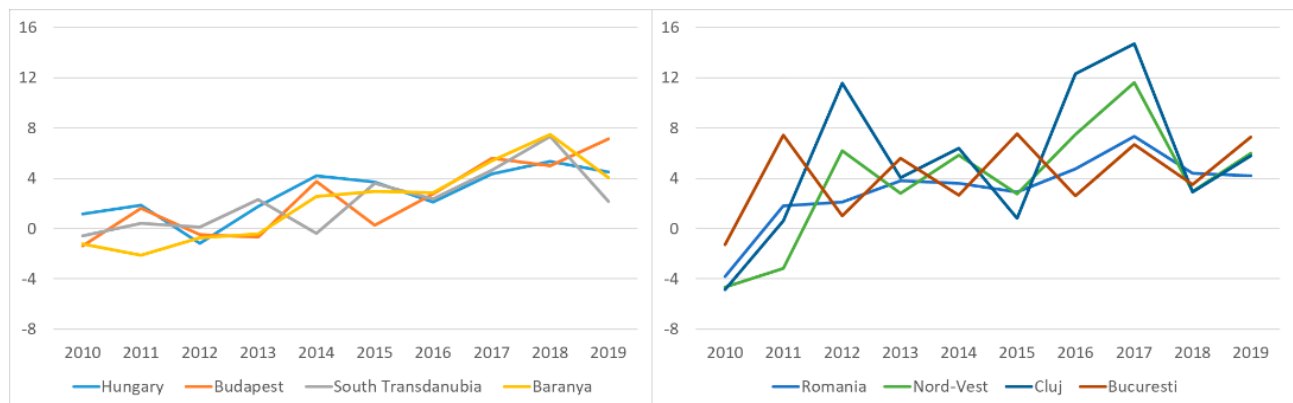
After the global financial and economic crisis, CEE countries underwent remarkable economic development. This was because economic policies were positioned towards sustaining a ‘high-pressure economy’ to address the challenges of the post-crisis recovery, most notably, the productivity slowdown (Callaghan 2021, p. 1). This concept was first used by Okun (1973, p. 207) and then adapted by Ball (2009, pp. 25–26) in the context of the post-crisis economic policy recommendations (National Bank of Hungary 2016, p. 16). Counter-cyclical economic policy measures were proposed to drive the economy back to the potential output level. However, these measures were continued later on, and became pro-cyclical, thereby sustaining a high-pressure economy during the late 2010s.

The main features of the high-pressure economy in Hungary and Romania were mostly similar. The concept itself means that the economy grows beyond the potential level because economic policy keeps strong pressure on the demand side of the economy. The international and domestic monetary environment was supportive through near-zero nominal (and negative real) interest rates and quantitative easing measures. This was combined with an expanded fiscal margin due to the low government budget deficit and low or declining government debt. After the first few years of the post-crisis recovery, despite the increasing labour market participation, labour shortage became an increasing challenge, and domestic policies were not prepared to handle this in the short run. With gradually enhancing economic dynamism, unemployment shrank and the employment rate significantly increased.

Nevertheless, the labour market became tighter as the share of the working-age population started to decline as a result of ageing and outmigration (Sucháček and Pytlíková 2017, pp. 211–214). Labour shortage and unemployment coexisted due to skill mismatches, which adversely affected labour productivity. This process put a strong upward pressure on wages, which facilitated a demand-side pressure on the economy (National Bank of Hungary 2016, p. 16). During this period, the influx of investments was intensive, thanks to EU programmes and the partly government-supported foreign direct in-

vestments. However, the investment rate was not able to reach the pre-crisis level in Romania, and it reached that level only by 2018 in Hungary.

The distribution of the benefits of this upsurge in the second half of the 2010s was uneven in space (Figure 1) and across the different groups of society. Generally, those areas that were able to increase their performance more were already better off (with the exception of the capital city of Budapest), while the lagging regions were not able to proportionately converge to the national average.



**Figure 1.** GDP growth (at constant prices computed in national currency) in selected territorial units in Hungary and Romania, %

Source: own elaboration based on Eurostat (2022), *Gross domestic product...* and AMECO (n.d.).

The long-term economic performance of the countries and regions is largely determined by their economic resilience, the extent to which they can resist shocks and then recover afterwards. In many cases, economically stronger areas may be affected more severely in the initial phase of a recession, as was the case immediately after the 2008/2009 crisis. However, their recovery can also be stronger since these areas have a better capacity to revive and renew their productive capacities.

In contrast, more backward regions that have not experienced steep economic downturns have undergone hysteretic downward shifts in their post-recession economic growth (see Gardiner, Lewney, and Martin 2021, p. 165). Here, we evaluate resilience with the help of GDP data measured at constant prices and examine how fast the regions were able to reach the 2008 level again.

Hungary, as a whole, was able to restore its pre-crisis level of GDP in 2014, measured at constant 2015 prices. However, 11 out of the 20 NUTS3 regions (including the capital city of Budapest) reached it at a later stage. Baranya county was one of those counties that restored their pre-crisis GDP level the most slowly, only in 2017. Similarly to Hungary, Romania reached its 2008 GDP volume in 2014. But at the sub-national level, only around a third of the NUTS3 regions had recovered by that year, while most counties recovered only after 2015. The capital city, Bucharest (Bucuresti), bounced back to the 2008 GDP level in 2013, while the recovery

of Cluj was even faster, having already been achieved by 2012. Figure 1 above indicates that the high-pressure economy started after the early years of the previous decade in Romania, but it strengthened only in the last few years of the 2010s in Hungary.

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## Second-tier cities after the global financial and economic crisis in Hungary and Romania

Although the 2008/2009 global financial and economic crisis resulted in a sudden drop in the economic performance of both Hungary and Romania, catching up to the EU average continued in the 2010s (obviously because roughly all areas were hit by the crisis to some extent). The first part of the economic recovery was characterised by a slower convergence, which gradually strengthened by the end of the decade. In terms of per capita GDP at purchasing power standard, Hungary developed from 66% in 2010 to 73% in 2019 relative to the EU27 average, while the respective change was even greater in Romania, from 52% to 69% (Table 1). Generally, all areas at the sub-national level were able to benefit from the high-pressure economy to a greater or lesser extent during the last decade. At the same time, regional inequalities are persistent in both countries, and there are hardly any signs that second-tier cities are able to break out from path dependency (ESPON 2013, pp. 63–64; Benedek and Lembcke 2017, pp. 122–123).

Hungary has five major second-tier cities outside the capital: Debrecen, Szeged, Miskolc, Pécs and Győr, and three other cities which are above or close to a population of 100,000 (Nyíregyháza, Kecskemét and Székesfehérvár). Romania has seven major growth pole cities: Brasov, Cluj-Napoca, Constanta, Craiova, Iasi, Ploiesti and Timisoara (Benedek 2016, p. 287), and a dozen other cities with more than 100,000 inhabitants.

The city of Pécs ranks fifth among the Hungarian cities in terms of population. However, it is located in a relatively underdeveloped region: both Baranya county and the whole South Transdanubia NUTS2 region can be described as peripheral (Berkes 2020, pp. 69–70; Egyed and Rácz 2020, p. 120), ranking permanently among the 20 poorest NUTS2 regions of the EU in terms of GDP per inhabitant. Baranya and Cluj counties have similar urbanisation rates (65%), and their respective NUTS2 regions are classified by the EU Regional Innovation Scoreboard as emergent innovators (similarly to other NUTS2 regions in the two countries, apart from Budapest, the only moderate innovator). Cluj county, as the second-largest economic centre in Romania behind the capital region, is more developed than the national average, while the other counties in the Nord-Vest NUTS2 region are underdeveloped. The economic performance of Cluj county ranks highest among the Hungarian and Romanian NUTS3 regions outside the capital cities; at the same time, Baranya county reaches only a middle position (it ranks 13<sup>th</sup> out of the 19 non-capital regions). Generally, while the economic convergence of Hungary

somewhat decelerated after the global financial crisis, Romania was able to achieve a stable rate of convergence towards the EU average, which was also reflected by the performance at the sub-national level.

**Table 1.** GDP per inhabitant (in PPS, purchasing power standards) as a percentage of the EU27 average in selected spatial units in Hungary and Romania, %

Spatial level	Spatial unit	2010	2019
national	Hungary	66	73
NUTS3	Budapest	145	151
NUTS2	South Transdanubia	45	50
NUTS3	Baranya	44	49
national	Romania	52	69
NUTS3	Bucuresti	122	182
NUTS2	Nord-Vest	44	64
NUTS3	Cluj	61	95

Source: own elaboration based on Eurostat (2022), *Gross domestic product...*

**Table 2.** Selected economic and demographic indicators at different spatial levels in Hungary and Romania, 2019

Spatial level	Spatial unit	GDP (million PPS)	Population	Population aged 15–64	Economically active population (15–64)
<b>Hungary</b>					
national	Hungary	222,784	9,771,140	6,327,100	4,594,700
<b>Percentage shares</b>					
NUTS2	Budapest	37.19	17.92	17.69	18.49
NUTS2	South Transdanubia	6.12	8.98	8.88	8.4
NUTS3	Baranya	2.49	3.68	–	–
<b>Romania</b>					
national	Romania	419,962	19,375,840	12,930,400	8,760,700
<b>Percentage shares</b>					
NUTS2	Bucuresti-Ilfov	27.66	11.97	12.46	13.47
NUTS2	Nord-Vest	12.25	13.16	13.34	13.45
NUTS3	Cluj	5.02	3.66	–	–

Source: own elaboration based on Eurostat (2022), *Average annual population...*; Eurostat (2022), *Economically active population by sex, age...*; Eurostat (2022), *Gross domestic product...*; Eurostat (2022), *Population by sex, age...*



The Nord-Vest NUTS2 region accounts for around 12% of the total Romanian GDP, and within this, Cluj county accounts for around 5%. Unfortunately, Pécs and Baranya county do not play a comparable role within the Hungarian economy. The South Transdanubia NUTS2 region produced around 6% of the national GDP, within which Baranya produced around 2.5% in 2019 (Table 2).

## Data and methods

This paper uses empirical analyses with the help of explorative statistical methods in a comparative manner. Using descriptive statistics, we relate the economic performance of the areas surrounding Pécs and Cluj-Napoca (measured at the NUTS3 level) with that of the wider regions (NUTS2 level) and the national performance. These statistics provide guidance when assessing the degree of the co-movement between the economic dynamics of the sub-national levels of the two city regions and the national economies.

In the second part of our paper, we propose a decomposition method common in the growth accounting literature, which investigates the change in per capita GDP and calculates the contribution of its underlying factors to the total change. In this exercise, we decompose total per capita GDP change into two components: the contribution of productivity change and the contribution of the employment rate change. Productivity is measured as GDP (computed at constant prices in PPS) divided by the number of employees<sup>1</sup>; the employment rate is calculated as the number of employees divided by the total population (Equation 1).

$$\frac{GDP}{population} = \frac{GDP}{employees} \cdot \frac{employees}{population}. \quad (1)$$

On this basis, the contribution of the underlying factors to the change in per capita GDP can be computed as described in Equation 2:

$$GDPpc_{t_1} - GDPpc_{t_0} = (Prod_{t_1} - Prod_{t_0}) \cdot Emp_{t_0} + (Emp_{t_1} - Emp_{t_0}) \cdot Prod_{t_1}, \quad (2)$$

where  $GDPpc$  indicates per capita GDP,  $Prod$  is labour productivity,  $Emp$  is employment rate, and  $t_0$  and  $t_1$  are time indices indicating the beginning and the end of the given period.

<sup>1</sup> From the Labour Force Survey of the Eurostat (lfst\_r\_lfe2emp) which is available at the NUTS2 level and shows employment in the age group 15 years or over.

Our data are collected from the Eurostat and AMECO<sup>2</sup> databases at the national, NUTS2 and NUTS3 levels and cover the period between 2010 and 2019. To ensure full comparability, this time, we omit the use of national statistical office databases. Besides focusing on GDP as the most common measure of economic performance, our study also investigates its underlying factors, including important demographic and employment indicators in regional disaggregation.

## Results

In the light of the facts presented above, we summarise the results of an empirical analysis which relies upon the decomposition of the change in per capita GDP (detailed in Table 3) to its two main underlying factors, the contribution of productivity change and the contribution of employment rate change (see Equation 2). As suggested by the second section of this paper, the previous decade can be divided into two sub-periods: the first period is characterised by slow post-crisis recovery, as the 2008/2009 crisis was a W-shaped crisis in Hungary and Romania; while the second part, and especially the last few years, were a relatively high-growth period in both countries (Figure 1). For this reason, we divide the 2010s into two equal periods and analyse the change in per capita GDP between 2010 and 2015, and then between 2015 and 2019.

**Table 3.** The dynamics of per capita GDP in selected territorial units in Hungary and Romania (million PPS, at constant 2015 prices)

	Hungary	South Transdanubia	Baranya	Romania	Nord Vest	Cluj	EU
2010	18.88	12.74	12.59	15.05	12.85	17.71	26.49
2015	19.25	12.80	12.38	15.53	13.65	19.21	27.46
2019	19.69	13.57	13.38	17.87	16.31	24.48	29.46

Source: own elaboration based on Eurostat (2022), *Gross domestic product...*

Our results show high variation between the two countries and among the different territorial levels<sup>3</sup> within them, as well as the two sub-periods of the previous decade (Figure 2). In general, Romania achieved larger per capita GDP growth in both sub-periods than Hungary at all spatial levels. The Nord Vest region seems to be a positive outlier in both periods because it developed above the national average. In the first half of the decade, employment growth had a larger role than productiv-

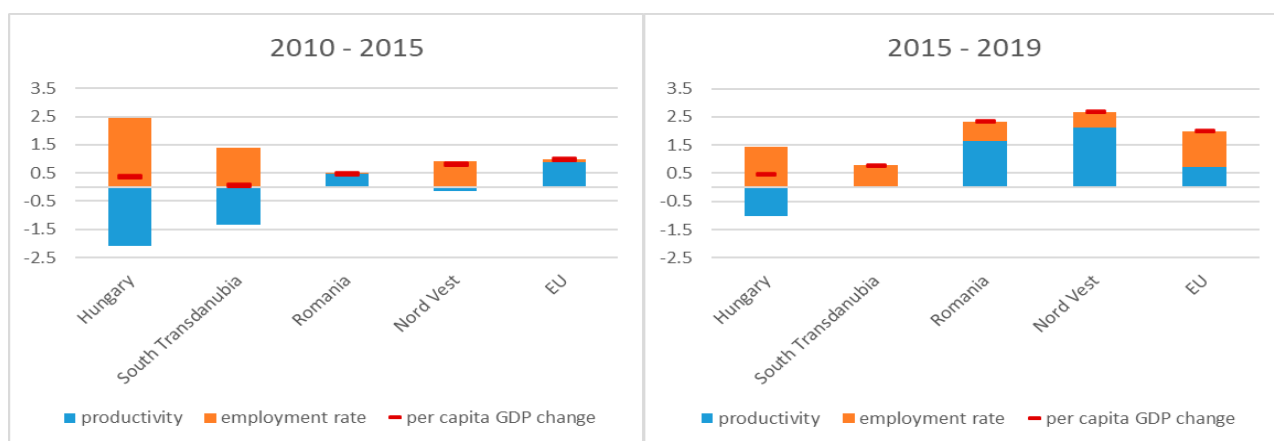
<sup>2</sup> The variable “Price deflator gross domestic product [PVGD]” is collected from AMECO to calculate GDP and labour productivity at constant prices – AMECO (n.d.).

<sup>3</sup> Proper data are available only at the NUTS2-level disaggregation.



ity growth, but after 2015, productivity became more important. In contrast, South Transdanubia developed more slowly than the national average, and the contribution of employment growth was counterbalanced by decreasing productivity between 2010 and 2015 (measured at constant prices). During the second half of the period, the dominant source of per capita GDP growth was the contribution of employment growth.

The results are somewhat different if we compare GDP values measured in national currencies instead of PPS (Figure 3). Benedek (2021, pp. 11–12) emphasises that the relative dynamics of the national currencies with respect to other foreign currencies have a notable impact on the GDP values measured in PPS. Due to the national monetary policy strategy, the exchange rate of the Romanian leu is relatively stable vis-à-vis the euro or other foreign currencies.

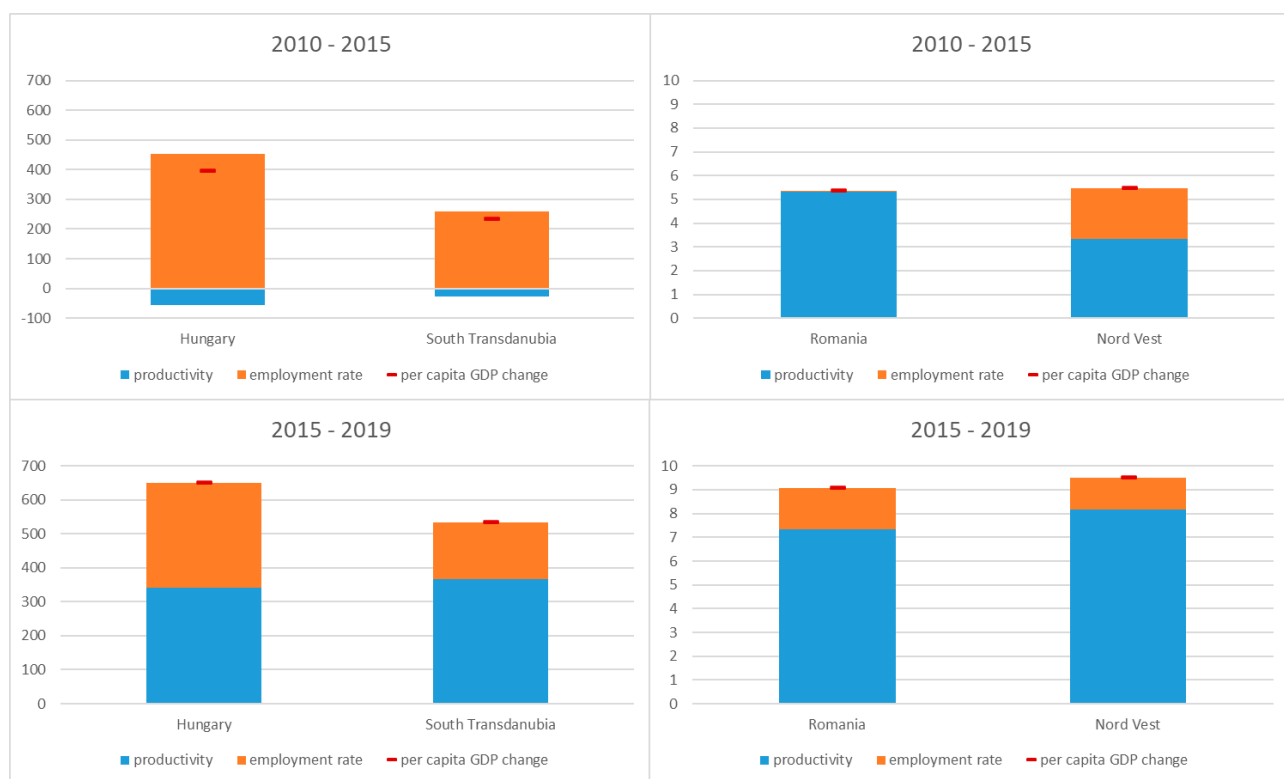


**Figure 2.** The contribution of productivity change and employment rate change to total per capita GDP change between 2010 to 2015 and 2015 to 2019 in selected territorial units in Hungary and Romania (thousand PPS at constant prices)

Source: own elaboration based on Eurostat (2022), *Average annual population...*; Eurostat (2022), *Employment (thousand persons)...*; Eurostat (2022), *Gross domestic product...*, and AMECO (n.d.).

In contrast, the Hungarian national currency is constantly devaluating, in line with its monetary policy stance. A second source of distortion may be the difference between the consumer basket of the different countries within the European Union. As a result, these facts have differential impacts when GDP values are calculated in PPS. In terms of the per capita GDP values calculated in national currencies (at constant prices), the positive impact of productivity growth seems to be much larger in Romania between 2010 and 2015, and its negative impact was smaller in Hungary in comparison to the PPS values. In the second half of the 2010s, productivity had a positive impact in both countries, especially in Romania, while employment growth continued to play an important role in Hungary.

The contributions of the productivity and the employment rate are certainly not independent of each other. Employment was rather low after the economic and financial crisis, especially in Hungary, and as a result of a strong policy commitment (Czirfusz 2020, pp. 11–12), it significantly increased during the 2010s. Furthermore, the increase was higher in the lagging areas of Hungary, which means that a significant convergence occurred among the different parts of the country. However, extensive employment growth took place in those segments of the labour market that are characterised by a below-average efficiency. Generally, the newly integrated employees had lower education and skills and were employed in jobs with lower value added. Consequently, the average productivity decreased in the first years of the post-crisis recovery in Hungary, but not in Romania.



**Figure 3.** The contribution of productivity change and employment rate change to total per capita GDP change between 2010 to 2015 and 2015 to 2019 in selected territorial units in Hungary and Romania (thousand units of national currency at constant prices)

Source: own elaboration based on Eurostat (2022), *Average annual population...*; Eurostat (2022), *Employment (thousand persons)...*; Eurostat (2022), *Gross domestic product...*, and AMECO (n.d.).

As an important feature of the high-pressure economy, the labour market became tight in the 2010s, and labour shortage emerged as a serious challenge compounded by persistent unemployment, especially in the lagging regions. The most relevant factor behind the labour shortage is the ageing of the population (Kozlovskyi et al. 2020, pp. 46–48), mostly as a consequence of the outmigration of the skilled and younger cohorts of the working-age population and partly due to natural demographic processes.

Between 2010 and 2019, the share of the working-age population within the total population shrank from 68.6% to 66.1% in Hungary, and from 68.1% to 65.8% in Romania. At the same time, South Transdanubia and Baranya had a slightly worse position compared to the national average in 2019 (with 65.5% and 65.8%, respectively), while the Nord Vest region and Cluj county recorded better shares compared to the Romanian average (with 66.7% and 68.0%, respectively). The most favourable situation can be found in Cluj county, while the rest of the Nord Vest region seems to have decoupled from that.

Due to the lack of a critical mass of endogenous resources and embeddedness in international networks, a similar decoupling cannot be detected for the economic position of Pécs within its wider region. These trends are likely to persist in the long run. Therefore, the dominant source of economic convergence is expected to be efficiency upgrading, i.e. increasing productivity by improving the quality of human resources and the capital intensity of the economy.

A number of academic and policy documents refer to the problem of the middle-income trap, which means that throughout the process of economic catching-up, the speed of growth starts to decline at a point in time, thereby the excess growth disappears before full convergence could take place. Iammarino et al. (2020, p. 11) suggest that ‘middle-income-trap regions’ are expected to fall within a GDP per capita range between 75 and 120% of the EU average in PPS. Consequently, the middle-income trap could be a relevant challenge for the FDI-driven economic model in the CEE countries (Lux 2017, p. 17). Strong FDI inflows boosted by trade liberalisation (Singh and Gál 2020, pp. 75–77) paved the way for convergence until the global financial and economic crisis. However, this development model appears to have reached its limit. Gál (2019, p. 681) showed that the direction of the causality between regional economic development and FDI inflow is not straightforward, based on evidence that FDI prefers regions that are already better off rather than taking risks with marginal locations. Due to the substantial risk of private and public investment concentrating on regions with better economic prospects, national governments are urged to pursue more explicit territorial investment strategies, especially in peripheral regions that cannot take advantage of the FDI-driven economic model.

Lux (2017, pp. 21–23) differentiates between three types of post-industrial development paths in CEE countries.

1. Central regions are the most successful areas that are integrated into global metropolitan networks; they specialise in high value-added sectors as well as corporate and public command and control functions.

2. Intermediate regions successfully combine industrial and tertiary sources of competitiveness and have a favourable environment for industrial development. They are increasingly integrated into global production networks, and their competitiveness is mainly driven by FDI together with their strong historical foundations.
3. Peripheral, ‘hollowing out’ regions are those that lost their old industrial base or originally lacked endogenous accumulation processes. The main resources they offer are cheap, mostly unskilled labour and basic infrastructure. There are few competitive SMEs, FDI branch plants and successful clusters, but they are disconnected from their territorial context because they exist in isolation in an underdeveloped environment.

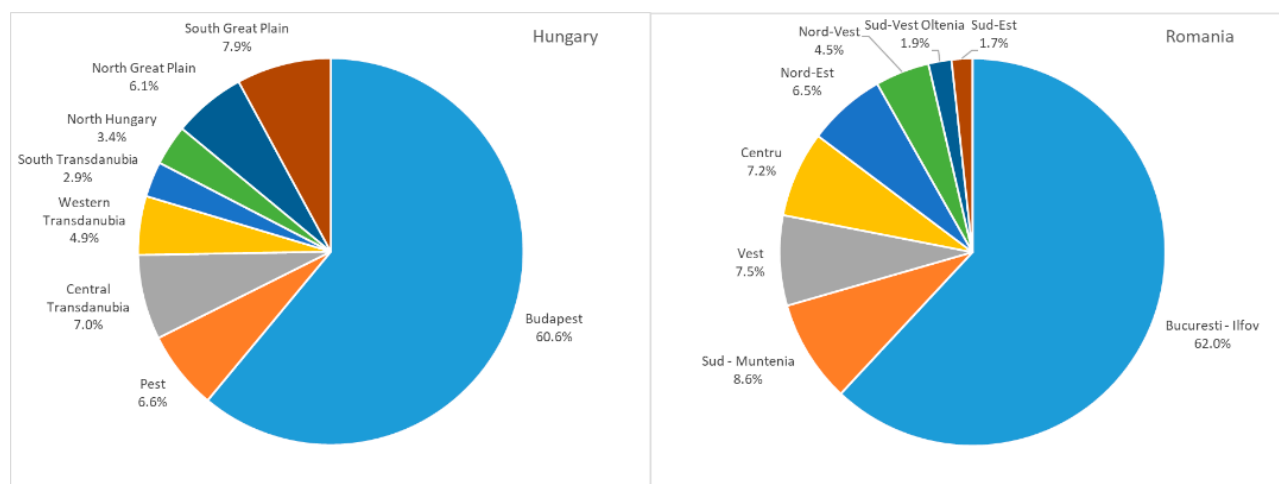
In the light of this triple typology of regions, one can recognise that the region surrounding Pécs belongs to the third, peripheral category, while the region around Cluj is more representative of the second, intermediate category, with some attributes of central regions, for instance, favourable sectoral and functional specialisation, and relatively better endowed with human capital (Fan, Urs, and Hamlin 2019, pp. 2–3). Cluj-Napoca, as a major educational, cultural, scientific and economic urban centre, was ranked among the 11 “tier 1” cities of Romania owing to its fast-growing population, developed service economy and important transport hub function (Veres 2020, pp. 546–547; Romanian Parliament 2001). It was rebranded as a “metropolitan pole with international potential” under the spatial planning system for 2014–2020. In terms of FDI, Cluj county has decoupled from the rest of the Nord-Vest region, concentrating 44% of the regional FDI stock (2,059 M euro) in 2019 (RNB 2020, p. 14). The high-road strategy to competitiveness that emphasises skills upgrading and innovation that Cluj followed appears more advantageous to overcome the middle-income trap in the long run.

However, these chances are much smaller for Pécs (Gál and Páger 2017, pp. 231–232). Its role as a university-backed ‘knowledge centre’ notwithstanding, the case of Pécs appears to confirm the finding of Iammarino et al. (2020, p. 48) that “especially in low-income regions, human capital accumulation alone is insufficient to fend against the risk of stagnation, unless an environment is offered where the acquired skills can be put to productive use.” The city’s locational disadvantages in terms of the traditional drivers of competitiveness such as skills, innovation, economic diversity, connectivity or governance capacities have confined it to the margin of dominantly FDI-driven re-industrialisation, while Cluj, as a winner of transition processes, is well integrated into global production networks.

The majority of the 203 large firms of the Nord-Vest Region that provide the backbone of the regional economy are located in Cluj county (86) and Bihor county (49). Cluj-headquartered MOL Romania, Transylvania’s largest trading company, is a top innovation performer in the services sector (Csíki and Szász 2020, pp. 353–355). Conversely, as a long-lasting effect of persistent deindustrialisation post-2000, Hungary’s Baranya

county is falling behind the rest of the Hungarian counties in terms of per capita production values (43% of the national level in 2018).

The University of Pécs, as the major catalyst for development in the region, contributes around 15–20% of the GDP of Pécs (Rácz, Kovács, and Horeczki 2021, p. 216). The leadership role of universities in implementing the knowledge-based economy is particularly valorised in the peripheral CEE regions where incentives for academic entrepreneurship are weaker (Erdős and Varga 2012, pp. 233–236), given the heavy concentration of business R&D expenditure in the developed knowledge economy regions of Europe (Figure 4).



**Figure 4.** The share of regional gross domestic expenditure on R&D (GERD) in national GERD in Hungary and in Romania, 2019

Source: authors' elaboration based on Eurostat (2022), *GERD by sector...* and Institutul National de Statistica (2021).

In terms of business R&D intensity, the Nord-Vest (0.09%) and the South Transdanubia (0.36%) NUTS2 regions are lagging far behind the EU level of 1.42% (European Commission 2020, p. 231). In the research presented by Gál (2020, pp. 18–19), Pécs typifies lagging peripheral regions where the weakness of the local business environment undermines the success of university-driven territorial innovation systems (see also Olejnik and Żółtaszek 2020, p. 105). The downward trajectory of Pécs as a shrinking city would more likely be reversed by pursuing a development strategy attuned to the needs of the “hidden sectors” described by Lux (2021, p. 2). Despite their significant job retention potential, these secondary or tertiary sectors suffer from policy neglect, but they are key to promoting the diversification and resilience of peripheral urban and regional economies. In Pécs, biotechnology, the health care industry and the machine industrial cluster may offer opportunities for new path creation.

Besides mainstream national government policies, explicit urban policies and supra-national resources were found to exert a palpable influence on reshaping the post-re-

cession development trajectories of the studied cities. Having undergone large-scale revitalisation and with 10% of its working population enrolled in IT and start-ups, Cluj has emerged as a major IT hub and is home to the top ranking Romanian HE institution (Babes-Bolyai University) as well as 28 public R&D institutions (six of which are institutes of the Romanian Academy), a leading technical university (TUCN), three industrial parks and a world-class ICT cluster at the vanguard of smart city initiatives. TUCN was the first Romanian university to receive a 21 million euro EIB loan from the European Strategic Investment Fund for its strategic development investments between 2021–2025.

Under a broader strategy of economic rebalancing, Cluj-Napoca with its seven clusters, was designated a national growth pole along with other core cities (Braşov, Craiova, Constanţa, Iaşi, Timişoara, and Ploieşti) in Romania’s urban growth pole strategy (Benedek 2016, p. 287).

Pécs, as a “pole of life quality”, also prioritised cluster development, relying on its competitive advantages, such as the health, cultural and environment industries, as part of the post-recession economic rebalancing agenda that focused on the five Hungarian core cities. The city has successfully blended national urban development programmes with local development resources to enhance the research, development and innovation potential and capacity development in higher education, connected to the internationalisation strategy of the University of Pécs, the largest employer in the region.<sup>4</sup>

A preferable long-run economic development strategy should rely upon a strong commitment to finding the right sectoral and functional specialisation. Along the value chain, the manufacturing stage ensures the lowest added value, while those stages that require high-skilled work, such as R&D, after-sales services, and financial services, offer the best opportunities for technological and productivity upgrading (see, e.g., Nagy 2021, p. 116).

In conclusion, we call for proactive policy initiatives in favour of retaining and/or establishing endogenous development potential for both lagging and intermediate regions. An important element of this is an environment that is supportive of local entrepreneurial activities, especially in the SME sector, and human capital accumulation. Also important are local economies that provide jobs featuring promising upgrading capacity, innovation potential, and international openness (Iammarino et al. 2020, pp. 82–87).

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<sup>4</sup> See, e.g. the Modern Cities Program (2015–), which promotes urban infrastructural developments and economic and functional diversification in the 23 county seats. Loosely connected to fragmented reindustrialisation efforts in non-core cities (Fekete 2019, pp. 40–41; Lux 2019, pp. 59–61), the large-scale urban development programme with its approx. 11 billion euro budget finances 270 investment operations, combining public investment (two-third of total resources), EU-funded operational programmes and municipal resources.



## Conclusion

This paper investigated the regional development context of two secondary cities in Central and Eastern Europe. We applied explorative statistical data analysis to describe the post-crisis regional economic environment in the context of the differential regional outcomes of the high-pressure economy in Hungary and Romania. The evolution of per capita gross domestic product was studied in a decomposed form, which revealed the differential contribution of productivity growth and employment growth to the regional development of the two regional centres, Pécs and Cluj and their respective regions. Our findings confirm that both regions could reap the benefits of the economic upswing in the late 2010s, but not to the same extent. Hungary, as a whole, and the South Transdanubia region, in particular, have based their economic growth on extensive employment expansion while neglecting productivity improvement.

This is in contrast to the economic development of Romania and the Nord Vest region, which have relied more upon productivity growth in this period. A positive impact of the favourable sectoral and functional specialisation of Cluj county was detected in terms of post-crisis economic growth. In contrast, the economic convergence of Hungary's Baranya county is much slower, which strongly undermines the chances of Pécs to overcome the middle-income trap in the short or medium run. Therefore, proactive policy initiatives are essential in favour of retaining and/or establishing endogenous development potential for both regions. Our exploratory research identified important disparities in labour productivity dynamics between the two countries and regions. An in-depth analysis of these disparities is needed to reveal their main underlying causes; therefore, our future research will examine the two cities at the micro level. A comparative, firm-level analysis is expected to yield novel insight into the nature of the observed productivity differentials.

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## Otoczenie gospodarcze dwóch ośrodków regionalnych Europy Środkowej i Wschodniej po kryzysie: podejście porównawcze

Opracowanie przedstawia wynik badania ekonomicznych podstaw dla ożywienia gospodarczego i procesu nadrobienia zaległości po globalnym kryzysie finansowym i gospodarczym, w oparciu o porównanie studium przypadku regionów Cluj-Napoca w Rumunii i Pécs na Węgrzech. Wykorzystano eksploracyjną analizę danych statystycznych do opisu otoczenia gospodarczego regionów po kryzysie w kontekście zróżnicowanych wyników gospodarki będącej w stanie trwałego rozgrzania w tych dwóch krajach. Następnie przeanalizowano ewolucję produktu krajowego brutto per capita w postaci zdekomponowanej, co pozwoliło na wgląd w główne wyzwania rozwoju regionalnego w obu ośrodkach regionalnych. Wyniki analizy wskazują, że do długoterminowych wyzwań gospodarczych należy podchodzić przy pomocy polityki regionalnej zorientowanej na efektywność, która opiera się na kapitało- i wiedzochłonnym wzroście.

**Słowa kluczowe:** rozwój regionalny, wzrost gospodarczy, Węgry, Rumunia, analiza porównawcza