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The Settlement Geographical Position of Budapest in the Eastern and Central European Urban Hierarchy

Introduction

Eastern and Central Europe is one of the most exciting playing fields for research on urban hierarchy in the 'old continent'. In the context of centuries of external power influence and limited state sovereignty, the leading cities of the region have sometimes been able to fulfil the role of a capital city only slowly. Even with delayed urbanisation, only three modern metropolises (Budapest, Warsaw, and Prague) were able to develop in rather eccentric geographical positions. The position of the most important cities relative to each other have continuously shifted and rearranged, however, none of them has been able to exert a wide-spread attraction over the entire Eastern and Central Europe, especially within the closed state framework of the decades of socialism. With the transition to a new political system and globalisation, the cities of the Visegrád countries have been given the opportunity to strengthen their functions in the international city competition.

With the geographic expansion of the European integration process, increasingly permeable state borders, and the progressively deepening Visegrád co-operation, the question arises whether the Hungarian capital can become the 'capital' of Eastern and Central Europe. Can Budapest aspire to – and in what capacity – achieve a leading role in the region? The mapping of the evolving city rankings raises the question whether size is a determining factor in the Visegrád countries' urban hierarchy, and whether the population of a city truly serves as an 'indirect measure' of its significance? Finally, comparing the two aspects of city competition, it is also worth examining whether or not a city's position in the urban hierarchy correlates with its economic development.

1. Milestones in the long-term development of the Eastern and Central European urban network

There are several interpretations of Eastern and Central Europe. The geographic term refers to the eastern part of Central Europe in contrast to the western part identified with the German-speaking areas. According to a broader interpretation related to natural landscapes and historical-cultural boundaries, Eastern and Central Europe encompasses the entire area of historical Poland and the Carpathian Basin, with its southern border extending up to line of the Mura, Drava, and Danube rivers. However, in academic literature, Eastern and Central Europe most commonly refers to the Visegrád Group

countries.¹ This narrower interpretation, which is in line with the borders of the states, is also the geographical framework of this study.

The Visegrád countries form a distinctive group based on their similar cultural and intellectual values and their shared history. However, they also face similar disadvantages, which impeded their internationalisation during the political transition.²

The position of the Hungarian capital in the Eastern and Central European city competition cannot be separated from the overall development of the region. The leading cities of Eastern and Central Europe have been subject to various external (German–Austrian, Russian, and Turkish) sovereignties, and their ranking in the urban hierarchy has continually changed.

1.1. Early Middle Ages: Buda as the second most important centre in the region after Prague

Compared to Western Europe, feudal urban development in Eastern and Central Europe appeared late, in the 10th and 11th centuries. The favourable geographical location of the three capitals (such as the meeting of different landscapes, central basin location, or the intersection of roads) was crucial in strengthening their commercial role. Buda increasingly strengthened itself ahead of other potential centres in the Carpathian Basin (Esztergom, Fehérvár – today's Székesfehérvár – and Visegrád).

However, Buda was preceded by Prague, which became an important European trading hub of its time. The cultural significance of the city is indicated by Central Europe's oldest university, Charles University. However, Prague's influence and network later shifted towards West-Central Europe instead of Eastern and Central Europe, as the capital of the Holy Roman Empire.

In Poland, on the one hand, Krakow, which became a bishop's seat in the 10th century and the capital in the 11th century, was significant, while on the other hand, Poznań, an important centre of the early Polish state in the 10th–11th centuries and located at the intersection of important transit routes in western Polish territories, was also significant. Both cities prospered for centuries. Krakow experienced its golden age in the 15th–16th centuries, while Poznań became one of Eastern and Central Europe's most important craft trading cities by the 15th century.

1.2. New centres after the fall of Buda – The strengthening of Pressburg and Warsaw

During the era of the great geographical discoveries, all Eastern and Central European cities were disadvantaged by their lack of direct access to the Atlantic Ocean, resulting in

¹ MRÁZ 2016: 376.

² KÖRÖSI 2015: 160.

their exclusion from global trade and gradual lagging in development amid the changing power dynamics. The situation was further exacerbated by the strengthening of the Austrian and Ottoman Empires, which had a differentiating impact on the region's urban hierarchy. While Buda, Krakow, Poznań, and Prague lost their positions, the status of Pressburg (Pozsony) and Warsaw was strengthened.

Prague lost its position in the city competition due to Habsburg rule and Buda lost its position due to Turkish rule. Vienna took over Prague's role, while Buda's role was gradually assumed by Pressburg, which was also increasingly fulfilling capital functions (such as coronations and parliamentary sessions). In Krakow's case, geopolitical factors were also at play, but not in the form of an external oppressive power. Instead, Warsaw, with its more central location, irrevocably took over the capital role from Krakow, which was becoming increasingly peripheral in the Lithuanian and Swedish power environment.³ Poznań, in turn, suffered a series of tragedies, being repeatedly destroyed and burnt by Swedish troops, and then plagued by epidemics and natural disasters.⁴

1.3. The gradual transformation of Budapest into a world city

The retreat of Ottoman rule and, in conjunction with this, the strengthening of Habsburg dominance once again restructured the urban hierarchy in favour of Vienna and Buda, at the expense of Prague, Pressburg, Warsaw, and Krakow. During the reign of Emperor Joseph II, while Prague was further overshadowed by Vienna, Buda gradually regained its position relative to Pressburg. Several government institutions (such as the Lieutenantcy Council and the Hungarian Chamber) were relocated to Buda, and Pressburg's role was limited to the estates' diets. From the 1830s, although Pressburg's economy continued to grow rapidly as the Danube became an important international trade route, its role in the urban hierarchy diminished to that of a regional centre due to the changed power dynamics following the Austro-Hungarian Compromise.⁵ The competition between Buda and Pressburg was finally settled with the unification of Buda, Pest and Óbuda in 1873. One of the biggest beneficiaries of the onset of capitalist development was the Hungarian capital. Budapest gradually became Vienna's partner city. Particularly, the Pest side of the city experienced rapid growth. Major infrastructure investments were initiated in preparation for the Millennium Celebrations (such as the underground railway and the city's outer ring road).⁶ Thanks to its dynamic development, the modernising Budapest was considered the eighth largest city in Europe at the turn of the 20th century.⁷ By 1890, the Hungarian capital had become the first city in Eastern and Central Europe to reach a population of half a million, and by 1920, it had also been the first metropolis to reach a population of one million.

³ ENYEDI 1978: 238.

⁴ PARISEK-MIERZEJEWSKA 2006: 291.

⁵ JACOBS 2013: 508.

⁶ ELTER-BAROSS 1993: 190.

⁷ BELUSZKY 2003: 74.

Poland came under Prussian, Austrian, and Russian rule in the 18th century. As the centre of Silesia, Breslau (Wrocław) had been part of the German sphere of influence since ‘times immemorial’, and the more significant Polish cities were originally incorporated into Prussia or Austria, not into Russia, which controlled the largest territories. Łódź and Warsaw came under Russian influence only after the Napoleonic Wars, in 1820. The loss of Polish state independence particularly affected Warsaw, whose control for a long time was limited to Mazovia and the other Polish territories under its jurisdiction.⁸ Due to the tripartite division, instead of having a unified central ‘head’, Polish cities followed different developmental paths ‘side by side’ within various empires, which contributed to the formation of the still-characteristic polycentric nature of the Polish urban hierarchy. This was further reinforced by the fact that, while Poznań (in South Prussia) and Lemberg/Lwów (in Galicia and Lodomeria), coming under Prussian and Austrian rule, received more significant administrative roles, the previously more prominent Krakow and Warsaw were downgraded to peripheral provincial cities.

Despite the difficulties, both Warsaw and Krakow experienced dynamic population growth. Warsaw, after Budapest, was the second city to surpass a population of half a million in the 19th century. Krakow, which enjoyed a relatively high degree of autonomy, was able to undertake significant developments. The city’s development plan for the next 100 years was completed, and in relation to this, the area of the city was expanded. By the time of World War I, the population had already grown to 180,000.⁹

At the very beginning of the 20th century, rapid demographic and economic development led to the emergence of two more modern cities in Eastern and Central Europe. On the one hand, Breslau (Wrocław), an important economic centre in Germany at the time, had a population of half a million by 1910.¹⁰ Prague also developed rapidly and soon became one of the most important economic and cultural centres of the Habsburg Empire.¹¹ With Prague’s ‘open city’ declaration in 1866, the population of the rapidly growing area exceeded half a million by 1920.

1.4. Nation state efforts shaping urban hierarchy: The strengthening of Prague and Warsaw

The territorial changes that concluded World War I had a significant impact on the urban hierarchy of Eastern and Central Europe. The post-war boundary changes favoured metropolitan development, as the victorious powers created buffer states of varying sizes between the empires. In these states, the establishment of strong, symbolic capitals was part of the conscious nation-building efforts of the majority nationalities.

⁸ NIEMCZYK 1998: 301.

⁹ ROMAŃCZYK 2018: 139.

¹⁰ KSIĄŻEK–SUSZCZEWICZ 2017: 53.

¹¹ SÝKORA–ŠTĚPÁNEK 1992: 92.

This was particularly true for Czechoslovakia, which had a multi-ethnic and polycentric urban hierarchy. The strengthening of Prague, which was relatively modest in size compared to the expanded country, also served the interests of the state-building Czech nationality against Hungarian, Moravian, Ruthenian, or Slovak counterweights – such as Brno, Pressburg (Slovakian: Bratislava, Hungarian: Pozsony), Košice (Hungarian: Kassa), and Uzhhorod (Hungarian: Ungvár). By 1940, Prague's population had nearly reached one million, although many people moved to rural areas due to the war and food supply issues.

In Poland, the re-established state after a long period of fragmentation also favoured the reinforcement of Warsaw, the capital that symbolised the nation. During the interwar period, the Polish capital, which had grown into a million-strong metropolis, temporarily took over demographic leadership from Budapest.

Even in Hungary, which suffered territorial losses, the urban hierarchy became more concentrated. However, rather than the conscious strengthening of the capital, the direct role of the territorial changes played a significant role in the reduction of state territory and the loss of potential counterweights – such as Pozsony (Bratislava) to Slovakia or Kolozsvár (Cluj) to Romania. The 1920 Dictate of Trianon further intensified the concentration of Hungarian urban hierarchy by relocating a significant portion of the Hungarian population from the detached territories to Budapest. After the Dictate of Trianon, the global economic crisis further hampered economic growth, bringing an end to the golden age of the Hungarian capital.

In addition to Warsaw, Łódź was declared an industrial city due to its favourable geographic location. From the mid-19th century, the dynamically developing cotton industry strengthened the city, attracting professionals from German territories, thus increasing both its economy and population.¹² Consequently, Łódź, renowned for its textile industry, also joined the ranks of Eastern and Central Europe's cities with a population of over half a million before World War II.

After World War I, Pressburg (Pozsony/Bratislava) became part of Czechoslovakia. As the capital of the short-lived First Slovak Republic declared in March 1939, it held a brief leading role until 1945.

1.5. Centralised urban hierarchies excluded from urban competition in the socialist framework

Post-World War II urban development in all three countries of Eastern and Central Europe shared similar elements. For several cities, rebuilding after war damage became crucial. The city of Breslau (Wrocław), which later became part of Poland from Germany, suffered severe damage. In Budapest, many facilities built in the late 19th century were destroyed not only by German bombing but also by the occupying Soviet army.

¹² LAGZI 2014: 44.

In the rebuilding of Warsaw after the war, smaller routes were redesigned with public transport considerations in mind. In Bratislava, the reconstruction of destroyed factories and infrastructure also began.¹³

In addition to infrastructural losses, the populations of several cities temporarily declined (e.g. Warsaw or Breslau/Wrocław). In Bratislava, which had meanwhile become the centre of Slovak nationalism, two-thirds of the population were deported, and part of the German and Hungarian populations, who were accused of collective guilt, were also expelled. Łódź suffered severe losses due to the German occupation.

With the communist takeover, a new era began for the cities under examination. During early socialism, the centralised socialist state favoured the development of capitals considered to be the basis of the working class on an ideological basis. It is therefore not surprising that the capitals of Czechoslovakia, Poland, and Hungary became the metropolises of Eastern and Central Europe.

The economic situation of the cities was fundamentally shaped by nationalisation. This affected not only property management but also dominant enterprises. Housing estate construction projects were initiated in several phases to provide affordable housing for as many workers as possible. These projects prioritised quantity over quality. In Prague, these constructions continued for an excessively long time and were only halted based on decisions made after the transitional revolution.¹⁴ In the hope of finding housing and employment, many people from the surrounding settlements migrated to the cities.

To accommodate the large-scale construction and development projects, the area of cities often proved to be too limited, leading to the gradual incorporation of surrounding settlements. In 1922, the area of Greater Prague tripled, and from 1950, Budapest also expanded significantly – at 525 km² – it became fifteen times larger than the next largest county seat.¹⁵ Warsaw's area was also expanded to 480 km².

The capitals increasingly concentrated the population and the economy, becoming a 'hydrocephalus' in areas such as culture, education, and sports as well (especially in Hungary). To counterbalance the resulting imbalances, alternative centres were designated. In the late socialist period, it was Czechoslovakia and Hungary that pioneered the introduction of national urban network development plans based on a hierarchical organisation of the entire population of communities, which were also applied in the other countries of the Eastern Bloc, broadly in line with the same principles and at the same time. The system that favoured higher hierarchical levels in state-funded projects proved to be unsuccessful.¹⁶

The role of cities in international urban competition was severely limited due to the impossibility of contacts with the West within a closed state framework and the lack of foreign investment. However, Krakow's central role in culture and education was maintained.

¹³ JACOBS 2013: 508.

¹⁴ SÝKORA–ŠTĚPÁNEK 1992: 95.

¹⁵ ELTER–BAROSS 1993: 191.

¹⁶ BLAIS–SZESZLER 2000: 9.

*1.6. Increased involvement in international city competitions
after the political transition*

In Western European researchers' studies of international city hierarchies, the cities of Eastern and Central Europe were barely represented for a long time. With the fall of the Iron Curtain, studies on European city competition increasingly turned their attention to the cities of the Visegrád countries, which associated their progress towards closing the gap with the West and urban development with the improvement of market conditions and the influx of international capital.¹⁷ Another aspect of the analyses addresses the role that the cities of Eastern and Central Europe might play in the pan-European urban hierarchy and whether this will have an impact on urban development in Western Europe.

According to most research, the urban network of Eastern and Central Europe could join the second tier of European cities, similar to the Mediterranean region ('Golden Banana' or 'Sun Belt').¹⁸ After the political transition, new spatial structural axes emerged, independently affecting the Visegrád group of countries as well. The most famous among them was the model outlined by a Polish researcher, Grzegorz Gorzelak in 1996, which suggested that the Gdańsk–Poznań–Wrocław–Prague–Brno–Bratislava–Budapest form a development axis.¹⁹ Due to its shape, it was named the 'Central European boomerang' as a mirror image of the 'Blue Banana'.²⁰

With the political transition, new economic processes began in the cities of Eastern and Central Europe.²¹ The industrial jobs that had lost their market for their products found themselves in a difficult position.²² Beyond the economic problems, the municipal leadership of Łódź also faced the challenge of determining "the identity to assign to a city with a core element (the textile industry) that had virtually disappeared".²³

The cities that found it easiest to navigate the post-transition period were those located closer to Europe's economically developed regions. In the case of Poznań, for example, a process of qualitative transformation soon began.²⁴

Cities in the region that were particularly well-positioned were those with a skilled workforce and advanced infrastructure. In the case of Wrocław/Breslau, for example, a significant factor in the influx of foreign investments was the city's early integration into the European motorway network.

With the opening of the markets, the number of private enterprises rapidly increased in the leading settlements of the urban hierarchy. According to the data of REGON, the Polish business registry, the number of enterprises in Kraków grew from approximately 11,000 to 126,000 between 1991 and 2015.²⁵

¹⁷ LICHTENBERGER 1996: 145.

¹⁸ HALL 1993: 885.

¹⁹ GORZELAK 1996: 128.

²⁰ EGRI-KÓSZEGI 2018: 28.

²¹ NIEMCZYK 1998: 303.

²² PÉNZES-FEKETE 2014: 13.

²³ LAGZI 2014: 49.

²⁴ PARISEK-MIERZEJEWSKA 2006: 292.

²⁵ ROMANCZYK 2018: 142.

As a result of all these factors, the geographical polarisation of the urban hierarchy became one of the main processes in Eastern and Central Europe, raising numerous questions. Among these, a key issue is whether economic growth will further widen or mitigate the differences between cities.²⁶

2. City ranking by population size: Warsaw and Budapest at the top

When the term ‘urban hierarchy’ is mentioned, most people immediately think of city size, associating leading cities with the more populous members of the settlement network. As an indirect measure of ‘significance’, a city’s population size has long served as a fairly accurate indicator of its position within the urban hierarchy.²⁷

A significant economic centre will typically attract a larger population; as such, a key economic hub exerts a population-attracting effect due to its more favourable business and labour market opportunities. Thus, a city’s population size indirectly reflects its importance. This interaction also works in reverse: larger population concentrations eventually become important themselves, drawing in institutions, jobs, transport and residential infrastructure. For the economy, this means not only a broader labour supply but also a closer consumer market, which is advantageous for minimising transport costs.

2.1. Million-strong metropolises: The leading cities of the Eastern and Central European urban hierarchy

Eastern and Central Europe has few metropolises, with only three capitals – Budapest, Prague and Warsaw – reaching a population of over one million.²⁸ Two key factors can be highlighted:²⁹

1. As the nations of the region were under the dominance of external powers for centuries, and due to their non-existent or limited statehood, strong sovereign capitals did not historically develop. It was only in the 20th century that independence was achieved, though this was largely nominal due to Soviet occupation.
2. In the case of Slovakia, the relatively small size of the state – created by the dissolution of Czechoslovakia, with a population of just over 5 million – also does not favour the development of million-strong metropolises.

Of the three metropolises, Budapest was the most populous for many decades, being the only one to exceed 2 million inhabitants. After reaching its peak population in the 1980s, the number began to decline (especially during the 1990s with the deepening of

²⁶ BENEDEK–KOCZISZKY 2017: 261.

²⁷ KOVÁCS 2002b: 141.

²⁸ KOVÁCS 2002a: 68.

²⁹ JENY 2013: 48.

suburbanisation) or stagnate. Meanwhile, Warsaw's population has been growing rapidly, and due to the contrasting demographic trends of the two capitals, the Polish capital has surpassed the Hungarian one (1.79 million versus 1.72 million at the end of 2020). Prague, which is third in the ranking, has a somewhat smaller population compared to the other two; while it also experienced a temporary decline in the 1990s, it began to grow again after the turn of the millennium (1.3 million according to the 2021 census).

The absence of million-plus cities means that the metropolitan population ratio for Eastern and Central Europe as a whole is relatively low, at 8%. However, this ratio varies widely among the four Visegrád countries depending on the size of their states and their respective metropolises. In Hungary, it stands at 18%, which is notably high in a European context. In Czechia with similar size, the ratio is 12% due to its somewhat smaller capital. In Poland, which is four times larger than the previously mentioned countries, the ratio is 5%, and in Slovakia, which lacks a metropolitan area, the ratio is understandably 0%.

2.2. Regional cities: The missing counterweights

In Eastern and Central Europe, there is a significant gap in regional cities with populations between 500,000 and 1 million compared to Western Europe. Only four regional cities are concentrated in the Visegrád countries. From this perspective, Eastern and Central European countries can be classified into three main types:

- In Poland, all four regional cities have developed as counterweights to the million-strong Warsaw, creating a truly polycentric urban network. This is partly due to the historical fact that the three partitioned Polish territories developed independent centres. The polycentric nature is further supported by the fact that Poland's grid-based transport network is not Warsaw-centric.
- In Czechia and Hungary, there are no strong regional cities serving as counterweights to the million-plus capitals. Due to the radial road and rail network and the unitary state structure, strong counterweights to Budapest and Prague did not historically develop. Following the million-strong capitals, there is a significant gap to the second cities (particularly in Hungary), with Brno at nearly 400,000 and Debrecen at around 200,000.
- Slovakia does not have any cities at all. Bratislava is considered more of a medium-sized town on an international scale.

In Poland, the four regional cities house 7% of the country's population. When including Warsaw's 5% share, the proportion of people living in cities in Poland is the same as in Czechia (12%).

The rank-size rule confirms the well-known polycentric nature of the Polish urban hierarchy. Poland's curve is above the Auerbach (or Zipf) distribution curve (*Figure 1*). A similar situation is observed in Slovakia, which lacks cities, where the population of Košice, following Bratislava, is only slightly less than that of the capital, resulting in a bipolar urban hierarchy.

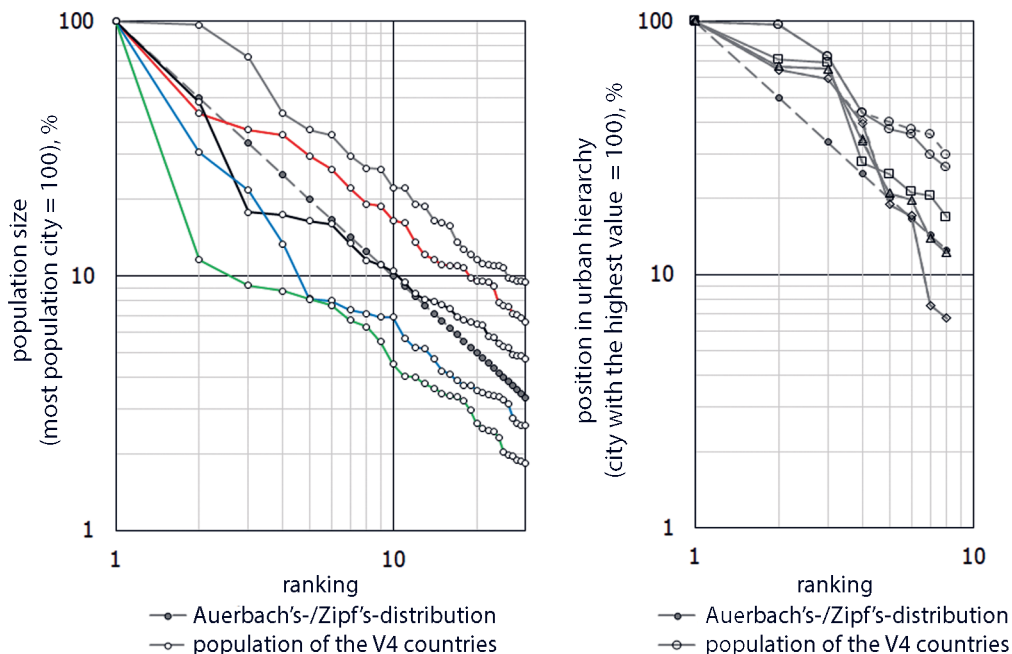


Figure 1: The degree of polarisation in the Eastern and Central European urban hierarchy based on a rank-size analysis

Source: compiled by the author based on the data of national statistical offices (population for Poland and Hungary means annual data at the end of 2020; and 2021 census data for Czechia and Slovakia), Eurostat (2019 GDP per capita), and Coface (2018 turnover values of large companies)

Notes: Left: the urban hierarchy by population size at the level of the member countries; right: city ranking according to various indicators at the V4 level. For the dotted line, the value of its NUTS3 unit is used instead of Bratislava.

In Czechia, and particularly in Hungary, the absence of regional cities results in a strong ‘primate city’ effect. Brno constitutes only 31% of Prague’s population, while Debrecen accounts for just 12% of Budapest’s population – one of the lowest ratios internationally.

2.3. Medium-sized towns: A characteristic settlement size category in Eastern and Central Europe

Medium-sized towns with populations between 20,000 and 500,000 play a much more significant role within the urban network of Eastern and Central Europe compared to Western Europe. Around 2020, the Visegrád countries collectively had 367 medium-sized towns, where about one-third (34%) of the region’s total population, and the largest proportion of urban dwellers, were concentrated. In contrast to metropolises and regional cities, there are no extreme variations in the proportion of medium-sized towns among

the countries. In Slovakia and Poland, this proportion is slightly higher (37% and 35%, respectively), while in Czechia and Hungary, it is lower (30% each).

The medium-sized towns of Eastern and Central Europe can be classified into four distinctive types:³⁰

1. As a medium-sized town, Bratislava attained the status of a capital. It had previously had capital functions for shorter periods. Today, as the capital of independent Slovakia, Bratislava is receiving significant developmental impetus compared to other medium-sized towns, helping it to ascend to a higher level in the European urban hierarchy.
2. From the 1970s onwards, county seats became the main beneficiaries of urban network development policies (such as Nyíregyháza, Salgótarján, Székesfehérvár, and Tatabánya). This stemmed partly from the realisation that it had become essential to counterbalance the excessive capital city concentration resulting from the misguided economic policies of the 1950s and 1960s. Paradoxically, the county seats that fared particularly well were those not granted the status of county-level towns, as they were able to control the development funds allocated for the entire county.³¹
3. The so-called 'socialist industrial towns' were artificially created, typically through greenfield investments for mining, heavy industry, or chemical industry purposes (e.g. Havířov, Kazincbarcika, Nowa Huta). These medium-sized towns, centred around one or a few factories, faced economic and demographic crises after the regime change.
4. On the other hand, suburban medium-sized towns experienced soaring growth with the deepening of suburbanisation around the cities (such as Érd, Gödöllő, or Vác near Budapest; Brandýs nad Labem–Stará Boleslav near Prague; Luboń near Poznań; Piaseczno near Warsaw; and Wieliczka near Kraków). Some of these towns, with populations in the tens of thousands, now rival the size of county seats. A characteristic feature of these towns is that numerous public services (such as education, healthcare, or culture) often do not keep pace with the rapid influx of residents, or do so only belatedly. However, this shortfall is only relative because their advanced transport infrastructure makes facilities of cities easily accessible. Previously, such towns were eventually absorbed by the cities. Since the transition, if they do not become mere dormitory towns, they are favoured destinations for foreign direct investment and domestic companies relocating from the central city due to their excellent transport connections (such as motorways, suburban rail, or trains) and proximity to the city. They fulfil several important central roles (such as hosting universities, tourist events, or attractions) and have a good chance of becoming sub-centres in the city region (for example, Gödöllő hosted numerous important international meetings during Hungary's EU presidency in 2011).

³⁰ JENEY 2013: 49.

³¹ ILLÉS 2008: 145.

Due to the small number of metropolises and the lack of strong regional cities as counterbalances, highly polarised national rankings have emerged in Eastern and Central Europe. Nevertheless, in terms of population size, the urban hierarchy of the Visegrád countries as a whole is balanced. This is partly because, instead of being dominated by a single megacity, the three metropolises in the region (particularly Warsaw and Budapest) are of very similar size and are geographically relatively distant from each other within the region (*Figure 2*). These two factors combined have contributed to the Visegrád countries' million-plus cities appearing as independent centres, with none of them being large enough to exert a dominant influence over the entire region as the capital of Eastern and Central Europe. Budapest, which for decades (especially in the 1970s) was the unrivalled leader in terms of population, is expected to lose its demographic lead based on trends since the turn of the millennium. By the early 2020s, Warsaw had already caught up, and Prague, which is also growing more rapidly than the Hungarian capital, is increasingly closing in. These trends suggest that the top tier of the Eastern and Central European urban hierarchy is moving from Budapest-centricity towards a more polycentric structure in the future.

3. City ranking based on economic functions: The leading role of capitals

The hierarchical ranking of cities by population size does not necessarily align with their economic roles. The growth of several cities has stalled due to suburbanisation, but they have maintained their positions within the urban hierarchy. The group of leading global cities (such as Amsterdam, Frankfurt am Main, or Zurich) remains largely unchanged, even though they have increasingly lagged behind the megacities of the developing world in terms of size.³² This indicates that today, population size increasingly fails to serve as an 'indirect measure of significance'. However, recent trends show that the rankings of cities based on demographic and functional approaches are converging again. Among the megacities of the developing world, several (such as Mumbai or São Paulo) have meanwhile become global cities.³³

Two indicators are used to determine the position within the economic urban hierarchy. Similar to population size, only absolute metrics can be used in the economic dimension to determine the hierarchical ranking of cities. Specific metrics inform about the socio-economic development of cities but do not reveal their positions within the urban hierarchy.

One of the indicators used to measure the economic significance of cities is GDP, which shows the strength and size of the economy. For cities, the challenge is that GDP data is not available at the settlement level but only at the NUTS3 level. Fortunately, Budapest and its competitors appear as separate units at the NUTS3 level, allowing their GDP to be measured. Only in the case of Bratislava does the NUTS3 unit (Bratislava

³² TAYLOR: 2004: 88.

³³ CSOMÓS–KULCSÁR 2012: 139.

County) not coincide with the somewhat narrower boundaries of the Slovak capital. Since the difference is relatively small, and given its role as the capital, Bratislava is included among the eight cities examined alongside other cities. Czechia, Hungary, and Slovakia are represented only by their capitals, while in the polycentric Poland; the four regional cities are also included in the analysis alongside Warsaw. In this case, the measurement of the economic strength of cities is based on the NUTS3-level GDP per capita for 2019, measured in purchasing power parity from the Eurostat harmonised database.

In addition to GDP, the economic significance of cities is also examined based on the turnover of their largest companies. The presence of large companies primarily and directly indicates the position of these cities in international economic life and the urban network, as well as their roles in international integration, division of labour, production, management, and employment. The presence of a large company indirectly indicates how well-known a city is, its infrastructure, human resources, and other hard-to-measure factors, such as how internationalised, well-known, or safe it is, thereby reflecting its international appeal and position.

In studies of the global urban hierarchy, the Fortune magazine ranking database of the world's 500 largest companies (Global 500) is often used. Among the headquarters of the largest globally recognised companies, Eastern and Central European cities are typically absent or barely present. However, the Coface database ranking the 500 largest companies specifically in Central and Eastern Europe (Coface CEE Top 500) provides adequate information. To convert this corporate database into an urban data series, companies were first localised by their headquarters, and then their turnover values were aggregated by city. Since the database only includes the 500 largest companies in the post-socialist region, not all companies in the examined cities are represented, only the largest ones. According to 2018 data, 343 of the 500 largest companies are headquartered in 152 cities in Eastern and Central Europe, representing companies with turnovers exceeding 481 million euros. For simplicity, these are referred to as large companies in this context, regardless of specific terminology. Out of the 343 'large companies', 194 are concentrated in the eight examined cities.

Based on the size of the economy measured by GDP, similar to population size, the three metropolises stand out, with Warsaw alone at the forefront. Here, Budapest ranks third, not far behind Prague. The three capitals also rank well among the top cities in the EU, with Warsaw representing the 9th (!) highest value among NUTS3 units of cities, and Prague and Budapest also ranking among the top 20 cities (18th and 19th places).

To compare the different data series, it is useful to express the original values of all eight cities as a percentage of the maximum value. Thus, Warsaw stands at 100%, followed closely by Prague and Budapest at 71% and 69%, respectively. Following the three metropolises, there is a significant gap before the fourth capital, Bratislava's economy, which represents just over a quarter of Warsaw's value, at 28%. The Polish regional cities lag far behind, with Krakow at 25%, Wrocław and Poznań at 21%, and Łódź also at 21%.

The ranking of cities based on the turnover of companies listed in the Coface database is similar, especially among the leading cities. Once again, Warsaw stands out (100%), followed by the capitals. Here, Budapest surpasses Prague with 64% versus 60%, and

Bratislava again ranks fourth with 40%. Bratislava's position (41%) remains essentially unchanged if, similar to GDP, the value of the NUTS unit (Bratislava County) is used instead of the town's value (including companies in Malacky and Ivanka pri Dunaji). Among large companies, the ranking of Polish regional cities changes compared to GDP, but none reach their GDP-measured position: Poznań at 19%, Krakow at 17%. Interestingly, Łódź and Wrocław fall far behind with 8% and 7%, respectively. Instead, Płock or Mladá Boleslav appears as medium-sized towns in the top eight Eastern and Central European cities.

By averaging the percentage values of GDP and the total turnover of large companies, a complex economic urban hierarchy indicator can be created. Since Warsaw is considered the leading city of the Visegrád countries based on both economic indicators, it naturally leads the overall economic ranking with 100%. Budapest and Prague follow at the next level of the Eastern and Central European urban hierarchy with 67% and 65%, respectively. Based on its economic functions, Bratislava ranks fourth with 34%, surpassing the larger Polish regional cities. The Polish regional large cities lag behind the capitals in economic significance, with values around 10–20%.

It is worth comparing the ranking of Eastern and Central European large cities in terms of economic roles with their ranking by population size (*Figure 1*). The analysis of the Visegrád countries' urban hierarchy in different dimensions confirms that the ranking of large cities based on economic indicators (particularly the turnover of large companies) is more polarised than their ranking by population size. Economic-business roles are not linearly proportional to the size of cities (*Figure 3*). The larger a city is, the more significant its role in the economy and its ability to attract companies.

In the 2010s, Budapest's GDP growth lagged behind that of its competitor cities, with only Bratislava's economic growth being slower. If current trends continue, Budapest is expected to decline more significantly in the economic dimension of the urban hierarchy compared to its population dimension, falling behind Warsaw and increasingly Prague.

4. The correlation between position in the urban hierarchy and economic development

The political transition created new development opportunities for the capitals of Eastern and Central Europe. In a globalising world, the success of the cities in the Visegrád countries depends on how well they can integrate into the European urban competition.³⁴ Several academic sources confirm that among post-socialist cities, the capitals of Eastern and Central Europe are most likely to join the European city system.³⁵ This raises the question of what position the four capitals at the top of the urban hierarchy hold within their countries and the European Union's spatial structure. In other words, does a favourable position in the urban hierarchy correlate with economic development?

³⁴ JENY 2003: 259.

³⁵ BOURDEAU-LEPAGE 2004: 1.

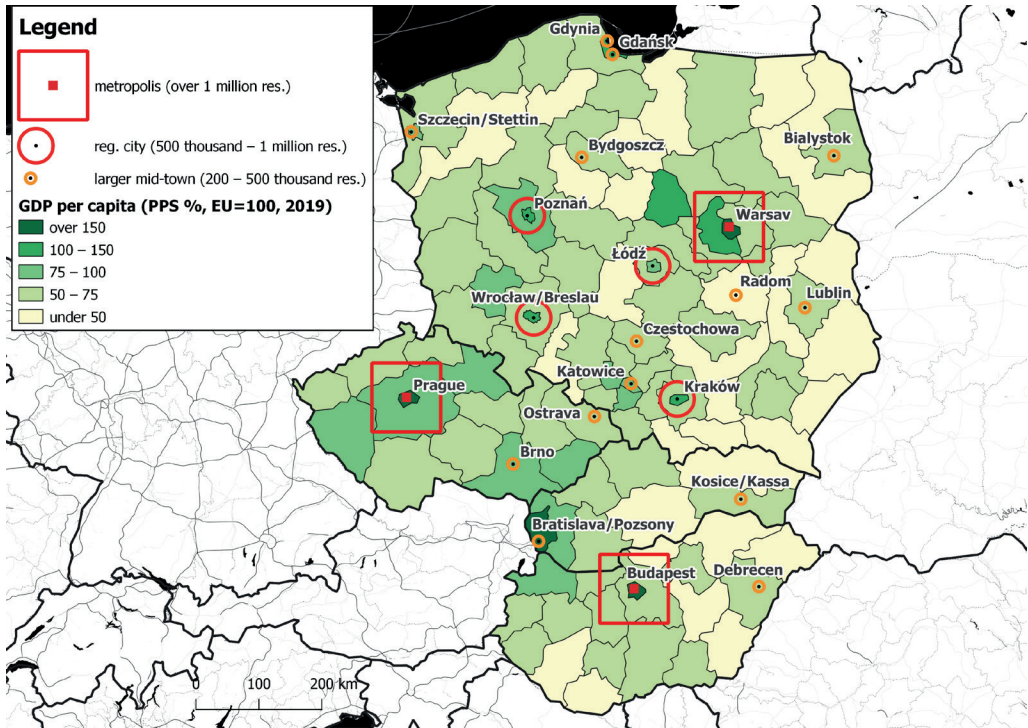


Figure 2: The relationship between the size of Eastern and Central European cities with populations of over 200,000 and the economic development of their regions

Source: compiled by the author based on the data of national statistical offices (population for Poland and Hungary means annual data at the end of 2020; and for Czechia and Slovakia 2021 census data) and Eurostat (GDP per capita)

Although economic development is a complex concept, the measurement of economic development differences here is based on GDP per capita adjusted for purchasing power parity at the NUTS3 level, as previously utilised from Eurostat. The analysis will focus on the positions of the four capitals within their respective countries.

In terms of economic development measured by specific indicators, Warsaw and Prague emerged as leaders again, with both cities exceeding the average development level of the European Union by more than twice (216% and 206%, respectively). Budapest's level of development reaches just over one and a half times the EU average (151%), with Bratislava also surpassing it (160%). Polish regional cities fall behind the aforementioned ones in terms of development, but, with the exception of Łódź (95%), they still exceed the average level of development within the European Union. The example of Eastern and Central Europe's medium-sized towns and cities with populations over 200,000 clearly illustrates how significant size is in economic development (Figure 2). The correlation calculated between the population size of the 21 largest cities marked on the map and the GDP per capita of the NUTS3 units they are part of empirically confirms this correlation ($r = 0.8$).

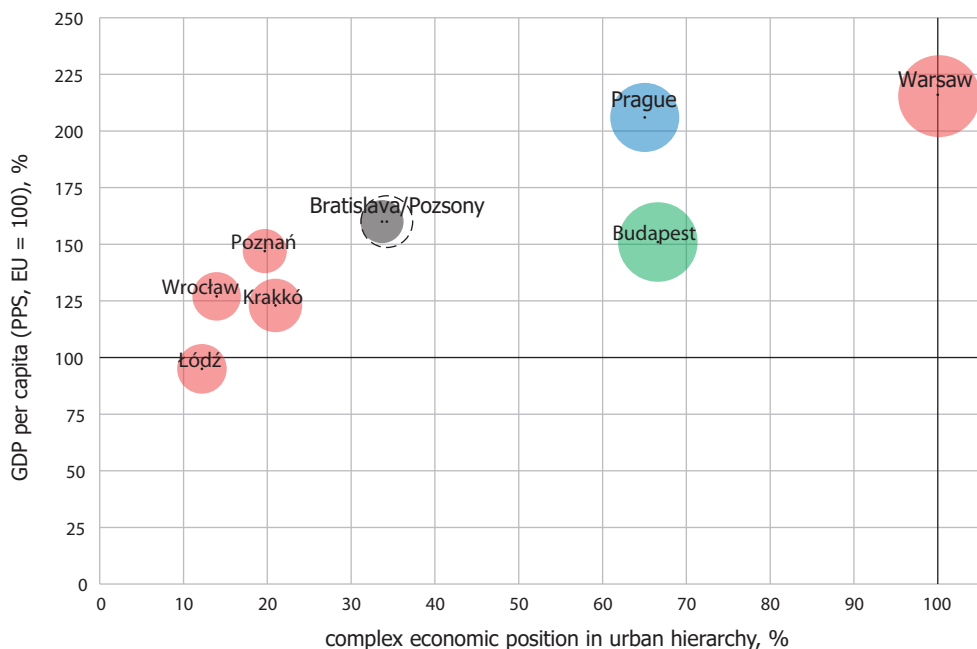


Figure 3: The correlation between the population size, economic urban hierarchy position, and economic development of the eight most populous cities in Eastern and Central Europe

Source: compiled by the author based on the data of national statistical offices (population for Poland and Hungary means annual data at the end of 2020; and for Czechia and Slovakia 2021 census data), Eurostat (2019 GDP per capita), and Coface (2018 turnover values of large companies)

Note: For Bratislava, a dashed line indicates the value for Bratislava County for comparability.

Broadly speaking, the order of the eight examined cities by population size, economic role, and economic development is fairly similar (*Figure 3*). Most of the cities studied confirm that the larger a city is, the more important its role in the economic dimension of the urban hierarchy, and the higher its economic development tends to be. This correlation is nuanced by the examples of Budapest and Bratislava. The Hungarian capital exemplifies how its prominent position in terms of population size is not matched by its economic role, and even more so by its economic development measured by GDP per capita. Conversely, Bratislava, despite its relatively small population, ranks as the fourth most economically significant urban unit and even surpasses Budapest in GDP per capita, placing it third.

Since the 1990s, one of the most defining phenomena in the development spatial structure of Eastern and Central Europe has been the increasing developmental advantage of capitals compared to rural areas. This has been particularly notable for the metropolises of the Visegrád Group: Budapest, Prague, and Warsaw have become some of the most dynamically developing elements in the EU's spatial structure. The economic growth of these cities has primarily stemmed from the dynamism of their tertiary sectors, while their

industrial activities have started to wane. Although to a lesser extent than spontaneous market processes, the EU's cohesion policy also primarily benefits capitals (so-called 'trade-off theory'). For instance, in Spain, it was found that between 1980 and 1996, cohesion funds were significantly directed towards Madrid, which resulted in polarisation rather than cohesion within the country in terms of the capital versus rural areas.³⁶ While the tertiarising capitals – integrating into the European city competition – have successfully caught up with their developed Western counterparts, they have left a 'gaping void' behind in their increasingly lagging rural hinterlands, which have experienced the shock of political transition more severely.

In the countries of Eastern and Central Europe, the capitals are among the most developed elements of the spatial structure, although their economic advantage over the rural areas varies from country to country. (In this paper, rural areas are considered complements to the capitals, meaning all NUTS3 units outside the capitals are classified as rural. Consequently, the capitals and rural areas together cover the entire territory of the examined countries.) The dual index (D_{CR}) can be used to measure the capital–rural dichotomy based on the following formula:

$$D_{CR} = \frac{\bar{y}_C}{\bar{y}_R},$$

where y_C represents GDP per capita of a country's capital, and y_R is average GDP per capita of the rural areas in the same country. In 2019, the development level of the capitals in the Visegrád Group exceeded that of the rural areas by a factor of 2.8. Eastern and Central Europe thus continues to be characterised by a strong capital–rural dichotomy. Warsaw's development level was 3.3 times, Bratislava's 2.8 times, and Budapest and Prague's 2.7 times higher than their respective country's rural average.

On average in Eastern and Central Europe, the capital–rural duality peaked around 2009, with varying peaks across countries: 3.1 in Hungary (2009), 2.7 in Czechia (2010), 3.1 in Slovakia (2011), and 3.3 in Poland (2013). Since then, the contrast between capitals and rural areas has either decreased or remained stable. Therefore, the previously stated observations are now more nuanced for the 2010s. The reduced duality is attributable to the more modest economic dynamics of capitals between 2010 and 2019. A notable development in the 2010s in Eastern and Central Europe was the significant role of the industrial sector (mainly machinery) within rural areas. As a result, rural areas have gradually caught up, and the capital–rural dichotomy has not continued to increase: it has stagnated and then started to decrease.

It can be observed that the most pronounced capital–rural dichotomy still characterises Poland, but in the 2010s, the dynamic previously characteristic of capitals gradually decreased in the spatial structure of Czechia and Slovakia, and particularly in Hungary.

³⁶ KERTÉSZ 2004: 68.

Summary

Buda, and later Budapest from 1873 onwards, has traditionally been one of the key players in the Eastern and Central European urban hierarchy. However, its role has continuously evolved over different periods. Initially, Prague was its main rival, followed later by Vienna. The Hungarian capital experienced its true golden age during the long 19th century when it developed into a genuine world city. However, its sphere of influence remained primarily within the Carpathian Basin and did not extend to becoming the capital of Eastern and Central Europe.

The 20th century fundamentally reshuffled Budapest's opportunities. Its catchment area first contracted due to the Dictate of Trianon, which turned it into a 'hydrocephalus' within the country. This was further exacerbated by the centralising and isolating policies of early socialism. Despite becoming the most populous city in Eastern and Central Europe with over 2 million residents, the socialist period limited its internationalisation. With the deepening of suburbanisation following the regime change, its population also declined, causing it to lose its demographic primacy.

Cities in the upper echelon of the urban hierarchy are also the most developed settlements in Eastern and Central Europe, having outpaced their rural hinterlands with their rapid development. However, Budapest's example highlighted that by the 2010s, the dynamic role of the capitals in the Visegrád countries had already begun to wane, reducing the capital–rural inequality.

If current trends continue, Warsaw will clearly remain Eastern and Central Europe's leading city, surpassing Budapest in both population and economic functions. Currently, Budapest stands on par with Prague in the examined dimensions. Although all three capitals play a leading role in Eastern and Central Europe's urban hierarchy, none have achieved a dominant role on a larger regional scale.

In terms of economic significance, Budapest is relatively better positioned regarding the large companies that have located there. This suggests that instead of fulfilling an Eastern and Central European capital role, Budapest might function more as a gateway city for large companies' Southeast European expansion.

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