

Competitiveness behind the invisible iron curtain: Spatial analysis of EU countries

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Abstract

Research background: The collapse of the Iron Curtain opened the way for integration, market liberalization, and political stabilization, yet more than three decades later significant disparities remain. Competitiveness, shaped not only by economic performance but also by institutions, infrastructure, and business efficiency, reflects these persistent inequalities.

Purpose of the article: This study examines spatial patterns of competitiveness among EU countries, focusing on the divide between Western and post-socialist states. By addressing the legacy of the „invisible iron curtain,” it contributes to debates on convergence, divergence, and regional development.

Methods: The analysis applies the cartogram method, which enables visualization of spatial disparities. Data from the IMD World Competitiveness Yearbooks were aggregated into an eight-year average across five dimensions: overall competitiveness, government efficiency, economic performance, business efficiency, and infrastructure. The values were visualized using choropleth maps classified by Jenks natural breaks.

Findings & Value added: Results reveal clear regional gradients, with Northern and Western Europe reaching the highest competitiveness levels, while Central, Eastern, and Southern Europe lag behind. Government efficiency and infrastructure proved to be the most decisive dividing factors. The value of this study lies in integrating spatial visualization with long-term data, demonstrating that despite decades of integration, the legacy of the Iron Curtain endures. The findings offer guidance for more territorially sensitive policies supporting cohesion and balanced growth in the EU.

Keywords: competitiveness; European union; cartogram method; regional disparities; post-socialist countries

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1. Introduction

The past decades, the European continent has undergone fundamental changes that have shaped its economic, social, and institutional character. The fall of the Iron Curtain in 1989 represented not only a geopolitical turning point, but also the beginning of a comprehensive transformation that



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opened up space for integration processes and new forms of cohesion between Western and post-socialist regions (Hrzic and Brand, 2020; Mach, 2020). This process was marked by gradual market liberalization, political stabilization, and the ambition to integrate new member states into a single European framework. Nevertheless, the question remains as to what extent historical differences have been overcome and socio-economic convergence achieved within the European Union.

One analytical approach to assessing regional differences is the Regional Competitiveness Index (RCI), which captures the performance of regions in several dimensions, from economic performance and the business environment to infrastructure and innovation potential (Borsekova et al., 2021). Research confirms that post-socialist regions, especially those without capital cities, still lag significantly behind, making them the most vulnerable group within the European area. The current analysis of regional cohesion points to persistent disparities that are not only economic but also social and institutional in nature.

These differences are also reflected in the labour market, where youth unemployment is an acute problem in most Member States. In post-socialist countries in particular, the situation is complicated by the absence of a tradition of small and medium-sized enterprises and a lack of financial resources, which leads to the marginalization of young people and weakens their chances of successful integration into society (Palkova et al., 2018).

Spatial analyses provide a unique lens through which to examine these differences, as they allow researchers to capture interdependencies, spillovers, and regional clusters of competitiveness across the EU (Anselin, 1988; Grodzicki and Jankiewicz, 2025). The spatial dimension is particularly relevant in the European context, where shared borders, common policies, and economic integration create complex patterns of convergence and divergence (Ezcurra and Rios, 2020; Fagerberg et al., 2010). Recent scientific studies have emphasized that competitiveness is increasingly influenced by territorial proximity and regional connectivity, suggesting that national performance cannot be fully understood without taking into account its spatial environment (Annoni and Dijkstra, 2019; Capello and Lenzi, 2016).

At the same time, competitiveness is a multidimensional phenomenon that goes beyond purely economic indicators. It includes the quality of institutions, the efficiency of public administration, the business environment, and the availability and quality of infrastructure (Birca et al., 2023; Buitrago and Barbosa Camargo, 2021; Chikan et al., 2024; Liu et al., 2022). Research in this area suggests that appropriately designed institutions and government policies can mitigate the negative effects of crises and contribute to the long-term resilience of countries. Similarly, consumer preferences and behaviour are another important factor influencing the competitiveness of businesses and regions, as confirmed by empirical findings from Central Europe (Marakova et al., 2023).

In this context, this study examines spatial patterns of competitiveness among EU countries, with a particular focus on the persistent differences between the post-socialist countries of Central and Eastern Europe and their Western partners. Using spatial analysis techniques, the research seeks to reveal hidden structures, dependencies, and asymmetries that traditional statistical comparisons do not capture. The aim is not only to map the uneven geography of competitiveness, but also to contribute to a deeper understanding of how historical legacies, institutional trajectories, and policy frameworks shape the changing landscape of economic performance in the EU.

2. Methodology and data

The methodological framework of the research is based on the application of the cartogram method, which is one of the most widely used forms of thematic cartography. Cartograms allow for the visualization of spatial differentiation of the phenomenon under study through the colour differentiation of administrative units and are a suitable tool for presenting data related to territory

(Slocum et al., 2022). In this case, cartograms were used to illustrate the differences between countries in terms of competitiveness and its sub-dimensions.

The primary source of data was the World Competitiveness Yearbooks published by the International Institute for Management Development (IMD). The following areas were selected from the published data: overall competitiveness score, infrastructure status, government efficiency, business efficiency, and economic performance. To eliminate short-term fluctuations and strengthen the robustness of the results, the individual values were aggregated into an eight-year average, creating a representative indicator of long-term competitiveness (the average values are shown in Table 1).

Table 1: Average scores achieved in the analysed areas

Country	Total score	Government efficiency	Economic performance	Business efficiency	Infrastructure
Netherlands	95.00	77.57	73.10	90.18	83.83
Germany	84.35	64.37	72.57	65.82	79.32
Sweden	94.38	77.54	63.75	90.67	90.27
Denmark	97.33	84.79	63.62	94.51	91.07
Finland	88.25	73.94	54.89	81.27	87.58
France	73.78	49.10	60.86	52.51	77.46
Luxembourg	87.43	77.21	72.25	76.22	68.76
Austria	81.58	58.62	62.40	70.62	79.35
Belgium	80.43	57.45	62.00	71.75	75.22
Spain	68.75	48.76	58.21	50.24	64.90
Ireland	88.77	80.25	73.85	88.57	72.53
Italy	65.17	40.03	54.06	50.86	60.80
Estonia	75.36	68.72	54.69	61.88	60.91
Czech Republic	75.02	60.38	63.61	58.43	62.34
Portugal	68.30	52.26	54.13	49.09	61.15
Slovenia	66.76	49.78	57.99	44.40	59.56
Poland	64.75	44.62	62.40	43.72	52.95
Lithuania	72.53	59.34	55.15	63.64	60.38
Latvia	66.26	56.86	48.92	45.64	54.60
Slovak Republic	54.83	39.07	49.84	30.43	44.69
Cyprus	67.95	62.38	62.06	41.96	50.09
Hungary	61.68	48.01	61.78	29.68	51.92
Bulgaria	56.11	47.18	54.71	30.07	38.40
Romania	57.80	45.67	52.44	37.41	40.50
Greece	56.46	37.31	43.16	38.64	51.42
Croatia	51.84	39.46	50.75	19.53	42.35

Source: own elaboration

The methodological framework of this study was designed to enable a comprehensive capture of spatial patterns of competitiveness within the European Union. The analysis is based on the application of the cartogram method, which is one of the established tools of thematic cartography and is particularly suitable for studies focusing on regional differentiation and spatial disparities. Cartograms allow the visualization of indicator values through colour gradation on a map background, which increases the interpretability of the results and reveals spatial structures that are often hidden in tabular data.

The primary source of data was the World Competitiveness Yearbooks published by the International Institute for Management Development (IMD), which represent one of the most comprehensive international assessments of competitiveness. Data on five key areas were extracted from the database: overall competitiveness, economic performance, government efficiency, business efficiency, and infrastructure level. To minimize the impact of short-term economic cycles, crises, or one-off shocks, the individual indicators were aggregated in the form of an eight-year arithmetic average. The long-term index created in this way provides a more stable

picture of the position of countries and allows for the identification of structural rather than cyclical differences.

The data were then transformed into a spatial format and assigned to the relevant EU countries. As the IMD methodology provides standardized and internationally comparable values, no further normalization adjustments were necessary. The visualization process was carried out by creating choropleth cartograms, in which the intensity of the colour represented the height of the values achieved. The Jenks natural breaks method was used to classify the data, which optimizes the distribution of data into categories to minimize intra-group variability and maximize differences between classes. This approach is widely recognized as suitable for visualizing heterogeneous socio-economic data (Dent et al., 2009).

The resulting cartograms made it possible to identify in detail the spatial structure of competitiveness, reveal the existence of geographical gradients, and identify areas with a significant concentration of high or low values. The spatial interpretation then formed the basis for the analytical part of the study, which compares the distribution of competitiveness across dimensions and highlights regional asymmetries between western, northern, southern, and eastern Europe. This methodological approach not only allows for the quantification of territorial differences but also explains their persistence in the context of historical, institutional, and structural factors.

3. Results

The results section provides an analysis of the competitiveness of European countries through spatial visualization based on cartograms. These visualizations allow for a better understanding of regional differences that are not always apparent in traditional numerical comparisons. The analysis is based on data from the IMD World Competitiveness Yearbook, which provides an assessment of the overall competitiveness score as well as its four key dimensions of economic performance, government efficiency, business efficiency, and infrastructure.

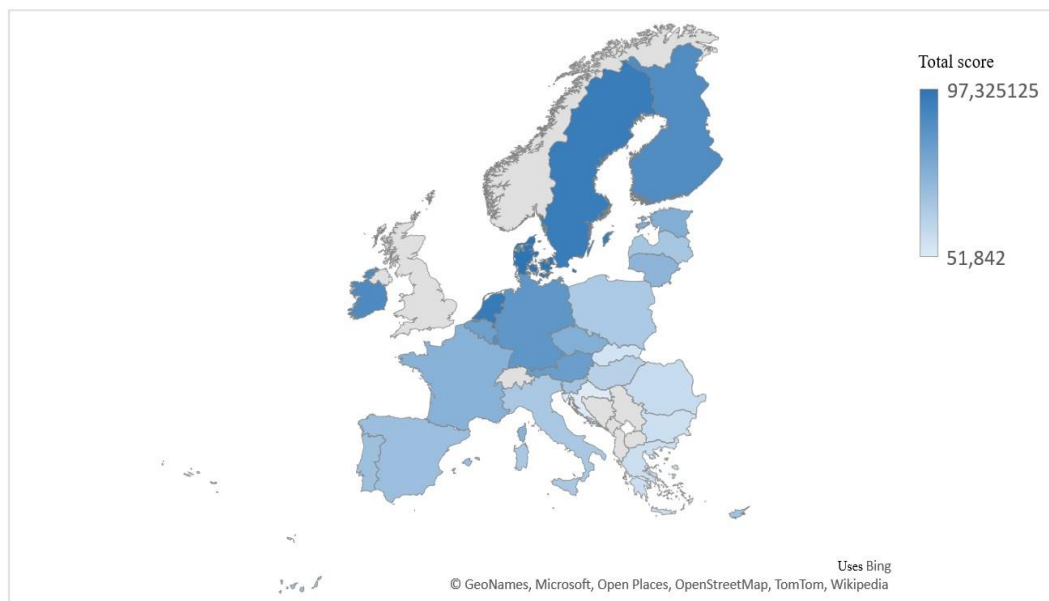
The aim of this section is to identify spatial patterns of competitiveness and highlight regional inequalities between Western and Eastern Europe, as well as between the north and south of the continent. The cartograms clearly show that, despite the political and economic integration of the European Union, significant differences remain, largely reflecting historical and institutional legacies.

The first thing we looked at was the cartogram of the overall competitiveness score, which gives a quick look at where countries rank in the IMD assessment. This indicator summarizes four basic dimensions and provides an overall picture of countries' ability to create and maintain favourable conditions for economic growth, innovation, and long-term prosperity. Figure 1 also allows us to identify broader geographical patterns and reveal persistent differences between different regions of Europe.

The cartogram reveals clear spatial differences within Europe, which can be interpreted along the north-south and west-east axes. The highest values of the indicator are concentrated in Nordic countries such as Sweden, Finland, Denmark, and Norway, which traditionally rank high in institutional quality, innovation, and sustainable economy. High scores can also be observed in Western European countries, particularly Germany, the Netherlands, Ireland, and, to some extent, France.

In contrast, the post-socialist countries of Central and Eastern Europe (Poland, Czech Republic, Slovakia, Hungary, Romania, and Bulgaria) show lower values, which are represented by lighter shades in the visualization. This contrast clearly points to the lingering effect of the "invisible iron curtain," as the eastern part of the continent still lags behind the west in terms of competitiveness.

Figure 1: Comparison of regional disparities in overall competitiveness

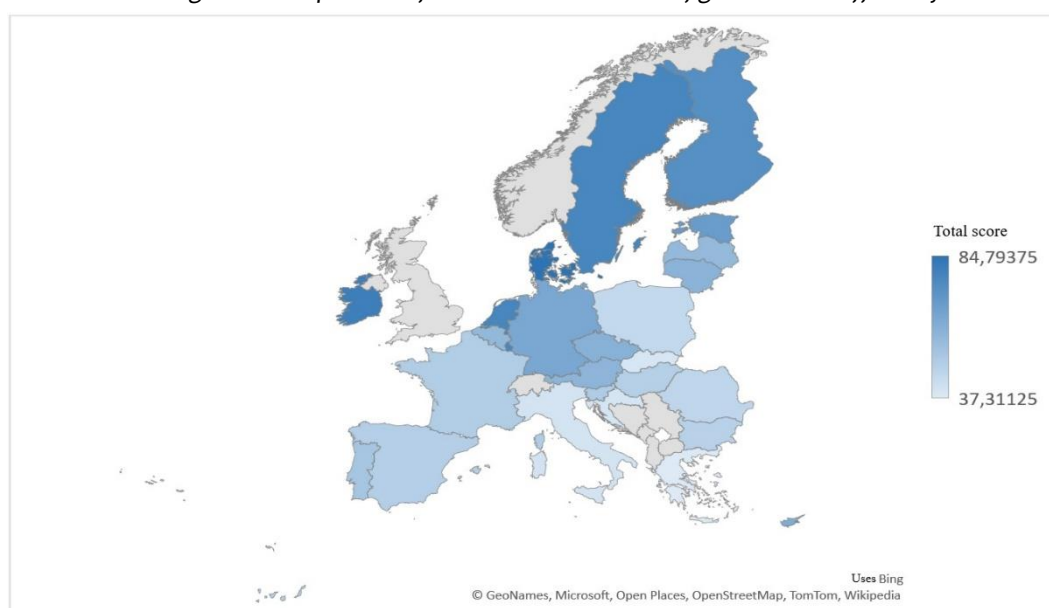


Source: own elaboration

Southern Europe, represented mainly by Spain and Italy, is in the middle range. These countries perform better than most post-socialist states, but lag significantly behind the Nordic leaders. Another dimension analyzed is government effectiveness, which is one of the most critical pillars of a country's competitiveness. This indicator reflects the state's ability to create a stable, transparent, and predictable institutional environment, allocate public resources effectively, and ensure a credible legal framework. Factors such as the quality of legislation, the level of regulation, fiscal policy, and the degree of public trust in political institutions are included.

The importance of public administration efficiency lies in its multiplier effect on other areas. Figure 2 illustrates this dimension, which offers an important insight into the spatial distribution of institutional quality in Europe and allows for the identification of deeper patterns of differences between individual regions of the continent.

Figure 2: Comparison of EU countries in terms of government efficiency



Source: own elaboration

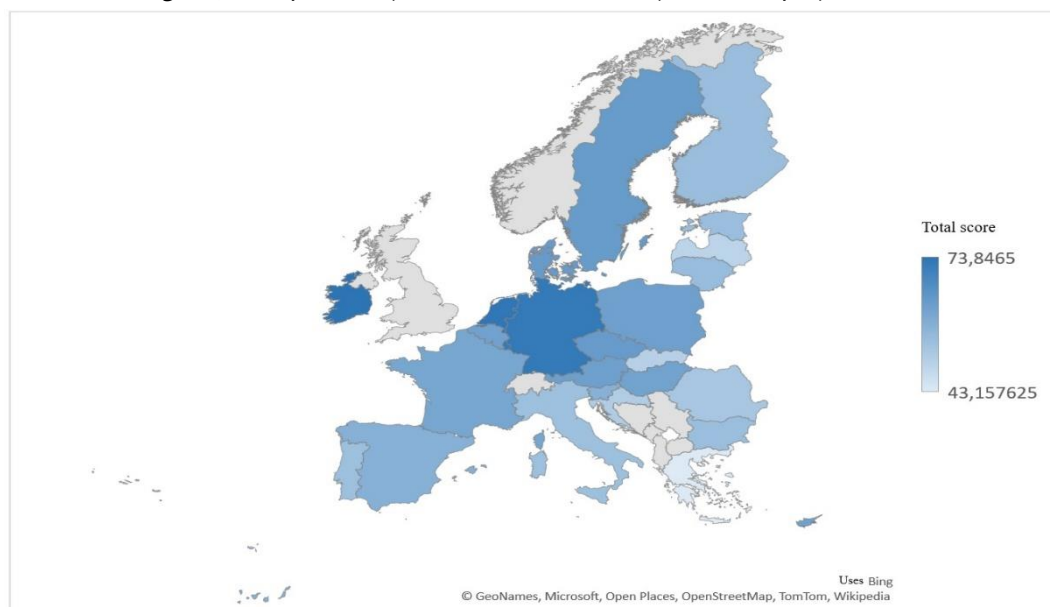
The cartogram of government effectiveness reveals a pronounced northwest-southeast axis of differences, which is one of the most striking spatial patterns in the entire analysis. The darkest shades, representing the highest values of the indicator, are concentrated in the Nordic and Western European countries. Denmark occupies a dominant position, visually standing out as the clear leader in Europe. Together with Sweden, Finland, the Netherlands, Ireland, and Luxembourg, it forms a compact block of countries with highly effective institutions and a stable political environment.

At the opposite end of the spectrum are the post-socialist and southern European countries, which are shown in lighter shades on the cartogram. Slovakia, Croatia, and Greece are among the lowest-ranked countries, reflecting chronic problems with public administration efficiency, political stability, and corruption levels. This contrast is spatially coherent, lighter shades are concentrated in eastern and south-eastern Europe, while the north-western countries on the map are darker.

Central Europe occupies an intermediate position. The Czech Republic, Estonia, and Lithuania appear on the cartogram as slightly darker islands within the post-socialist bloc, reflecting their partial shift towards greater efficiency. Nevertheless, their visual separation from Western Europe confirms that the integration process has not yet eliminated all differences. This picture confirms that the quality of government institutions remains one of the key factors hindering the competitiveness of post-socialist countries and their full convergence with Western economies.

Economic performance is a fundamental dimension of competitiveness, reflecting a country's ability to generate stable and sustainable economic growth. This indicator includes factors such as productivity levels, exports, employment, and foreign investment inflows. Strong economic performance is a prerequisite for development in other areas, from business efficiency to infrastructure, and determines a country's ability to compete in the global economy. This competitiveness parameter is illustrated in Figure 3.

Figure 3: Comparison of EU countries in terms of economic performance



Source: own elaboration

The cartogram of economic performance reveals significant spatial differences within Europe, with western and north-western countries occupying a dominant position. The highest values are achieved by countries such as Ireland, the Netherlands, and Luxembourg, which benefit from high labour productivity, strong export orientation, and a stable economic model. These countries are shown in darker shades on the map, forming the core of European economic performance.

The Nordic countries show an equally high level of competitiveness, which is driven by an innovative environment and an emphasis on sustainability. Although their results lag slightly behind the absolute leaders, they represent a stable pillar of economic development in the European context.

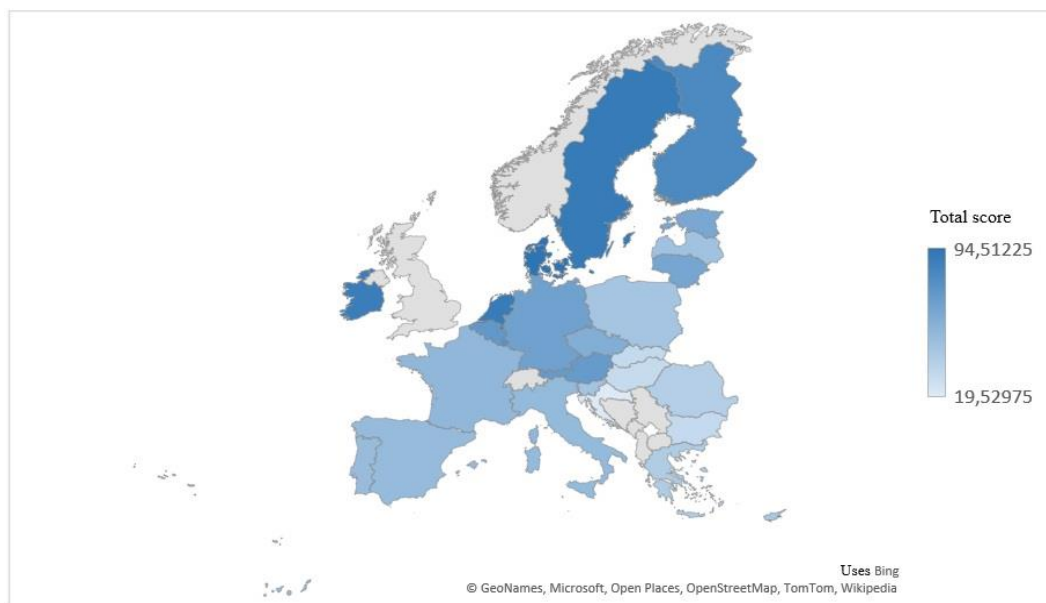
Central Europe occupies an intermediate position. The Czech Republic, Poland, and Hungary are among the post-socialist countries that have achieved a relatively high level of performance and stand out from the weaker south-eastern region. Slovakia and Latvia, however, appear lighter on the map, indicating their lower economic performance and limited ability to catch up with Western countries.

Southern Europe is represented mainly by medium shades, which signal average performance. Spain and Italy balance between the west and the east, while Greece and several Balkan countries are among the weakest parts of the European economic area.

The spatial gradient is clear: the further west and north, the higher the level of economic performance; the further south and east, the weaker the results. Although the boundary between east and west is not as sharp as in the case of government effectiveness, an invisible iron curtain remains present on the map. Post-socialist states have made significant progress, but their economic convergence with western economies is still incomplete.

Another dimension monitored is business efficiency, which represents the ability of countries to create conditions for a dynamic, innovative, and flexible business environment. This indicator includes factors such as access to capital, labour market adaptability, innovation rate, business productivity, and the level of entrepreneurial culture. Its importance lies in the fact that it directly reflects the competitiveness of businesses and their ability to succeed in global markets. Figure 4 visualizes this attribute.

Figure 4: Comparison of EU countries in terms of business efficiency



Source: own elaboration

The business efficiency cartogram reveals one of the most striking differences between European regions. The darkest shades, representing the highest values, dominate in north-western Europe. Ireland, the Netherlands, Sweden, and especially Denmark form a compact block of countries that achieve an exceptionally high level of business efficiency. This group is characterized by a flexible labour market, a high degree of innovation, and a dynamic business culture.

The Nordic countries, together with Ireland, thus form the core of the European business environment, which is the most competitive and attractive to investors. This area is clearly highlighted in dark shades on the cartogram, contrasting with most other regions.

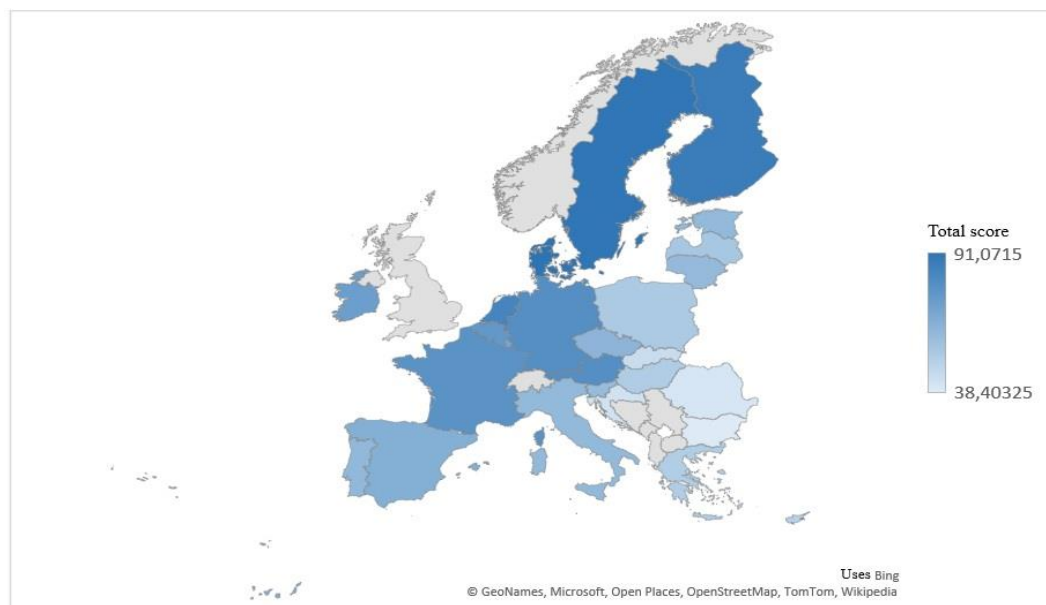
Western and Central Europe show more differentiated results. Belgium, Austria, and Luxembourg achieve above-average scores, while Germany is in the middle range. France, together with Portugal, Spain, and Italy, are closer to average or below average, pointing to persistent structural problems in these economies, such as a rigid labour market, and administrative barriers.

The lightest shades on the map are concentrated in Central and South-eastern Europe. Slovakia, Hungary, Bulgaria, and Croatia have the lowest business efficiency scores, reflecting these countries' weaker ability to create favourable conditions for business activity. The problems are related to a lack of innovation, limited access to finance, low productivity, and persistent administrative burdens.

The spatial picture is particularly clear in the north and northwest of Europe, where the most business-efficient environment is found, while the south and east of the continent remain marked by lighter shades and thus lower values. This northwest-southeast gradient represents one of the sharpest dividing lines in the European economic space, with post-socialist countries and parts of southern Europe forming the periphery of business competitiveness.

Another key dimension of competitiveness is infrastructure, which is a fundamental prerequisite for sustainable economic development and quality of life. This indicator includes not only transport and energy infrastructure, but also technological readiness, the level of digitization, the scientific and research base, and the education system. A high level of infrastructure reduces transaction costs, promotes innovation, and improves the country's connectivity to global markets. This parameter across the EU is shown in Figure 5.

Figure 5: Comparison of EU countries in terms of infrastructure



Source: own elaboration

The infrastructure cartogram offers a picture that largely mirrors the general map of economic development in Europe. The highest values are concentrated in the northern and north-western parts of the continent. Sweden, Denmark, and Finland, together with the Netherlands and Germany, form the core of countries with highly developed transport, technological, and educational infrastructure. These countries are shown in the darkest shades, indicating their ability to support innovation, digitization, and a high standard of living.

France, Austria, and Belgium also maintain a strong position, representing a stable Western European environment with long-established high-quality infrastructure. Ireland is at a slightly lower level but still achieves values that secure its position among developed countries.

Central Europe is shown in lighter shades, indicating lower infrastructure quality. The Czech Republic, Slovenia, and Estonia are in the middle range, while Slovakia, Hungary, and Poland lag behind and are approaching the scores of south-eastern European countries. This difference reflects the slower pace of modernization and investment in infrastructure following the transformation of post-socialist economies.

The brightest shades are visible in the Balkans. Bulgaria, Romania, and Croatia have the lowest infrastructure scores, reflecting persistent problems in transport networks, technological readiness, and investment in research and education. Similarly, Greece and Cyprus show below-average results, pointing to structural challenges linked to economic crises and limited public resources.

Spatial continuity is evident: the highest quality infrastructure is concentrated in the north and west, while southern and eastern Europe lag behind. The cartogram thus confirms that infrastructure remains one of the key factors deepening the differences between the core and the periphery of the European economic area.

4. Discussion

The spatial analysis of competitiveness across European Union countries confirms the persistence of a clear west–east and north–south gradient, which is consistent with broader empirical findings on regional disparities in Europe. Previous research has highlighted that the transformation of post-socialist regions remains incomplete, with these territories systematically lagging behind their western counterparts in most pillars of competitiveness. Borsekova et al. (2021) demonstrated that while convergence has been observed in some dimensions, particularly in capital regions, the majority of post-socialist regions without metropolitan centers remain the most vulnerable group in Europe. Our cartogram results align with this interpretation, as they revealed significantly lower competitiveness scores in Central and Southeastern Europe compared to the Nordic and Western countries.

The hypothesis of regional convergence within the EU has been widely debated, and findings often point to heterogeneous patterns. Zdrasil (2025) applied a stricter definition of convergence and found evidence of partial income convergence, with a “belt of convergence” along the former Iron Curtain, but weaker links to German regions than previously suggested. Our results support this notion of club convergence, showing that while some Central European states (e.g., Czech Republic, Estonia, Lithuania) are catching up, others remain locked in structural disadvantages.

At the same time, the long-term persistence of productivity gaps is evident in case studies such as East Germany. Muller (2021) showed that, even 30 years after reunification, Eastern Germany reaches only 80% of Western productivity levels, primarily due to firm-level inefficiencies. This echoes the results of our analysis of business efficiency, where post-socialist states consistently ranked lower. Similarly, Bergner (2021) emphasized that policymakers underestimated the challenges of institutional and economic transformation, which helps explain why institutional weaknesses remain a key obstacle to competitiveness in Eastern and Southern Europe.

Beyond institutions and governance, corporate behavior also plays a role. Kopp (2015) highlighted how corporate social responsibility (CSR) in Central and Eastern Europe is shaped by historical legacies and foreign investment, creating both opportunities and vulnerabilities. This contextualizes our findings on business efficiency, where countries with stronger international integration tend to perform better.

Innovation and industrial modernization represent another critical axis of differentiation. Orosnjak et al. (2021) found that much of the technological progress in Industry 4.0 has been concentrated in Western Europe, while Eastern European scholars have often remained in the role

of critics rather than leaders. This divide mirrors our cartogram of infrastructure, where the western and northern countries, with stronger R&D bases, clustered at the top.

From a methodological perspective, Kleszcz (2023) identified infrastructure, innovation, and institutions as the most decisive factors separating EU-15 from EU-13 members. Our findings strongly corroborate this conclusion, as the cartograms revealed that infrastructure and government efficiency were the clearest axes of division between Western and post-socialist Europe.

Digital transformation is another lens through which spatial inequalities manifest. Tislenko (2024) demonstrated that although EU policy has narrowed the digital divide, financing has been uneven, favouring western and southern states while leaving eastern members underfunded. This explains why many Eastern European states continue to struggle in digital readiness, which is captured indirectly in our infrastructure indicator.

Finally, research focusing directly on post-socialist countries shows substantial divergence within the group itself. Cibik (2021) found that since accession to the EU, differences between these countries have actually widened, reflecting uneven capacities to translate integration into growth. Likewise, Stanickova (2015) used factor analysis to classify EU territories, confirming that significant socio-economic disparities persist and undermine the EU's overall competitiveness in the global context.

Taken together, the evidence from the literature and our cartogram-based analysis converges on a common conclusion: the „invisible iron curtain“ continues to shape Europe's competitiveness landscape. While progress has been made, particularly in certain Central European economies, structural barriers in governance, infrastructure, and innovation remain significant. Bridging these divides will require sustained and territorially sensitive policies that combine institutional reform, targeted investment, and support for digital and innovation-driven transformation.

5. Conclusions

The present study has sought to uncover the spatial patterns of competitiveness within the European Union by employing cartogram-based visualization of data from the IMD World Competitiveness Yearbooks. By focusing on an eight-year average across five key dimensions overall competitiveness, government efficiency, economic performance, business efficiency, and infrastructure the analysis provided a robust and long-term view of disparities across European states. The use of cartograms proved to be a valuable methodological choice, as it allowed us to highlight territorial asymmetries that would not have been as clearly visible through traditional statistical tables.

The results clearly reveal that, despite more than three decades of political integration and economic convergence policies, the geography of competitiveness in Europe remains deeply uneven. A pronounced northwest–southeast and west–east divide persists, with the Nordic countries, Ireland, the Netherlands, and parts of Western Europe consistently ranking at the top of all examined dimensions. These states combine strong institutional quality, highly efficient governance, robust innovation ecosystems, and well-developed infrastructure, which together generate a resilient and competitive environment. In contrast, most post-socialist countries, along with parts of Southern and South-eastern Europe, remain clustered in the lower tiers of competitiveness, which is evident across nearly all cartograms.

The persistence of this gap underscores the enduring impact of the “invisible Iron Curtain,” as the post-socialist bloc continues to lag in areas such as government effectiveness, business efficiency, and infrastructure quality. Although progress has been made in certain Central European states, such as the Czech Republic, Estonia, and Lithuania, the convergence process remains incomplete and uneven. Particularly critical is the role of government efficiency, which was found to be the most decisive differentiator between the western and eastern halves of the continent. Weak institutions and ineffective public administration continue to hinder competitiveness,

creating barriers for entrepreneurship, slowing investment in infrastructure, and reducing overall resilience.

From a theoretical standpoint, the study contributes to the growing body of literature emphasizing the spatial dimension of competitiveness. The findings confirm that competitiveness cannot be fully understood in isolation at the national level; rather, it is shaped by spatial interdependencies, regional clusters, and historical legacies. The cartogram approach, by visualizing these spatial gradients, adds an important layer of insight to ongoing debates on European convergence and divergence.

In practical terms, the analysis suggests several implications for policymakers. First, targeted investment in infrastructure, education, and digital readiness remains essential in Central, Eastern, and Southern Europe, as these are the area's most strongly correlated with long-term competitiveness. Second, reforms aimed at strengthening governance, reducing corruption, and improving public administration efficiency must be prioritized, as they represent a critical bottleneck in bridging the east–west divide. Finally, policies should recognize the role of business efficiency and innovation ecosystems as catalysts for sustainable competitiveness.

Nevertheless, the study has its limitations. By relying on aggregated eight-year averages, short-term shocks and year-to-year dynamics could not be captured. Furthermore, the IMD methodology itself combines hard data with survey-based perceptions, which introduces an element of subjectivity. Future research should therefore complement this approach with alternative indicators, longitudinal econometric models, and finer-grained regional analyses that can shed light on intra-national disparities.

In conclusion, the findings highlight that while the European Union has made significant progress toward cohesion, the legacy of the Iron Curtain continues to cast a long shadow on the continent's competitiveness landscape. Unless structural reforms and targeted policies are intensified, particularly in governance and infrastructure, the spatial gap will persist and threaten the EU's ambition of balanced, sustainable, and inclusive growth. By employing spatial methods such as cartograms, researchers and policymakers alike can gain a clearer understanding of these disparities and develop more territorially sensitive strategies to foster convergence and resilience in the European economic space.

Author contributions

All authors listed have made a substantial, direct and intellectual contribution to the work, and approved it for publication.

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Data Availability Statement

Publicly available datasets were analysed in this study. This data can be found here: [<https://www.imd.org/centers/wcc/world-competitiveness-center/rankings/>].

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Conflicts of Interest

The authors declare no conflict of interest.

Declaration of generative AI and AI-assisted technologies in the writing process

The authors declare that no generative AI or AI-assisted technologies were used in the writing or preparation of this manuscript.

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