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# Competitiveness of Regions in Selected Countries of Central and Eastern Europe

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## Abstract

Creating the competitiveness of voivodeships is a difficult and complicated process; the effect is a specific competitive position against the background of compared regions. This study complements the literature on the subject and presents a new perspective that presents a fuller and more comprehensive range of determinants influencing the level of competitiveness of territorial units, thanks to the use of the components of the European Regional Competitiveness Index (RCI) and the European Social Progress Index (EU SPI). The study carried out a comparative analysis of the RCI and the EU SPI of territorial units of Central and Eastern Europe in 2016–2020, and as a supplement to the cluster analysis, used the Ward method. The research results prove that territorial units in Central and Eastern Europe were characterized by a lower level of competitiveness and social progress compared to regions in Northwestern Europe. Between the regions of countries of Central and Eastern Europe, there was also a visible spatial differentiation of competitiveness between individual units. Cluster analysis facilitated the selection of regions and the identification of units that were internally and homogeneously consistent. This made it possible to select leaders among the regions of the above-mentioned regions. countries with a relatively high competitive position compared to the others, including the regions of the Czech Republic and Poland.

## Keywords

competitiveness of regions | RCI | EU SPI | comparative analysis | cluster analysis

## JEL Codes

O11, R11

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## 1. Introduction

The competitiveness of the economy results from the competitiveness of individual elements, forming the aggregated model, which should also include interactions and cooperation between the levels of competitiveness and, among others, inter- and intra-sector links (Huggins et al., 2013; Martin, 2005; Tusińska, 2014, p. 21). One of the multidimensional concepts regarding the international competitiveness of the economy, presented at the World Economic Forum, defines competitiveness as a specific aggregate of institutions, policies, and determinants of state productivity, which, in consequence, should ensure high productivity, enabling high incomes and a high standard of living for residents, as well as a higher rate of return from investments (World Economic Forum, 2014). It is worth emphasising that the international competitiveness of the economy should refer to

objects (i.e., product, sector, industry) or entities (i.e., enterprise, region, state) (Olczyk, 2008, p. 13).

Regional competitiveness is one of the levels of economic competitiveness, which is defined, for example, as ‘the ability of the economy to provide residents with a high and growing standard of living and a high level of employment, based on sustainable foundations’ (European Commission, 2010, p. 23). Mesocompetitiveness means using the resources existing in a territorial unit in such a way as to achieve and maintain a high standard of living for the current and future inhabitants of a region and enable its continuous development (Meyer-Stamer, 2008, p. 3). It is also the adaptive capacity of regions in changing environmental conditions aimed at maintaining and/or improving their position among competing regions (Winiarski, 2000, p. 9). Therefore, a certain level of competitiveness of a region can be identified with its development, which means continuous and

dynamic changes leading to an increase in the level of development of a territorial unit. These issues have been the subject of consideration in various studies, which described, e.g., determinants and determinants of competitiveness, factors of economic growth and regional development, economic stability of regions, foreign direct investment (FDI), migrations (Annoni & Dijkstra, 2019; Bąk et al., 2022; Borozan, 2008; Cieślak, 2019; Grassia et al., 2022; Kharlamova & Vertelieva, 2013; Łaźniewska, Chmielewski, & Nowak, 2012; Liu, 2017, p. 121–122; Lizińska & Kisiel, 2023; Pires et al., 2020; Sánchez de la Vega et al., 2019; Tusińska, 2014; Wosiek, 2016).

Regional competitiveness means activities aimed at using existing resources and intellectual potential. As a result, the territorial unit should gain an advantage over its rivals. Competitiveness is also understood as the region's ability to generate high and growing incomes and increasing means of subsistence of its inhabitants (Borozan, 2008; Skórska, 2019). The process of competing at the regional level is becoming more and more complicated and sophisticated, and successful entities invest in innovations and management methods that allow them to fully exploit the existing potential of the region (Czudec, 2013). Creating competitiveness is a difficult process and involves a certain risk related to time and insufficient information in the decision-making process. Nevertheless, decision makers take this risk while considering possible failure, but success compensates for the effort. This is reflected in the increased attractiveness of a given region, which should translate into the interest of potential investors. Such activities may contribute to the socio-economic development of the region and improve the quality of life (Chrobocińska, 2021).

This study fills the cognitive gap regarding the assessment of the creation of competitiveness of regions in Central and Eastern European countries. The considerations are based on the definition of competitiveness combining various research trends, which allows for a comprehensive approach to the problem. According to Krakowiak-Bal (2019, p. 37, after Gorynia, 2009, p. 48) 'in the classical theories, the competitiveness of the economy (country, region) depended primarily on labor input. Subsequent definitions expand this concept to include other production factors, such as capital or technical knowledge, as well as the scale of production, institutional environment, marketing, promotion, etc. Undoubtedly, competitiveness can be understood

either as a feature (attribute, result, result) or as a process.' The study is based on the factor-result competitiveness approach (Gorynia, 2009, p. 53–66), which is a hybrid that includes both the competitive potential and determinants of competitiveness as well as the effects achieved by local economies, which is reflected in the competitive position (Krakowiak-Bal, 2019, p. 42–44, after Stankiewicz, 2002, p. 89). At the regional level, factor-result competitiveness is described by a multi-criteria RCI that takes into account the spatial diversity of the competitive position of territorial units of selected Central and Eastern European countries, but this approach does not take into account aspects related to the quality of life, which seem to be important in assessing the level of competitiveness.

The study complements the literature on the subject and presents a new perspective that presents a fuller and more comprehensive range of determinants influencing the level of competitiveness of territorial units, thanks to the use of the components of the European Competitiveness Index (RCI) and the European Social Progress Index (EU SPI). The practical use of both indicators allows one to determine the level of competitiveness of the regions enriched with aspects relating to the quality of life. This approach makes it possible to obtain an assessment of the level of competitiveness that is more adequate to the socio-economic situation of the unit, taking into account many aspects of socio-economic life. Cases of regions that have achieved a competitive advantage can become a benchmark that will be helpful in creating an effective development strategy for territorial units that occupy further places in the ranking of the most competitive (Chrobocińska, 2021). This research hypothesis was put forward: that the regions covering the capitals of selected countries will be characterized by a higher competitive position compared to other territorial units in the countries concerned. The study attempts to assess the competitive position of Polish voivodships against other territorial units of selected countries of Central and Eastern Europe.

## 2. Research Methodology

Creating a region's competitiveness is a time-consuming, complex, and difficult to measure process. Unfortunately, the literature on the subject has not yet described the best algorithm of conduct that would ensure the best assessment of competitiveness

at the mesoeconomic level based on specific and unambiguous measures (Kiseláková et al., 2019, p. 442–446). Therefore, scientific studies use many methods to assess the competitiveness of territorial units, e.g., TOPSIS (Rogalska, 2018, p. 712–714), linear ordering (Szczeniński, 2016, p. 110–112), zero unitarization (Czudec, 2013, p. 40–41), cluster analysis (Chrobocińska, 2021), or the multicriteria Perkal index, calculated to changes in the time system and comparative analysis of territorial units (Korinth & Wendt, 2021, p. 178–180).

The study uses a comparative analysis using the European RCI from 2016–2022 and the EU SPI from 2016–2020. These data came from publications and statistical data provided by the European Commission (EC). Unfortunately, there is a lack of the latest data on the level of the EU SPI (i.e., from 2022) published by the EC at the mesoeconomic level (i.e., at the regional level). One can obtain data on the development of the Social Progress Index from 2022 (<https://www.socialprogress.org/global-index-2022-results/>); however, this index concerns countries at the macroeconomic level. For example, the level of the mentioned indicator in 2022 in selected countries of Central and Eastern Europe was the highest in the Czech Republic (85.19), and the lowest was in Bulgaria (76.81). It is worth adding that the formulas of the EU RCI and EU SPI indicators are evolving, which means that their scope is changing (RCI 2.0 was published in 2023). The data used in the research came from publications and statistical data presented by the EC, who made it possible to present the level of competitiveness and social progress of the regions of the Czech Republic, Slovakia, Hungary, Bulgaria, Romania, and Poland; then rankings were prepared according to the above-mentioned indicators. In the description of the results, the median was used, which made it possible to indicate those regions that reached the highest levels of the above-mentioned indicators.

The study uses abbreviations of individual regions used by the EC, specifying the country of origin along with a numerical symbol (e.g., PL 12 represents the Mazowieckie Voivodeship in Poland).

At the regional level, factor-result competitiveness is described by the multicriteria RCI based on statistical data obtained under NUTS 2, which in 2019 includes over 80 indicators in its formula. Various aspects of competitiveness are included in its structure, which is divided into three groups: basic (including institutions, macroeconomic stability, infrastructure), efficiency (including higher education, labor market efficiency),

and innovation (including technological readiness, the state of development of enterprises, and innovation) (Annoni & Dijkstra, 2019; Chrobocińska, 2021; Kiseláková et al., 2019). The factor-result approach was supplemented by socio-economic relations in the mesoeconomic approach, which is illustrated by the multicriteria EU SPI, covering, in 2020, at the NUTS 2 level over 70 components of indicators, including economic development, quality of life, and the quality of the natural environment of voivodeships (including environmental pollution, accessibility of universities, trust in the police, institutional quality index, life expectancy, Internet access, homicide rate, unmet medical needs, etc.).

Classification of regions due to their level of competitiveness was carried out using cluster analysis, which belongs to the hierarchical agglomeration method. It allows the separation of clusters, their classification, and their exploration (Boichenko et al., 2023, p. 84). The essence of agglomeration methods boils down to extracting homogeneous subsets of these objects from a data set of objects. The division was carried out using the Ward method, so that objects from one group (class) were as similar as possible, and objects belonging to different classes as different as possible (Łukiewska, 2019, p. 125–126). As a measure of the distance between the tested objects, the Euclidean distance was adopted, which determines the actual geometric distance in multidimensional space. The process of grouping research results is reflected in a binary tree (dendrogram), which illustrates sets of objects due to the decreasing similarity between them. The results of the analysis were presented graphically on a dendrogram using Statistica software. The following research methods were also used in this study: the literature analysis method, the source materials analysis method, and comparative analysis.

### 3. Level of Competitiveness and Social Connection in Selected European Union Countries at the Regional Level in 2020–2022

Regional competitiveness is one of the pillars of the European Union's (EU's) regional policy. EU support is important both for local communities and local government units, which are the largest stakeholders in investment projects or modernization aimed at



improving living conditions and quality of life. This is of particular importance for the countries of Central and Eastern Europe selected for research because of that region's complicated geopolitical situation (Hagemejer et.al., 2021) and historical conditions related to belonging to the Eastern bloc in Europe. The assumptions of the EU regional policy are reflected in the strategies and projects already implemented by local government units, where the optimal allocation of funds can contribute to an increase in competitiveness at the county or commune level. The RCI is used to monitor the situation in the regions. The regularity of RCI publications is necessary and helpful in managing local government units. RCI can be used by researchers, investors, and local decision makers, because this index at the mesoeconomic level allows one to monitor and compare, for example, local results with others in similar regions. Awareness of the conditions, determinants of competitiveness, and paying attention to regional deficits may have a positive impact on the creation of regional strategy and policy. This can help the subsequent development of regions and their level of competitiveness, thanks to appropriate support for structural reforms. The analysis of the RCI level in EU countries in 2010–2022 (Annoni & Dijkstra, 2019) showed dynamic changes and large differences in the level of competitiveness, as well as disproportions in socio-economic development between Western European countries (e.g., in 2022 the RCI level was the highest in the Netherlands in the Utrecht region (151.1); in Zuid-Holland (142.5); and in France in the Ile de France region (142.0)) and the countries of Eastern Europe (e.g., in 2022 in Romania in the Sud Est region the RCI level was 46.1; in Nord Est, it was 47.0; and in Bulgaria in the Severozapaden region, it was 49.0) (Table 1).

The RCI analysis in 2022 also allows one to see differences in the level of competitiveness between voivodeships in Poland and regions in selected countries of Central and Eastern Europe. Analyzing the distribution of RCI, it is possible to state the high level of differentiation of the RCI, with higher competitiveness distinguished by the capital regions, although not always. For example, in the capital Warsaw (PL 91), the RCI was 118.8; the territorial unit of Prague (CZ 01, CZ 02) was ranked at 114.3; the Bratislava region (SK 01) was at 113.6; the Budapest region (HU 11, HU 12) was 105.5. However, in the case of other capital cities, the indicator values were relatively low compared to the above-mentioned RCI values. The regions of Central and Eastern Europe (i.e., the regions of Poland, the Czech Republic, Slovakia,

Hungary (HU 21 and HU 22), Bulgaria (BG 41), and Romania (RO 32) are characterized by a relatively high level of competitiveness—the RCI index ranged from 118.8 to 75.8. In the remaining regions, a low or very low level of RCI was found (the RCI level ranged from 73.3 to 46.1) (Figure 1). Data from 2016–2022 indicate a polycentric system of regions in Central and Eastern Europe, in which the effect of polarization and drainage of resources from the regions surrounding the centers of socio-economic life is visible. Initiating the region's development and stimulating competitiveness comes from strong capital and metropolitan centers (European Commission, 2022).

The EU SPI reflects the level of human development and quality of life at the mesoeconomic level, which is complementary to the RCI. The results of the 2020 reports indicate a large variation in the level of human development in Europe. A lower level of the social progress index is visible in Central and Eastern Europe (e.g., territorial units of Poland, the Czech Republic, Slovakia, Hungary, Bulgaria, and Romania). The EU SPI level in this part of Europe ranged from 73.48 (CZ 01) to 43.27 (BG 31) (Tables 1, 2). The highest level of social progress in the EU was achieved by the Swedish region of Övre Norrland (SPI, 85.11), followed by the Finnish region of Helsinki-Uusimaa (SPI, 83.75), and the Swedish Mellersta Norrland region (SPI, 83.31) (Table 1).

A comparative analysis of the countries of Central and Eastern Europe in terms of regions shows that in 2020, the highest level of social progress was characterized by the regions of the Czech Republic (SPI level ranged from 73.48 to 65.07), Slovakia (SPI level 64.86), Poland (SPI level ranged from 67.25 to 63.30), and Hungary (SPI level was 63.63) (Figure 2). The lowest level of SPI was recorded in the regions of Romania, Bulgaria, and Hungary (SPI ranged from 50.45 to 43.27) (Table 1).

#### **4. Level of Competitiveness and Social Progress in 2016–2022 in Selected Countries of Central and Eastern Europe in Regional Terms**

On the basis of the median value of the RCI in the years 2016–2022 and the median value of the EU SPI index, territorial units with the highest RCI and

**Table 1.** Level of the EU RCI in 2022 and the EU SPI in 2020 in Selected EU Countries

Region	EU RCI in 2022	Region	EU SPI in 2020
Utrecht	151.10	Övre-Norrland	85.11
Zuid-Holland	142.50	Helsinki-Uusimaa	83.75
Île-de-France	142.00	Mellresta Norland	83.31
Amsterdam and its commuting zone	140.60	Smaland med Öarna	82.89
Stockholm	138.90	Länsi-Suomi	82.86
Hovestaden	137.70	Midtjylland	82.85
Helsinki-Uusimaa	133.40	Västsverige	82.63
Hamburg	129.70	Norra Mellasverige	82.38
Oberbayern	129.60	Phojoisja-Itä-Suomi	82.33
Darmstadt	127.10	Estelä-Suomi	81.82
Vest	57.80	Severen Centralen	50.45
Nord Vest	56.00	Severoiztchoen	49.41
Yugoiztchoen	53.40	Yuzencentralen	49.45
Starea Ellada	53.20	Centru	49.47
Centru	52.50	Yugoiztchoen	46.29
Sud Muntenia	52.10	Sud Vest Oltenia	46.79
Sud Vest Oltenia	50.20	Nord-Est	44.76
Severozapaden	49.00	Sud Muntenia	43.67
Nord-Est	47.00	Sud-Est	43.55
Sud-Est	46.10	Severozapaden	43.27

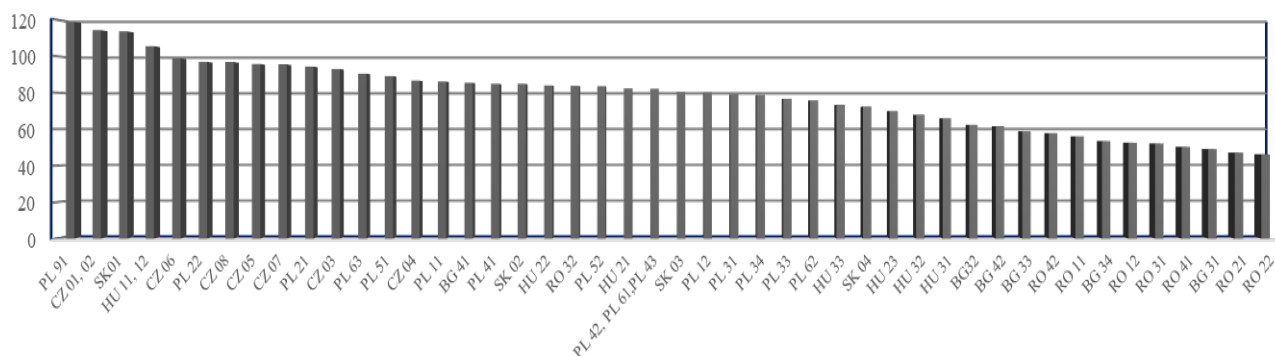
Source. [https://ec.europa.eu/regional\\_policy/information-sources/maps/regional-competitiveness\\_en](https://ec.europa.eu/regional_policy/information-sources/maps/regional-competitiveness_en) and [https://ec.europa.eu/regional\\_policy/information-sources/maps/social-progress/2020\\_en](https://ec.europa.eu/regional_policy/information-sources/maps/social-progress/2020_en)

SPI values were distinguished, which allowed one to create a ranking indicating the regions with the best competitive position in the discussed group. The analysis at the mesoeconomic level of the RCI in 2016–2022 indicates large disproportions in the level of competitiveness of Western and Eastern European regions, which means that in the above-mentioned regions, countries' economic and social development differs significantly from that in Western European countries. In particular, in the territorial units of Central and Eastern Europe, despite the low level of their RCIs, there is also differentiation even within the country (e.g., in 2019 in the Czech Republic in the region CZ 01, covering the capital city of Prague, and CZ 02, Střední Čechy, the RCI in 2019 was 0.43, while in CZ 04, Severozápad, it was –0.38) (Table 2).

A similar situation was also the case of the level of the EU SPI in 2020. Territorial units in the countries of Central and Eastern Europe were characterized

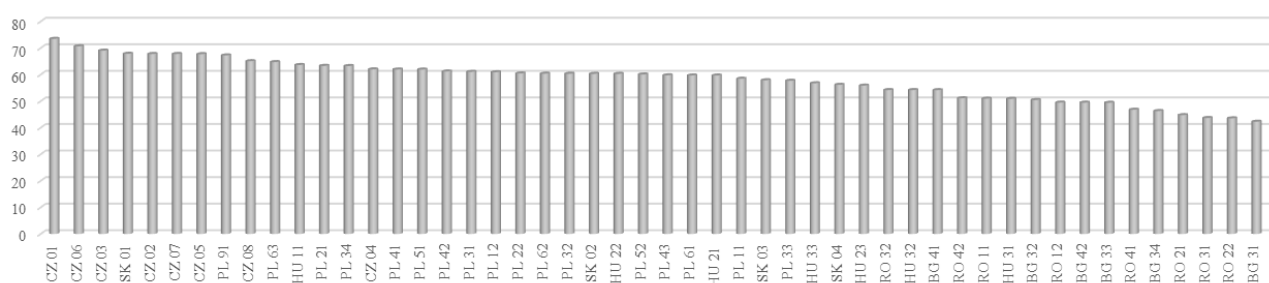
by much lower social progress than units in other European countries. In addition, there are also visible disproportions in social progress in some countries (e.g., in 2020 in Poland in PL 63, the Pomeranian Voivodeship, the EU SPI was at an average level and amounted to 64.73, while in PL 72, the Kuyavian-Pomeranian Voivodeship, the EU SPI was at a lower level—57.69 (Figure 2)).

Comparing the RCI level of the discussed territorial units of Central and Eastern Europe in the years 2016–2022, it should be noted that almost all regions of the Czech Republic (except for CZ 04), the Slovak region SK 01 was characterized by a relatively high index compared to the rest of this area, and there was a stable level of competitiveness in Bratislavský kraj, the Hungarian region of Budapest and its commuting zone (HU 11 and HU 12), and in the Bucuresti region (Ilfov, RO 32).



**Figure 1.** RCI level of regions in Central and Eastern Europe in 2022.

Source: own work based on [https://ec.europa.eu/regional\\_policy/information-sources/maps/regional-competitiveness\\_en](https://ec.europa.eu/regional_policy/information-sources/maps/regional-competitiveness_en) (7.09.2023)



**Figure 2.** SPI level by region in Central and Eastern Europe in 2020

Source: Own work based on [https://ec.europa.eu/regional\\_policy/information-sources/maps/social-progress/2020\\_en](https://ec.europa.eu/regional_policy/information-sources/maps/social-progress/2020_en) (9.03.2023)

The best results in 2022 in Poland were achieved by the Warsaw region: the capital RCI was at the level of 118.8 (in 2019 defined as PL 92, i.e., the Mazowieckie region), Silesia (96.9) and the Małopolskie (94.3) and Pomeranian Voivodeships (90.4). In the case of the Masovian Voivodeship in 2019, a decline in competitive position was found, and this situation could result from, among others, from the geographical separation of the capital area and separate presentation of the RCI for the voivodeship (RCI = -0.45) and the Warsaw capital area (RCI = 0.23) (Table 2).

Comparing the RCI level of the discussed territorial units of Central and Eastern Europe in the years 2016–2019, it can be noted that the following entities were characterized by a relatively high level of competitiveness compared to the others in this area, and a stable level of competitiveness: the Slovak region (Bratislavský kraj, SK 01) and the Czech regions (Prague, CZ 01 and Střední Čechy, CZ 02), where the RCI ranged from 0.28 to 0.43. Slightly lower RCI levels were observed in the following regions: Jihovýchod (CZ 06, RCI from -0.14 to 0.04), Severovýchod (CZ 05, RCI from -0.23 to -0.10), Jihozápad (CZ 03), Střední Morava (CZ 07), and Moravskoslezsko (CZ 08, RCI from -0.30

to -0.15). The best results in Poland during this period were achieved by the Masovian, Silesian, and Lesser Poland voivodeships (RCI from -0.13 to -0.45).

A slightly lower, but stable, competitive position in the ranking was occupied by the majority of territorial units from Poland (i.e., PL 52, PL 33, PL 43, PL 62, PL 42, PL 31, PL 61, and PL 34); the level of the RCI indicators then ranged from -0.35 to -0.65. In the 2022 ranking, the order of Polish voivodeships changed (PL 63, 51, 11, 41, 52, 42, 61, and 43), and the level of the RCI ranged from 90.4 to 82.1. A similar situation in 2016–2019 was in the case of the Hungarian region HU 22 (where the RCI ranged from -0.67 to -0.52), the Bulgarian region BG 41 (the RCI ranged from -0.67 to -0.42), and Slovak units SK 02, SK 03 (RCI was in the first case from -0.58 to -0.38, and in the second from -0.69 to -0.53) (Table 2).

The level of the RCI from 2016–2022 made it possible to isolate a group of territorial units from Central and Eastern Europe that occupied the weakest competitive positions. In the group of Polish voivodeships, the lowest level of the RCI in 2022 was recorded in the following regions: Lubelskie,

**Table 2.** Ranking of the Best Territorial Units Based on the Level of the RCI From 2016 to 2022 and the Level of the EU SPI From 2016 to 2020

Index	RCI			EU SPI	
	Years				
Ranking	2016	2019	2022	2016	2020
1	SK 01	CZ 02	PL 91	CZ 01	CZ 01
2	CZ 02	CZ 01	CZ 01, 02	CZ 06	CZ 06
3	CZ 01	SK 01	SK 01	CZ 03	CZ 03
4	PL 12	CZ 06	HU 11, 12	SK 01	SK 01
5	CZ 06	CZ 05	CZ 06	CZ 05	CZ 02
6	CZ 05	RO 32	PL 22	CZ 07	CZ 07
7	RO 32	CZ 08	CZ 08	PL 63	CZ 05
8	CZ 07	CZ 07	CZ 05	PL 34	CZ 08
9	CZ 03	CZ 03	CZ 07	CZ 02	PL 63
10	CZ 08	PL 22	PL 21	PL 42	PL 21
11	PL 22	PL 21	CZ 03	CZ 08	PL 34
12	PL 21	CZ 04	PL 63	RO 32	CZ 04
13	PL 51	SK 02	PL 51	PL 41	PL 41
14	PL 11	BG 41	CZ 04	PL 12	PL 51
15	PL 41	PL 51	PL 11	HU 22	PL 42
16	CZ 04	PL 11	BG 41	PL 32	PL 31
17	PL 63	PL 12	PL 41	PL 62	PL 12
18	PL 61	PL 41	SK 02	SK 03	PL 22
19	SK 02	PL 63	HU 22	PL 21	PL 62
20	PL 31	HU 22	RO 32	PL 31	PL 32
21	PL 32	SK 03	PL 52	PL 61	SK 02
22	PL 34	PL 52	HU 21	SK 02	HU 22
23	PL 42	PL 32	PL 42, PL 61, PL 43	CZ 04	PL 52

Source. Own work based on [https://ec.europa.eu/regional\\_policy/information-sources/maps/social-progress/2020\\_en](https://ec.europa.eu/regional_policy/information-sources/maps/social-progress/2020_en) (9.03.2023, 7.09.2023)

Podlaskie, Świętokrzyskie, and Warmian-Masurian. Comparing the presented results and those in other studies on the competitiveness of voivodships in Poland, it can be concluded that similar observations have already been published earlier, and the following voivodships were still characterized by the lowest investment attractiveness: Świętokrzyskie, Lubelskie, Warmian-Masurian, and Podlaskie (Borowicz et al., 2016, p. 9; Chrobocińska, 2021; Skórska, 2019, p. 532–537).

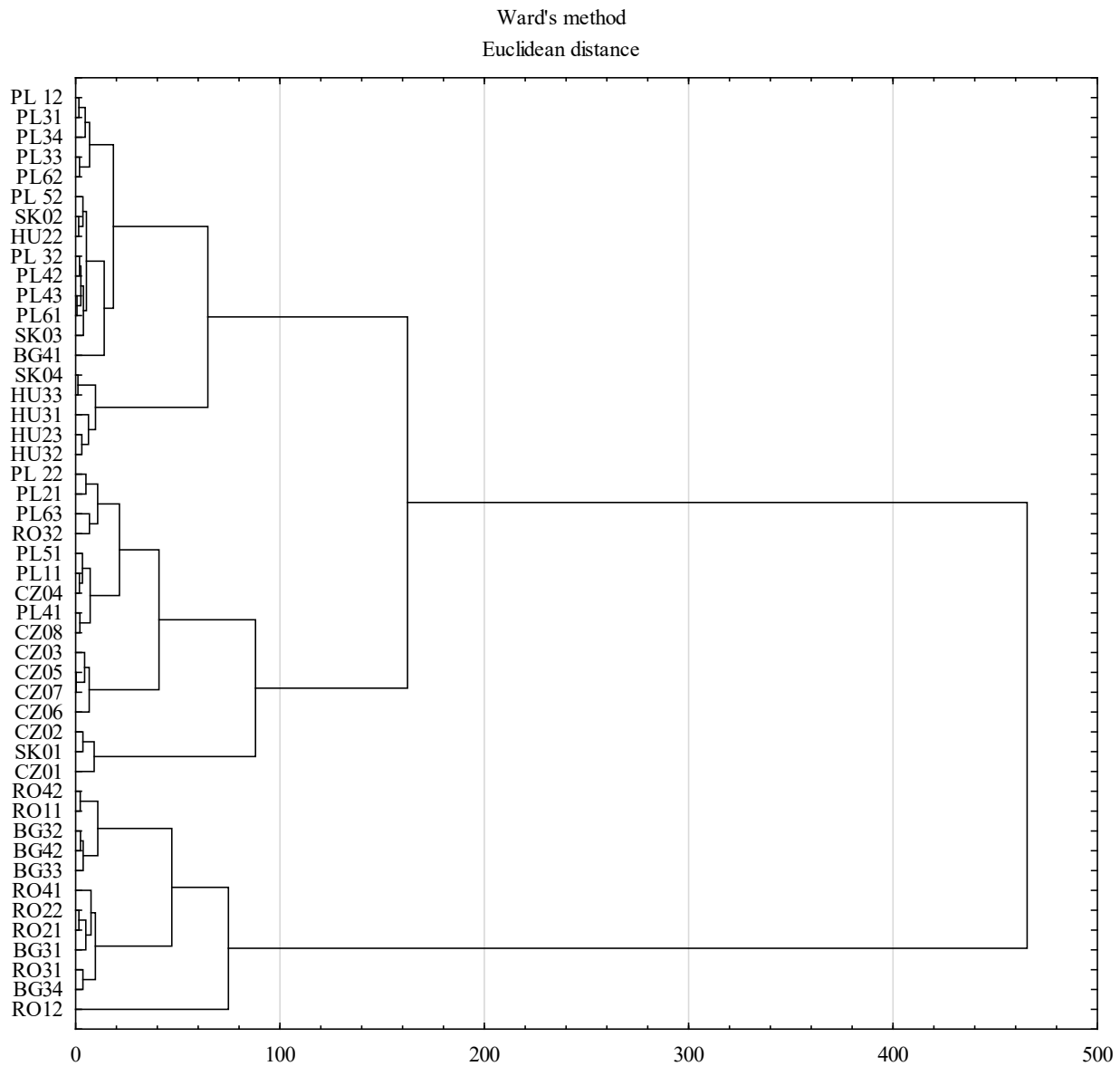
In the discussed group, apart from the above-mentioned ones, almost all Romanian and Bulgarian regions were characterized by the lowest level of RCI, which allowed them to be classified in the lowest positions of the ranking (Figure 1).

The development of the EU SPI level in 2016–2020 also made it possible to create a ranking of territorial units of Central and Eastern Europe. Those characterized by a relatively high level of social progress include all Czech territorial units, where the highest level of EU SPI in the analyzed period was recorded in the case of CZ 01 (the level of EU SPI was 65.85–73.48), and the lowest level was found in CZ 04 (in which the EU SPI was at the level of 56.52–61.99).

Also, most Polish voivodeships in the EU SPI were ranked highly (EU SPI ranged in 2016 from 60.52 in PL 63 to 57.00 in PL 61 and in 2020 from 64.73 in PL 63 to 60.33 in PL 32). In addition, three Slovak regions (SK 01, SK 03, SK 02) were characterized by relatively high levels of the EU SPI (50.64–67.86). In addition to this group, there was a Romanian region (RO 32, 58.03) and two Hungarian ones (HU 22 and HU 11, where the EU SPI was 57.83–60.28) (Table 2). The analysis of the level of the EU SPI in 2020 showed that units whose level of the index was below 60.07 were classified as those characterized by the lowest level of, among others, quality of life. These included all territorial units of Bulgaria and Romania, as well as one Slovak region (SK 03) and four Hungarian regions (HU 31, HU 32, HU 23, HU 33). Some Polish voivodships were also included in this group (i.e., Opolskie, Lubuskie, Świętokrzyskie, Łódzkie, and Kuyavian-Pomeranian) (Figure 2).

Then, an attempt was made to group territorial units from Central and Eastern Europe due to the similarity of components forming multicriteria indicators of regional competitiveness and social progress. Unfortunately, due to the lack of all data from the analyzed period, the following regions were excluded from the analysis: PL 91 (Warsaw Capital Region) and HU 11, HU 12 (Budapest region). For this purpose, Statistica software was used, and cluster analysis was performed using the Ward method, as a result of which a dendrogram was obtained. Based on the analysis of the prepared binary tree, two main groups of internally homogeneous territorial units can be distinguished, due to the examined components. Within both groups, smaller clusters of subgroups were formed, which were also internally consistent (Figure 3).





**Figure 3.** Typology of selected territorial units according to the level of competitiveness in the period 2016–2022 and the level of social progress in the period 2016–2020  
Source. Own study based on research

The first group included all Czech, Slovak, Polish and Hungarian units. In this group, there are two groups with distinct characteristics. In the first subgroup, there is a cluster of regions characterized by relative competitiveness and main positions, defined as some Czech regions and one Slovak one. It is worth noting that this group includes two regions covering the European capitals of the Czech Republic (Prague) and Slovakia (Bratislava). In the second subgroup, even smaller clusters of territorial units with relatively high and medium levels of competitiveness and social progress emerged. A relatively high level of competitiveness and social progress was characterized

by some Polish voivodeships (i.e., PL 11, 21, 22, 32, 41, 51, 63), other Czech regions (CZ 03, 04, 05, 06, 07, 08), and one Hungarian (HU 22). The average level of competitiveness and social progress was observed in the remaining Polish voivodeships (PL 12, 31, 32, 33, 34, 42, 43, 52, 61, 62), the remaining Hungarian regions (HU 22, 23, 31, 32, 33), a Slovak unit (SK 02, 03, 04), and one Bulgarian region (BG 41). The second large cluster was formed by territorial units that were characterized by the weakest level of competitiveness and social progress, including all Romanian and Bulgarian units (Figure 3).

## 5. Conclusion

Diagnosis and assessment of the level of competitiveness of both rivals and the self-assessment of individuals is necessary to plan activities that may contribute to the development of the region and increased investment attractiveness. Unfortunately, the mere implementation of activities without a thorough analysis of the competitive potential and the instruments used may turn out to be ineffective. The research results prove that territorial units in Central and Eastern Europe were characterized by a lower level of competitiveness and social progress compared to regions in Northwestern Europe. In addition, in general, in individual countries, there was also a differentiation of competitiveness between individual regions. It is worth paying attention to the territorial units in which the capitals of the Czech Republic, Poland, Slovakia, Hungary, and Romania were located. These regions usually had a better competitive position compared to the rest of the country (which allowed us to positively verify the research hypothesis). This state of affairs could be influenced by long-term socio-economic processes (e.g., low intensity of urbanization and industrialization), as well as the negative effects of polarization in the form of draining the competitive potential (e.g., internal migrations of qualified staff from units surrounding capital cities).

The results of the analysis indicate that the regions of the Czech Republic and Poland had the best competitive position among the countries of Central and Eastern Europe. So far, the economic and social development of both countries has been similar, but in the case of territorial units of the Czech Republic, their advantage could be due to, among other things, the advanced FDI implementation process, which contributed to the development of the automotive industry and the intensification of tourist traffic. Nevertheless, both countries are still far from the competitive positions of the regions of Northwestern Europe. It seems that in order to reduce the existing disproportions in individual EU countries, more intensive efforts should be made to supplement regional budgets with EU funds that would allow for the elimination of deficits. Perhaps more detailed analysis of the processes of creating the competitiveness of successful regions, which are reflected in the best competitive position compared to other regions, would make it possible to create benchmark solutions. The emergence of a leader in the group of countries characterized by homogeneous

cohesion and, at the same time, a stable, relatively high competitive position, would probably support the creation of competitiveness in regions characterized by a weaker competitive position.

## References

- Annoni, P., & Dijkstra, L. (2019). *The EU regional competitiveness index 2019*. <https://www.europeansources.info/record/the-european-regional-competitiveness-index-2019/>
- Bąk, I., Wawrzyniak, K., & Oesterreich, M. (2022). Competitiveness of the regions of the European Union in a sustainable knowledge-based economy. *Sustainability* 14(7), 3788. <https://doi.org/10.3390/su14073788>
- Boichenko, K., Umair Ashraf, R., Nuno Mata, M., & Cristian Gherghina, Ș. (2023). The EU's socio-economic development against the backdrop of the war in Ukraine. *Central European Economic Journal*, 10(57), 72–89. <https://doi.org/10.2478/ceej-2023-0005>
- Borowicz, A., Kostyra, M., Szlutka, S., & Wandałowski, M. (2016). Atrakcyjność inwestycyjna regionów i podregionów w 2016 roku [Investment attractiveness of regions and subregions in 2016]. Instytut Badań nad Gospodarką Rynkową w Gdańsku, Fundacja Konrada Adenaura w Polsce. <https://ai.ibnigr.pl/>
- Borożan, D. (2008). Regional competitiveness: Some conceptual issues and policy implications. *Interdisciplinary Management Research*, 4, 50–63. <https://econpapers.repec.org/RePEc:osi:journl:v:4:y:2008:p:50-63>
- Cieślak, A. (2019). Determinants of foreign direct investment from EU-15 countries Poland. *Central European Economic Journal*, 6(53), 3952. <https://doi.org/10.2478/ceej-2019-0007>
- Chrobocińska, K. (2021). Comparative analysis of regional competitiveness in Poland from 2010–2019 in the context of the concept of sustainable development. *Sustainability*, 13(6), 3202. <https://doi.org/10.3390/su13063202>
- Czudec, W. (2013). Konkurencyjność województwa podkarpackiego na tle innych regionów Polski Wschodniej [Competitiveness of the Podkarpackie Voivodeship compared to other regions of Eastern Poland]. *Modern Management Review*, 18(20), 39–50. <http://doi.org/10.7862/rz.2013.mmr.43>

- European Commission. (2022). *EU regional competitiveness index 2.0*. (2022 ed.). [https://ec.europa.eu/regional\\_policy/assets/regional-competitiveness/index.html#/](https://ec.europa.eu/regional_policy/assets/regional-competitiveness/index.html#/)
- European Commission. Directorate-General for Enterprise and Industry. (2010). *European competitiveness report 2010*. Publications Office. <https://data.europa.eu/doi/10.2769/83441>
- European Competitiveness Report. (2010). Luxembourg: European Commission. <https://doi.org/10.1287/mnsc.35.12.1514>.
- European Commission (2022). RCI 2.0- 2022 edition [https://ec.europa.eu/regional\\_policy/assets/regional-competitiveness/index.html#/](https://ec.europa.eu/regional_policy/assets/regional-competitiveness/index.html#/)
- Gorynia, M. (2009). Teoretyczne aspekty konkurencyjności [Theoretical aspects of competitiveness]. In M. Gorynia, & E. Łaźniewska (Eds.). *Kompendium wiedzy o konkurencyjności* [Compendium of knowledge about competitiveness]. Wydawnictwo Naukowe PWN.
- Grassia, M. G., Marino, M., Mazza, R., Misuraca, M., Zavarrone, E., & Friel, M. (2022). Regional competitiveness: A structural-based topic analysis on recent literature. *Social Indicators Research*, 1–26. <https://doi.org/10.1007/s11205-022-02951-4>
- Hagemejer, J., Michałek, J. J., & Svatko, P. (2021). Economic impact of the EU Eastern enlargement on New Member States revisited: The role of economic institutions. *Central European Economic Journal*, 8(55), 126–143. <https://doi.org/10.2478/ceej-2021-0008>
- Huggins, R., Izushi, H., & Thompson, P. (2013). Regional competitiveness: Theories and methodologies for empirical analysis. *Journal of Centrum Cathedra (JCC): The Business and Economics Research Journal*, 6(2), 155–172. <http://dx.doi.org/10.7835/jcc-berj-2013-0086>
- Kharlamova, G., & Vertelieva, O. (2013). The international competitiveness of countries: Economic-mathematical approach. *Economics & Sociology*, 6(2), 39–52. <https://doi.org/10.14254/2071-789X.2013/6-2/4>
- Kiselařková, D., Šofranková, B., Onuferová, E., & Čabinová, V. (2019). The evaluation of competitive position of EU-28 economies with using global multi-criteria indices. *Equilibrium. Quarterly. Journal of Economics and Economic Policy*, 14(3), 441–446. <https://doi.org/10.24136/eq.2019.021>
- Korinith, B., & Wendt, J. A. (2021). The impact of COVID-19 pandemic on foreign tourism in European countries. *Prace Komisji Geografii Przemysłu Polskiego Towarzystwa Geograficznego*, 35(3), <https://doi.org/10.24917/20801653.353.11>
- Krakowiak-Bal, A. (2019). *Zrównoważona konkurencyjność obszarów wiejskich w województwie małopolskim: Ujęcie wielokryterialne*. [Sustainable competitiveness of rural areas in the Lesser Poland Voivodeship: Multi-criteria approach]. C. H. Beck.
- Łaźniewska, E., Chmielewski, R., & Nowak, P. (2012). Definicje, modele i studia nad regionalną konkurencyjnością [Definitions, Models, and Studies on Regional Competitiveness]. In Łaźniewska E., Gorynia M. (Eds.). *Konkurencyjność regionalna: Koncepcje, strategie, przykłady*. Wydawnictwo Naukowe PWN., Warszawa, 26–27.
- Liu, C. (2017). International competitiveness and the fourth Industrial Revolution. *Entrepreneurial Business and Economics Review*, 5(4), 111–133. <https://doi.org/10.15678/EBER.2017.050405>
- Lizińska, W., & Kisiel, R. (2023). Pozycja Polski na ścieżce inwestycyjno-rozwojowej na tle wybranych krajów Europy Środkowo-Wschodniej [Poland's position on the investment and development path compared to selected Central and Eastern European countries]. *Przegląd Wschodnioeuropejski*, 13(2), 68–80. <https://doi.org/10.31648/pw.8449>
- Łukiewska, K. (2019). *Metodologiczne aspekty pomiaru międzynarodowej konkurencyjności przemysłu jako studium przypadku przemysłu spożywczego*. [Methodological Aspects of Measuring International Competitiveness of an Industry as a Case Study of the Food Industry]. Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego w Olsztynie.
- Martin, R. (2005). *Thinking about regional competitiveness: Critical issues*. Nottingham Trent University. <https://irep.ntu.ac.uk/id/eprint/519>
- Meyer-Stamer, J. (2008). Systemic Competitiveness and Local Economic Development. In Bodhanya, S. (Ed.). *Large scale systemic change: Theories, modelling and practices*.
- Olczyk, M. (2008). *Konkurencyjność: Teoria i praktyka: na przykładzie polskiego eksportu artykułów przemysłowych na unijny rynek w latach 1995-2006*. CeDeWu.
- Pires, S. M., Polido, A., Teles, F., Silva, P., & Rodrigues, C. (2020). Territorial innovation models in less developed regions in Europe: The quest for a new research agenda? *European Planning Studies*, 28(8), 1639–1666. <https://doi.org/10.1080/09654313.2019.1697211>

Rogalska, E. (2018). Multiple-criteria analysis of regional entrepreneurship conditions in Poland. *Equilibrium Quarterly Journal of Economics and Economic Policy*, 13(4), 707–723. <http://dx.doi.org/10.24136/eq.2018.034>

Sánchez de la Vega, J. C., Buendía Azorín, J. D., Calvo-Flores Segura, A. & Yago, M. E. (2019). A new measure of regional competitiveness. *Applied Economic Analysis*, 27(80), 108–126. <https://doi.org/10.1108/AEA-07-2019-0010>

Skórska, A. (2019). R&D activity as a factor of regional competitiveness. *Zeszyty Naukowe Organizacja i Zarządzanie Politechniki Śląskiej*, 139, 525–539. <http://dx.doi.org/10.10.29119/1641-3466.2019.139.40>

Stankiewicz, M. J. (2002). *Konkurencyjność przedsiębiorstwa: Busowanie konkurencyjności przedsiębiorstwa w warunkach globalizacji*. [Competitiveness of the enterprise: Building the company's competitiveness in the conditions of globalization]. TNOiK Dom Organizatora.

Szczuciński, P. (2021). Taxonomic methods in the study of similarity Lubusz Voivodeship to other regions European Union. *Social Inequalities and Economic Growth*, 65 124–137. <https://doi.org/10.15584/nsawg.2021.1.7>

Tusińska, M. (2014). *Konkurencyjność międzynarodowa a rozwój społeczno-gospodarczy: Przypadek Polski na tle krajów Unii Europejskiej*. [International competitiveness and the socio-economic development: The case of Poland against other EU countries]. Wydawnictwo Uniwersyteut Ekonomicznego w Katowicach.

Winiarski, B. (2000). Strategie podnoszenia konkurencyjności regionów [Strategies for increasing the competitiveness of regions]. In: *Polityka budowy regionu konkurencyjnego* [Policy of building a competitive region]. M. Klamut (Ed.), Wydawnictwo Akademii Ekonomicznej we Wrocławiu, p. 9-23.

Wosiek, R. (2016). Międzynarodowa konkurencyjność gospodarki: Aspekty teoretyczne [International competitiveness of the economy]. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, 269, 235–244.

World Economic Forum. (2014). *The global competitiveness report 2014-2015*. World Economic Forum. <https://www.weforum.org/reports/global-competitiveness-report-2014-2015/>

## Internet Sources

European Commission. *European Social Progress Index 2020*. [https://ec.europa.eu/regional\\_policy/information-sources/maps/social-progress/2020\\_en](https://ec.europa.eu/regional_policy/information-sources/maps/social-progress/2020_en)

European Commission. *Przedstawicielstwo w Polsce*. [https://ec.europa.eu/poland/news/170227\\_index\\_pl](https://ec.europa.eu/poland/news/170227_index_pl)

OECD. (2023). *OECD competition trends 2023*. OECD Publishing. <https://doi.org/10.1787/bcd8f8f8-en>