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The Innovativeness of the Economies of European Union Candidate Countries – an Assessment of Their Innovation Gap in Relation to the EU Average

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Abstract

Innovation is nowadays seen as an essential success factor in achieving economic prosperity and competing in markets. It is one of the most important determinants of the competitive process throughout the world, helping economies catch up with developing and changing technologies while revealing those countries' innovation perspectives.

The article assesses the innovativeness of the economies of selected European Union (EU) candidate countries based on the Summary Innovation Index (SII). It also estimates the innovation gap between these countries and the EU average of the SII between 2015 and 2022. The analysis is limited to Türkiye, Serbia, Albania, Montenegro, North Macedonia, Bosnia and Herzegovina, and Ukraine due to the availability of data that describes the SII. It provided for all the countries surveyed in the European Innovation Scoreboards, i.e., the reports of the European Commission, only from 2015. The presented analysis is based on a research hypothesis that suggests that the surveyed countries are characterized by a lower level of innovativeness of economies than the EU average, and therefore, they show an innovation gap compared to the average for EU countries in the analyzed period. The results of the analysis confirm this hypothesis – between 2015 and 2022, the economies of all the examined candidate countries recorded a lower level of innovativeness than the EU average. They showed a lower level of the SII than the EU average, and therefore, all these countries demonstrated an innovation gap compared to the EU average. Recommendations for increasing the innovativeness of those economies are formulated separately in the conclusions.

The article reviews the literature on the innovation and innovativeness of economies and the innovation gap. Descriptive analysis, statistical data analysis, and comparative analysis methods are

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applied, and statistical data from the European Innovation Scoreboard 2022 are used. The value added of the article lies in its comparison of the level of innovativeness of the economies of selected EU candidate countries to the EU average, as well as its estimation of the innovation gap between these countries and the EU average.

Keywords: innovation, innovativeness of an economy, innovation gap, European Innovation Scoreboard, Summary Innovation Index

JEL: O30, O31, O43

Introduction

Innovation is nowadays seen as an essential success factor in achieving economic prosperity and competing in markets. It is one of the most important determinants of the competitive process throughout the world, helping economies catch up with developing and changing technologies while revealing the innovation perspectives of those countries (Aytekin et al. 2022, p. 1; Strahl and Sobczak 2017, p. 42). Innovation can be understood broadly and narrowly. In its narrow aspect, an innovation is treated as something new, usually technical, and marketed for the first time. More broadly, the results of innovations are an important element of social reality, organizational structures, and marketing solutions, not only economic practice. Innovations understood in such a way bring benefits to the general public – not only to employers and producers but also consumers and employees (Ziółkowska 2018, p. 72; Maradana et al. 2017, p. 2).

The article assesses the innovativeness of the economies of selected European Union (EU) candidate countries based on the Summary Innovation Index (SII). It also estimates the innovation gap between these countries and the EU average of the SII between 2015 and 2022. The analysis is limited to Türkiye, Serbia, Albania, Montenegro, North Macedonia, Bosnia and Herzegovina and Ukraine due to the availability of data that describes the SII, which are provided for all the countries surveyed in the European Innovation Scoreboards, i.e., reports of the European Commission, only from 2015. The analysis assumes a research thesis supposing that the surveyed countries are characterized by a lower level of innovativeness of economies than the EU average, and therefore, they show an innovation gap compared to the average for EU countries in the analyzed period. The results of the analysis confirm this thesis – all the examined candidate countries in the period recorded a lower level of economic innovativeness than the EU average. They showed a lower level of the SII than the EU average, and therefore all these countries demonstrated an innovation gap compared to the EU average. Recommendations for increasing the innovativeness of those economies are formulated separately in the conclusions.

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and comparative analysis methods are applied. Statistical data from the European Innovation Scoreboard 2022 were used. The value added of the article lies in its comparison of the level of innovativeness of the economies of selected EU candidate countries to the EU average, as well as its estimation of the innovation gap between these countries and the EU average.

The concept of the innovation and innovativeness of the economy. Defining the innovation gap

Innovation is seen in the economic sciences as one of the key categories of modern economic processes. It is significant that in the literature devoted to the innovativeness of the economy, there is no uniform position on the content and scope of the concept of innovation. Different authors who use this term ascribe to it different meanings.

The concept of innovation in the economic sciences was introduced by Schumpeter in 1912. For the first time in economic theory, he formulated five cases of the emergence of new combinations of various material elements and man's productive power, which he later referred to as innovations. These include (Schumpeter 1960, p. 104):

- introducing new products into production or improving existing ones,
- introducing a new production method, i.e., one not yet tried in a given industry,
- opening a new market,
- acquiring new sources of raw materials or semi-finished products,
- reorganizing an industry, for example, the creation or liquidation of a monopoly.

Schumpeter also pointed to two other phenomena that accompany the creation of innovations, i.e., the invention of a new solution and imitation, which means the dissemination of innovations. He distinguished three phases of economic development (Schumpeter 1960, p. 104):

- the discovery of new goods and methods of production, i.e., the invention of something new;
- the commercialization of this invention, i.e., introducing it to the market, which usually requires a combination of old and new knowledge;
- the imitation of the innovator by others, which means dissemination and spreading (diffusing) innovations.

It is significant that the formula developed by Schumpeter's definition is still considered in the economic literature to be a classic definition, and it is a starting point for defining concepts in the field of innovative activity.

Innovativeness is related to the concept of "innovation" (Okrzesik 2018, p. 314; Dworak and Grzelak 2020, p. 37), and while the two terms are sometimes used interchangeably, they are not the same. Innovativeness is defined as the ability to innovate (Weresa 2012, p. 27) because, according to the terminology, it is an activity aimed at implementing innovations, both in the private and public sector (*Potencjał innowacyjny…* 2016, p. 21). The innovativeness of the economy can also be understood as the ability of the economy to create and implement innovations, where *ex ante* it is the possibility of developing new solutions, while *ex post* it is the combined effect of the innovative activity of the enterprise and other entities operating in a given economy in the analyzed period (Weresa 2012, p. 23).

The ability to innovate makes it possible to assess what resources an economy has at its disposal to create and commercialize new ideas. It is expressed in measures that describe expenditures (e.g., expenditure on R&D, human resources, infrastructure that supports the creation and diffusion of innovations). In the context of considerations on the innovativeness of the economy, it is also worth mentioning the concept of innovative position, which is the result of the creativity of the inhabitants of a given country and the use of financial resources in a given economic and institutional environment. It is described by performance measures (e.g., patents, sales of new and modernized products, or the share of exports of high-tech products in total exports). Separating the category of innovation capacity (the ability to innovate) and innovative position corresponds to the *ex ante* and *ex post* view on the concept of innovativeness of the economy (Weresa 2012, p. 23), and it allows us to indicate three ways to measure the level (*Potencjał innowacyjny…* 2016, p. 23; Szajt 2020, p. 9):

- Measurement using input indicators. These indicators include two main groups of variables: expenditure on research and development and the number of employees in research and development. The basic variable is the amount of expenditure on research and development (Gross Domestic Expenditure on Research and Development – GERD), i.e., the level of national expenditure on R&D presented as a percentage of GDP. It comprises three parts: business expenditure (BERD), higher education expenditure (HERD) and government expenditure (GOVERD).
- Measurement based on result indicators. These indicators include patent registers (e.g., the number of patents introduced by domestic entrepreneurs and guests), data describing the country's balance of payments in technology (e.g., the flow of own technologies and know-how from and to the country, funds obtained and paid for the use

of patents, licenses, trademarks and service), the number of scientific publications, and the volume of sales of new and modernized products.

- Measurement based on synthetic indicators, created on the basis of both input and output measures, but also taking into account the climate for innovation or the business environment. These indicators comprise numerous sub-measures and are developed to make more multifaceted comparisons of the level of innovativeness of economies. Their advantage is the increase in international comparability thanks to the parallel use of many variables that describe the innovativeness of economies.

To assess the innovativeness of an economy, the innovation gap between the economy of a given country and another entity recognized as a point of reference can be estimated. The concept of the innovation gap is variously interpreted in the economic literature. Kubielas defines it as differences in technological advancement between countries, and he proposes several methods to measure its size. He says that it can be measured by the distance between the technological activity of a country and the countries at the technological frontier, calculated either as a ratio of the number of patents per capita or the share of research expenditure in value-added or national income (Kubielas 2009, p. 137).

The literature review also revealed indirect measures, such as the share of high-tech products in exports in relation to a similar indicator for the technology frontier, the relationship between the productivity of a given branch of the country to a country on the verge of the technological frontier or, in aggregate terms, the relationship between GDP per capita and the corresponding indicator of the technological frontier (Kubielas 2009, p. 137). The last two approaches identify the technological gap with a productivity gap or income gap. The global technological frontier shall be deemed as the GDP level, which can be achieved by using the given inputs of capital and labor and the best possible technologies (Growiec 2012). This level of GDP is now achieved by the U.S. economy, in which the distribution of specialization is the standard for a technology leader. The highest competitive advantages are demonstrated by the science-based sector, followed by the specialized supplier sectors. By contrast, the scale-intensive and traditional sectors are characterized by negative indices of comparative advantage; the traditional sector is the lowest on the scale of advantages of the U.S. economy (Kubielas 2009, p. 153).

In the literature, there is also the concept of the innovation gap, understood as the distance between individual economies and the modern technological frontier. It is identified with the last stage of the socio-economic development of economies, i.e., the emergence of a knowledge-based economy (Lundvall 1992, pp. 25–36; Zacher 2007, p. 530; Pawlik 2014, pp. 68–69). The innovation gap is also perceived as a broader concept, encompassing non-technological innovation, such as processes, and organizational or social innovation.

An important research challenge is to connect the topic of dynamics and determinants of the innovation gap with the concept of innovation systems, which underlines the role of the organizational and institutional arrangements, such as public policies, scientific units, and innovative enterprises, which are considered the most essential agents within national innovation systems (Kowalski 2021, p. 1969). The United Nations defines the innovation gap quite generally as the distance between those who have access to technologies and know how to use them effectively and those who are not able to do so (Kraciuk 2006, p. 5). The innovation gap can be considered from the perspective of creating new technology in the home country, as well as from the perspective of its transfer from other countries and effectively adapting it to the needs and capabilities of the nation.

In summary, it can be stated that measuring the innovation gap means estimating the distance between a given country's economy and the most developed economies of Europe and the world, known today as knowledge-based economies, in many areas, e.g., in the sphere of innovation, education, and institutional system.

It is possible to estimate the innovation gap by comparing synthetic measures of innovation, e.g., the SII, developed by the European Commission, and the Global Innovation Index, developed by Cornell University in cooperation with the World Intellectual Property Organization (Mielcarek 2013; Weresa 2014, p. 64), or indicators that describe the advancement of the knowledge-based economy, e.g., the Knowledge Index and the Knowledge Economy Index, derived from the Knowledge Assessment Methodology.

This paper presents an attempt to estimate the innovation gap based on the indicator that shows the difference between the level of the SII for EU candidate countries and the average value of this index for the EU. The indicator of the innovation gap defined in this way takes the following form (Weresa 2014, p. 64):

$$L_{pt} = \frac{SII_{pt}}{SII_{UEt}}, \tag{1}$$

where:

L_{pt} – the innovation gap index for a candidate country in relation to the EU average in year t,

SII_{pt} – the Summary Innovation Index for a candidate country in year t,

SII_{UEt} – the average Summary Innovation Index for the EU in year t.

The value of the innovation gap index greater than 1 means that the country presents a higher level of innovativeness than the EU average. In contrast, a value lower than 1 indicates an innovation gap exists between that country and the EU average. To assess the changes in the innovation gap over time, a formula presenting the difference

between the innovation gap index (L_{pt}) in a given year and the value of this index for the previous year should be used. It is written as follows (Weresa 2014, p. 64):

$$D_{pt_1} = \left[\frac{SII_{pt_1}}{SII_{uet_1}}\right] - \left[\frac{SII_{pt\,0}}{SII_{uet\,0}}\right], \tag{2}$$

where:

D_{pt1} – index of changes in the innovation gap between a given EU candidate country and the EU average in year t_1 compared to year t_0,

SII_{pt0} – the Summary Innovation Index for a given EU candidate country in year t_0,

SII_{uet0} – the average Summary Innovation Index for the EU in year t_0,

SII_{pt1} – the Summary Innovation Index for a given EU candidate country in year t_1,

SII_{UEt1} – the average Summary Innovation Index for the EU in year t_1.

The index of the change in the innovation gap (D_{pt1}) takes values from –1 to +1. Negative values indicate an increase in the innovation gap between a given country and the EU average, while positive ones indicate a decrease. Nevertheless, the index only indicates the direction of changes; it does not allow us to determine whether the distance shortens or the previously gained advantage is gradually being lost (Weresa 2014, p. 65). Therefore, it is necessary to analyze the index of changes in the innovation gap (D_{pt1}) in relation to the index of the innovation gap (L_{pt}).

Assessing the innovativeness of the European Union candidate countries. Estimating the innovation gap between the European Union candidate countries and the EU average

Table 1 shows the values of the SII for the EU candidate countries and the average value of the SII for EU countries between 2015 and 2022. Based on this index, a ranking of candidate countries for the EU in the analyzed period was prepared (Table 2).

Table 1. The Summary Innovation Index for EU candidate countries and the average value of the SII for EU countries, 2015–2022

SII	2015	2016	2017	2018	2019	2020	2021	2022
EU average	0.493	0.495	0.501	0.512	0.514	0.533	0.539	0.542
Albania	0.201	0.214	0.194	0.2	0.237	0.224	0.227	0.226
Bosnia and Herzegovina	0.185	0.18	0.181	0.158	0.155	0.181	0.194	0.189

SII	2015	2016	2017	2018	2019	2020	2021	2022
Serbia	0.258	0.251	0.271	0.291	0.311	0.344	0.353	0.335
North Macedonia	0.188	0.185	0.191	0.209	0.209	0.21	0.232	0.247
Montenegro	0.225	0.242	0.246	0.219	0.234	0.232	0.,25	0.257
Türkiye	0.261	0.262	0.27	0.299	0.302	0.25	0.251	0.259
Ukraine	0.17	0.164	0.155	0.152	0.148	0.153	0.16	0.168

Source: European Commission 2022, p. 99.

Table 2. Ranking of the EU candidate countries based on the values of the Summary Innovation Index, 2015–2022

No.	2015	2016	2017	2018	2019	2020	2021	2022
1	Türkiye	Türkiye	Serbia	Türkiye	Türkiye	Serbia	Serbia	Serbia
2	Serbia	Serbia	Türkiye	Serbia	Serbia	Türkiye	Türkiye	Türkiye
3	Montene-gro	Montene-gro	Montene-gro	Montene-gro	Albania	Montene-gro	Montene-gro	Montene-gro
4	Albania	Albania	Albania	North Macedonia	Montene-gro	Albania	North Macedonia	North Macedonia
5	North Macedonia	North Macedonia	North Macedonia	Albania	North Macedonia	North Macedonia	Albania	Albania
6	Bosnia and Herze-govina	Bosnia and Herze-govina	Bosnia and Herze-govina	Bosnia and Herze-govina	Bosnia and Herze-govina	Bosnia and Herze-govina	Bosnia and Herze-govina	Bosnia and Herze-govina
7	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine	Ukraine

Source: European Commission 2022, p. 99.

As shown in the data describing the SII values in Table 1, between 2015 and 2022, the highest SII values were noted by Serbia and Türkiye. In 2015, for Türkiye, this index was 0.261, and for Serbia, it was 0.258. In 2022, the values were: Türkiye – 0.259, Serbia – 0.335. Each of these countries was at the top of the ranking four times in the analyzed period. Third place in the ranking in the entire period, with the exception of 2019, was held by Montenegro. The lowest SII values and the lowest places in the ranking in each year were occupied by Bosnia and Herzegovina (in 2022, the SII value was 0.189) and Ukraine (0.168).

Table 3 shows the average annual rate of change (geometric mean) of the SII for the EU candidate countries between 2015 and 2022.

Table 3. The average annual rate of change (geometric mean) of the Summary Innovation Index for EU candidate countries, 2015–2022

Country	Average annual rate of change of SII, 2015–2022 (%)
European Union	101.36
Albania	101.69
Bosnia and Herzegovina	100.31
Serbia	103.80
North Macedonia	103.98
Montenegro	101.92
Türkiye	99.89
Ukraine	99.83

Source: calculations based on the data in Table 1.

Based on the data in Table 3, it can be concluded that an average annual increase in the SII index was observed in the following order: North Macedonia (3.98%), Serbia (3.8%), Montenegro (1.92%), Albania (1.69%) and Bosnia and Herzegovina (0.31%). Meanwhile, an average annual decrease in SII was recorded in Türkiye (0.11%) and Ukraine (0.17%).

Table 4 shows the values of the innovation gap index for a given EU candidate country in relation to the EU average (L_{pt}) and the index of changes in the innovation gap between a given EU candidate country and the EU average (D_{pt1}) from 2015 to 2022.

Table 4. The innovation gap index for EU candidate countries in relation to the EU average (L_{pt}), 2015–2022, and the index of changes in the innovation gap between a given EU candidate country and the EU average (D_{pt1}), 2015–2022

	2015	2016	2017	2018	2019	2020	2021	2022
Lpt for Albania	0.408	0.432	0.387	0.39	0.461	0.42	0.421	0.417
Dpt compared to the previous year for Albania		0.024	–0.045	0.003	0.071	–0.041	0.001	–0.004
Dpt in 2022 compared to 2015 for Albania	–0.015							
Lpt for Bosnia and Herzegovina	0.375	0.374	0.361	0.308	0.301	0.339	0.36	0.349
Dpt in 2022 compared to the previous year for Bosnia and Herzegovina		–0.001	–0.013	–0.053	–0.007	0.038	0.021	–0.011

	2015	2016	2017	2018	2019	2020	2021	2022
Dpt in 2022 compared to 2015 for Bosnia and Herzegovina				−0.026				
Lpt for Serbia	0.523	0.507	0.541	0.568	0.605	0.645	0.655	0.618
Dpt compared to the previous year for Serbia		−0.016	0.034	0.027	0.037	0.04	0.01	−0.037
Dpt in 2022 compared to 2015 for Serbia				0.095				
Lpt for North Macedonia	0.381	0.374	0.381	0.408	0.407	0.394	0.43	0.456
Dpt compared to the previous year for North Macedonia		−0.007	0.007	0.027	−0.001	−0.013	0.036	0.026
Dpt in 2022 compared to 2015 for North Macedonia				0.075				
Lpt for Montene-gro	0.456	0.489	0.491	0.428	0.455	0.435	0.464	0.474
Dpt compared to the previous year for Monte-negro		0.033	0.002	−0.063	0.027	−0.02	0.029	0.01
Dpt in 2022 compared to 2015 for Montenegro				0.018				
Lpt for Türkiye	0.529	0.529	0.539	0.584	0.587	0.469	0.466	0.478
Dpt compared to the previous year for Türkiye		0	0.01	0.045	0.003	−0.118	−0.003	0.012
Dpt in 2022 compared to 2015 for Türkiye				−0.051				
Lpt for Ukraine	0.345	0.331	0.301	0.297	0.288	0.287	0.297	0.31
Dpt compared to the previous year for Ukraine		−0.014	−0.03	−0.004	−0.009	−0.001	0.01	0.013

	2015	2016	2017	2018	2019	2020	2021	2022
Dpt in 2022 compared to 2015 for Ukraine	– 0.035							

Note: the results for Albania and Ukraine are less reliable due to limited data availability, European Commission 2022, p. 99.
Source: calculations based on the data in Table 1.

The analysis of the innovation gap index for all EU candidate countries (Table 4) indicates that throughout the entire period, the level of innovativeness of their economies was below the EU average. In 2022, the lowest innovation gap was recorded in Serbia (0.618), followed by Türkiye (0.478), Montenegro (0.474), North Macedonia (0.456), Albania (0.417), Bosnia and Herzegovina (0.349), and Ukraine (0.31). Taking into account the changes in the innovation gap indicator compared to the previous year, in all countries, slight decreases in the innovation gap were followed by increases and vice versa. North Macedonia, Montenegro, Türkiye, and Ukraine showed a decrease in the innovation gap in 2022 compared to the previous year. In contrast, Albania, Bosnia and Herzegovina and Serbia recorded an increase. As for the change in the innovation gap indicator in 2022 compared to 2015, only three countries showed a reduction: Serbia, North Macedonia, and Montenegro.

Conclusions

To sum up, between 2015 and 2022, the economies of all the analyzed candidate countries were characterized by a lower level of innovativeness than the EU average. They showed a lower level of the SII than the EU average, and therefore, all these countries noted an innovation gap in relation to the EU average. It can, therefore, be concluded that the research hypothesis adopted in the introduction has been positively verified. The highest level of SII in the entire period was found in Türkiye and Serbia, followed by Montenegro and North Macedonia. Turkey and the Western Balkan countries (i.e., Serbia, Montenegro, and Macedonia) also showed the lowest innovation gap in the analyzed period. The Western Balkan countries also reduced the innovation gap compared to the EU average between 2015 and 2022. The lowest values of the SII were recorded by Bosnia and Herzegovina and Ukraine. In 2022, these countries experienced an increase in the innovation gap relative to the EU average, compared to the levels observed in 2015.

In conclusion, among the examined countries, the highest innovation potential is found in Türkiye, Serbia, Montenegro, and North Macedonia. They are characterized by relatively the highest expenditure on R&D among the countries surveyed. For Türkiye, this

indicator is 0.96% of GDP (2022), for Serbia – 0.91% (2020), Montenegro – 0.36% (2019), and North Macedonia – 0.38% (2020) (The World Bank 2024). Of particular note among the Western Balkan countries is Serbia's position as a frontrunner on the road to EU membership. Serbia, like Montenegro, is already benefiting from EU funds, detailed policy advice, and stabilization and association agreements that ensure far-reaching progress to the internal market of the EU. Nevertheless, Serbia is mainly based on public sector investments, and many structural reforms are still needed to prepare an innovation environment. It is vital for Serbia to construct an innovation – and technology-based eco-system for the economy to accelerate on the road to EU accession (Kaynak, Atuntas, and Dereli 2017, p. 49).

Türkiye's high innovative position is of note. It is one of the most significant innovators among the countries studied. Nevertheless, it should allocate more incentives to the investors who will produce high-added value products and provide more qualified innovation facilities through a well-structured R&D strategy. A law related to promoting research infrastructure was approved by the presidency of the Republic of Türkiye on 9 July 2014 and published in the official gazette on 10 July 2014 (Kaynak, Atuntas, and Dereli 2017, pp. 49–50). It can be considered one of the most important initiatives to support R&D activities and sustain innovation-driven development in the country (Kaynak, Atuntas, and Dereli 2017, pp. 49–50). Türkiye should also pay more attention to innovation activities and create awareness for the contribution of innovation to both the country and investor sides, which will help the country jump to the top stage of development in the future. Investment in innovation also plays an important role in meeting a broad range of challenges and opportunities that the Turkish society faces (Dikbaş and Akkoyun 2006, p. 55). It means that making the right investment decisions (at the right time) is as important as innovation itself. Therefore, it is vital to develop an effective eco-system for innovators, investors and policy decision-makers that brings together efforts to evaluate measurement, prioritization and commercialization of both innovations and investments in the country (Kaynak, Atuntas, and Dereli 2017, p. 50). This will probably accelerate Türkiye on the road to EU accession.

Countries with low innovation potential are Albania, Bosnia and Herzegovina, and Ukraine. They are also characterized by low expenditure on R&D – for Albania, it was only 0.15% of GDP in 2008, Bosnia and Herzegovina – 0.21% (2020), and Ukraine – 0.41% (2020) (The World Bank 2024). A necessary condition for these countries' successful accession negotiations and economic development is modernization based on innovative development, which ensures the increase of the profitability of industrial enterprises, real wages and welfare (Zhylinska et al. 2020, p. 10). It is obvious that in the case of Ukraine, it will be difficult to meet these principles during the ongoing war.

The conclusions formulated on the basis of the analysis are important both from the point of view of the EU and the candidate countries (Aytekin et al. 2022, p. 1). The EU should consider the state and dynamics of changes in the innovation potential of individual candidate countries in the ongoing accession negotiations. Therefore, a country with high and growing innovation potential should strengthen its bargaining power and be given priority in these negotiations. High and growing innovation potential means that there is a high probability for the country to conduct successful innovation activity and to manufacture high technology in the future.

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Innowacyjność gospodarek krajów kandydujących do Unii Europejskiej – ocena luki innowacyjnej w stosunku do średniej unijnej

Innowacyjność jest obecnie postrzegana jako niezbędny czynnik sukcesu w osiąganiu dobrobytu gospodarczego i konkurowaniu na rynkach. Jest jednym z najważniejszych wyznaczników procesu konkurencyjnego na całym świecie i pomaga gospodarkom dogonić rozwijającą się i zmieniającą się technologię, jednocześnie ujawniając perspektywy innowacyjne krajów.

Celem artykułu jest ocena poziomu innowacyjności gospodarek wybranych krajów kandydujących do Unii Europejskiej na podstawie Sumarycznego Indeksu Innowacyjności (SII), a także oszacowanie luki innowacyjnej pomiędzy tymi krajami a średnią unijną. Analizę ograniczono do Turcji, Serbii, Albanii, Czarnogóry, Macedonii Północnej, Bośni i Hercegowiny oraz Ukrainy, ze względu na dostępność danych opisujących Sumaryczny Indeks Innowacyjności, przewidziany dla wszystkich krajów objętych badaniem w Europejskich Tablicach Innowacyjności – raportach Komisji Europejskiej, dopiero od 2015 r. W artykule sformułowano tezę badawczą, która zakłada, że badane kraje charakteryzują się niższym poziomem innowacyjności gospodarek niż średnia unijna, a tym samym wykazują lukę innowacyjną w stosunku do średniej dla krajów Unii Europejskiej w analizowanym okresie. Wyniki analizy potwierdzają tę tezę – wszystkie badane kraje kandydujące do Unii Europejskiej odnotowały w latach 2015–2022 niższy poziom innowacyjności gospodarek niż średnia unijna. Charakteryzowały się niższym poziomem SII niż średnia unijna, a więc wykazały lukę innowacyjną w odniesieniu do średniej unijnej. Rekomendacje dotyczące podniesienia poziomu innowacyjności gospodarek zostały sformułowane osobno dla poszczególnych krajów we wnioskach. W artykule dokonano przeglądu literatury dotyczącej innowacji i innowacyjności gospodarek oraz luki innowacyjnej. Zastosowano metody analizy opisowej, statystycznej analizy danych oraz analizy porównawczej. Wykorzystano dane statystyczne pochodzące z Europejskiej Tablicy Innowacyjności 2022. Jeśli zaś chodzi o wartość dodaną artykułu, to należy stwierdzić, że polega ona na porównaniu poziomu innowacyjności gospodarek wybranych krajów kandydujących do UE i średniej unijnej, jak również na oszacowaniu luki innowacyjnej między tymi krajami a średnią unijną.

Słowa kluczowe: innowacja, innowacyjność gospodarki, luka innowacyjna, Europejska Tablica Innowacyjności, Sumaryczny Indeks Innowacyjności