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Assessing the global competitiveness of European countries

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Abstract

Despite the importance of competitiveness in the context of a market economy, both practical and methodological issues remain unresolved in the assessment of its state. One of the reasons is that this phenomenon is a complex phenomenon, manifested in many different facets in reality, and therefore the concepts and definitions of competitiveness emphasise different aspects that reflect it. On the other hand, almost all of them emphasise its impact on the country's economic development. The results of the analysis of these impacts depend to a large extent on the adequacy of the assessment of the actual level of competitiveness of the country. To a large extent, it depends on how it was valued. Out of the three most widely applied methodologies, the World Economic Forum, the Institute for International Management Development, and the Institute for Industrial Policy Studies, the Global Competitiveness Index, proposed by the World Economic Forum, brings together 12 dimensions of equal importance. The analysis shows that this importance must be different, as some reflect factors that directly and fully affect the competitiveness of a country, while others are the result of the first effects. This idea is confirmed by experts, giving dimensions different weights and greater importance to factors directly affecting the competitiveness of the country. An assessment of the Global Competitiveness Index of the European Union countries using the same and different dimensional weights showed a difference between 0 % and 3 %. With the help of correlation regression analysis, it was found that an increase in the country's competitiveness by 1 % the GDP per capita increases by 1.04 %. Depending on the size of the country, this amounts to hundreds of millions to billions of euros.

Keywords: *Countries' Economic Development, Global Competitiveness Index, Dimensional Weights, Multi-Criteria Assessment*

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INTRODUCTION

Science and practice have shown unequivocally that the economic development of a country depends exclusively on its competitiveness (Moirangthen & Nag, 2022; Za et al., 2021, Simionescu et al., 2021; Onuferova et al., 2020). Strategies to increase it are shaped as a result of discussions between decision-makers, economic operators representing different interests, politicians, etc. The implementation of these strategies depends to a large extent on a number of closely interrelated problems. First, although scientific literature has been discussing this issue since the 16th century, the concept of competitiveness remains unclear. Secondly, in the absence of a clear concept, it is difficult to determine the factors of its increase (Rakauskienė, 2013). Aware of the importance of competitiveness, the European Commission published a white paper in 1993. The next step was the Competitiveness Advisory Group set up in 1995, which regularly prepared proposals to improve competitiveness for EU member states. Such proposals were integrated into the Lisbon Strategy (Jaquemin & Pench, 1997). The EU summit

in 2000 set the goal of making the union's economy the most competitive and dynamic knowledge-based emerging economy in the world (Lisbon European Council, 2000).

In addressing the challenges of increasing the competitiveness of countries (CoCs), the issue of determining the level reached has constantly arisen. This is a rather complex task, as the CoP is a complex phenomenon, manifested in many different aspects. There are many suggestions for such an assessment that differ from each other depending on how this phenomenon is understood. In one case, the CoP is reflected in a small number of highly aggregated sizes. In other cases, the indices combine many more dimensions within them and are therefore more complex. Today, the three most well-known and most widely used indices of this kind are the World Economic Forum (WEF) Global Competitiveness Index (GCI) (Global competitiveness index, 2021); The International Management Development Institute (IMD) and the Institute for Industrial Policy Studies (IPS), 2021. Within themselves, they combine a different number of dimensions of an uneven degree of aggregation, which are treated as partial indices. Of the three mentioned CoC indices, this article deals with the most widely known WEF GCI. Compared to the other two, it is the most complex and most consistent, with the complexity of the phenomenon under consideration, the country's competitiveness.

The value of the GCI depends on two sizes — the meaning and importance of the dimensions that make up it. The index gives them the same weight. In accepting the fact that dimensional values are taken from official statistical sources, it makes sense to look deeper into the justification for giving equal weight to all dimensions.

An analysis of the content and nature of the GCI dimensions shows that their impact on the competitiveness index is different. Some reflect the factors that directly and fully influence the GCI, while others are the result of the impact of these factors on the CoC and therefore have a lower impact. All this says that the dimensions that reflect the factors of global competitiveness need to be different. It follows from this that the purpose of this article is, first, to assess in a differentiated manner the relevance of the 12 indices of the GCI; second, to combine the indices into the GCI using the same weights in one case and the different weights in the other; third, to compare the results with each other.

The article's literature review analyses the concept of competitiveness of countries and methods of quantification of its condition, and identifies their shortcomings. The second part of the article presents a research methodology based on multi-criteria methods and differentiated weights of competitiveness dimensions. The third part of the article discusses the results obtained. The conclusions shall include the results of the study, their scientific and practical value, as well as the possibilities and limitations of further studies.

1 LITERATURE REVIEW

Competitiveness is an essential condition for a country's economic development. Therefore, both methodological and practical literature examine this phenomenon in a broad and diverse way. Many years of experience have shown that the results of the study on the same phenomenon depend to a large extent on how it is understood. This is also the case with a country's competitiveness. To date, there is no unified definition acceptable to all (Table 1).

Tab. 1: The concept of a country's competitiveness. Source: compiled by authors

Source	The concept of competitiveness of a country
Dollar & Edward 1993	It requires successful international trade to maintain the country's high income and wages.
Gough, 1996	It is the country's ability to ensure a high and increasing income for its population in a context of intense international competition.
Bienkowski, 2009	It is the country's ability to grow relatively quickly in the long term in such a way that the economy is able to cooperate effectively with the developing world economies.
The international institute for management development. (n.d.)3	These are actions and policies that shape a country's ability to create and maintain an environment that enables companies to create greater value and ensure prosperity for the whole population.
Cann, 2017	It is a set of institutions, policies and actions that determine the level of productivity of the country.
Schwab & Zahidi, 2020	This is a category that includes productivity, people, and planetary goals.
Širá et al., 2021	This is the ability of entities to sell and offer goods and services in a given market.

To summarise the CoC concepts set out in Table 1, the following definition can be given: this is the ability of the country to create a high level of human well-being due to the economic development of the country due to scientific and technical progress. On the basis of this understanding of the CoC, it is possible to evaluate the scientific research analysing this phenomenon. In order to make it systematic, it is appropriate to examine these studies based on the following aspects: object of the research, complexity of the competitiveness indicator, relationship with the object of the impact, research methods used, and content of the analysis.

Predominant studies have concerned a group of countries, e.g., EU, ASEAN, etc. (Širá et al., 2020; Za et al., 2021; Nogueira & Madaleno, 2021; Marčeta & Bojnec, 2021), less explored regions (Moirangthem & Nag, 2023; Alexa et al., 2019) and individual countries (Dadgar et al., 2018).

A series of regional competitiveness studies have been carried out in the context of the European Union. The competitiveness gaps between EU countries have been highlighted in the context of the Europe 2020 strategy, which was based on sustainable growth (Priede & Neuert, 2015). Based on the GCI, the competitiveness of the 28 EU and 7 other countries was established. The investigation revealed both a positive and a negative link between investment in R&D and the share of high-tech goods in total exports. In order to improve the current situation, it has been proposed to fully promote investment in research. Even though the European Union is one of the world's most developed regions with a high standard of living, there are significant differences between its members. They have a negative impact on the balanced development of the community as a whole and at the same time weaken its competitiveness in a global context. Factor analysis based on the country's competitiveness index defined the factors for further socio-economic development in the European Union (Stanickova, 2015).

Other authors examined the interaction between national innovation activities and competitiveness in the context of the European Union as a whole (Ciocanel & Pavelescu, 2015). A broader approach to this issue can be found in another study looking at the link between the knowledge economy and competitiveness in the European Union region (Dima et al., 2018). Part of the research focuses on individual sectors of economic activity, such as tourism (Zhou at al., 2015; Bustamante et al., 2021) or industrial clusters (Bhawsar & Chattopadhyay, 2018). Competitiveness is also explored in the context of green growth towards sustainability of development (Cheng et al., 2018; Wang et al., 2019).

The complexity of the analysis depends on the degree of integrity of the competitiveness index, i.e., how many fundamental aspects it combines. In one case, the aim is to cover a larger number of them (Širá et al., 2020; Moirangthem & Nag, 2023; Alexa et al., 2019), others — only individual aspects of it (Nogueira & Madaleno, 2021; Marčeta & Bojnec, 2021; Simionescu et al., 2021). There is also a third, intermediate, case where competitiveness is one among other indices of importance, such as economic freedom, innovation, perception of corruption, etc. (Za et al., 2021; Dadgar et al., 2018; Onuferová et al., 2020; Banerjee et al., 2020).

Competitiveness has the role of argument in some cases, and in others the role of a function. In the first case, it is a factor of impact on the phenomenon under consideration (Moirangthem & Nag, 2023; Za et al., 2021; Dadgar et al., 2018; Onuferová et al., 2020; Banerjee et al., 2020; Nogueira & Madaleno, 2021; Marčeta & Bojnec, 2021; Marshall & Parra, 2019; Vogelsang, 2017). In the second case, on the contrary, which factors affect competitiveness are analysed (Šira et al., 2020; Simionescu et al., 2021). For example, the relationship between the competitiveness index and other multi-factor indices (Global Innovation Index, Doing Business Index, Economic Freedom Index, Corruption Perception Index) was analysed (Kiselakova et al., 2019). The aim of these studies is to look at whether there is a link between the situation in that country and its competitiveness, in order to model opportunities for increasing competitiveness.

In the case of an analysis depending on competitiveness, impact factors shall be used to measure the level of education of the population, research and development of its results, patents, innovation, infrastructure, macroeconomic stability, technology, investments, sustainability, etc. (Šira et al., 2020; Moirangthem & Nag, 2023; Simionescu et al., 2021, Mate et al., 2022).

Various methods are used to analyse competitiveness, but correlation-regression analysis dominates (Moirangthem & Nag, 2023; Za et al., 2021; Nogueira & Madaleno, 2021; Onuferová et al., 2020; Alexa et al., 2019). Less frequently are used multi-criteria (Šira et al., 2020), cluster analysis (Onuferová et al., 2020), and statistical methods (Dadgar et al., 2018).

The WEF methodology differs from other considered methodologies to the degree of aggregation of factors (Appendix 1). On the other hand, it appears that in all three cases the CoP was intended to reflect a hierarchical system of indicators. The logic of its formation is set out in literary sources (Ginevičius & Podvezko, 2009). First, those components of the phenomenon in question are distinguished, the ignorance of which makes the assessment pointless. For example, the assessment of the sustainable development of a socio-economic system becomes pointless if it does not incorporate social or environmental development into its model (Lozano, 2008; Roseland, 2000). The separated components are broken down into aspects of the lower hierarchical level, the latter, if necessary, even lower, etc. The structuring process ends when it is available to the primary, indivisible indicators. Their number per group shall be such as to enable the application of the appropriate quantitative assessment methods.

In such a hierarchical system, when assessing the state of the analysed phenomenon (AP), all indicators, from primary to top-level components, are expressed in two values: meaning and significance. The importance of easily formalised indicators is given by various sources — statistical yearbooks, normative documents, projects, reports, etc. When difficult to formalise, the chosen scale is scored by experts. The issue of determining the importance of indicators and indices is more complex, i.e., whether all of them are equally or differently relevant to AP and what it depends on. The answer to this question is given by the set of indicators and the nature of their relationship with AP.

Out of the three methodologies for quantifying the condition of the CoC discussed, it appears that various aspects reflect it: foreign trade, productivity, investment, standard of living, innovation, etc. Some of them reflect the impact and others reflect its outcome. On this basis, all of them can be divided into two groups. The first one would be directly influenced by the CoC. They can be identified as a base effect factor. These are innovations, investments, technologies, etc. The indicators in the second group reflect the results obtained from these factors. They can be identified as effective factors. This is the state of economic development of the country, productivity, standard of living, etc. The interaction between these two groups is shown in Figure 1.

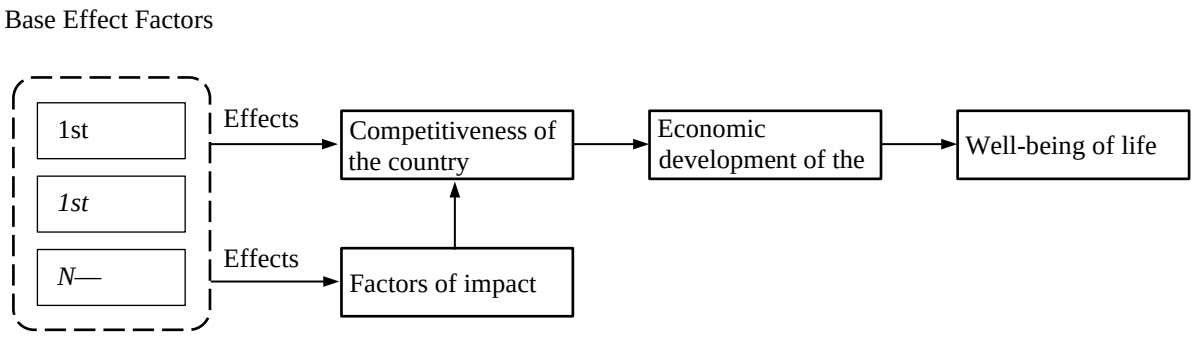

Fig. 1: The impact of the country's competitiveness on people's well-being. Source: compiled by authors

This understanding of the impact of the CoC is confirmed by Porter, who argues that high and ever-increasing living standards can only be created thanks to the development of the country (Porter, 1998; 2003). Figure 1 shows that the importance of factors in the first group, or the baseline effect, must be greater than that of the second group or of the resultant factors.

If the indicator system consists exclusively of the first group of factors, their importance may be the same. This is the case, for example, with the generally accepted sustainable development index — all three of its components (economic, social and environmental) have the same weights. If we have a situation as shown in Figure 1, then the impact factors should be less important, as they are derived from the primary baseline impact factors.

A review of literature sources shows that in almost all cases the impact of competitiveness on the economic development of the country is analysed (Dadgar et al., 2018; Alexa et al., 2019; Onuferová et al., 2020; Za et al., 2021; Moirangthem & Nag, 2023). Limited research assesses the state of competitiveness. This may be because today's research exclusively relies on the generally accepted three CoP-levelling methodologies: WEF's Global Competitiveness Index, International Institute for Management Development and Institute for Industrial Policy Studies.

Based on the statement that wealth creation depends primarily on economic operators operating in the country, the government's ability to create an environment conducive to their

development, IMD has developed a competitiveness index consisting of four groups of factors (Table 2).

Tab. 2: Structure of the IMD Competitiveness Index. Source: (International Institute for Management Development, 2022)

No.	Group of Factors	Content of the group of factors
1	Economic activity	Domestic economy (size, development, prosperity, forecasts)
2	Efficiency of Government	Fiscal policy; institutional framework (central bank, state efficiency); the legal environment for business (openness, competition and regulation); public finances; structure of society
3	Business efficiency	Labour market (costs, relationships, access to knowledge); efficiency; attitudes and values; management practices; finance (bank securities market efficiency, financial management)
4	Infrastructure	Scientific, basic technological infrastructure, health and environment, education

The IIP Country Competitiveness Index assumes that the WEF and IMD methodologies are difficult to apply. Competitiveness factors have been further aggregated, and only two groups remain (Table 3).

Tab. 3: The Institute of Industrial Policy Studies Proposed for Country Competitiveness the structure of the index. Source: The Institute for Industrial Policy (IIP)

No.	Set of Factors Group	Content of the group of factors
1	Physical Factors	Demand conditions, clusters of factors, conditions of action, business context, related industries
2	Human Factors	Workers, politicians and bureaucrats, professionals, entrepreneurs

Otherwise, the indicator system proposed by the WEF combines 12 dimensions (Appendix 1). Their content shows that some of the factors reflected are directly related to the CoC, while others have weaker links. For example, healthy life expectancy is more a result of the country's economic development due to high competitiveness, rather than an impact factor. At best, it can only indirectly influence the CoC. Other dimensions can also be seen, the importance of which is less important at the CoC. Thus, deactivation of one or another dimension from the system at the CCP will not make the assessment of the CoC pointless. On the other hand, given the structure of the GCI as a generally accepted official methodology, such dimensions cannot be turned off. The solution is to differentiate their importance.

The IMD country competitiveness index consists of four groups or dimensions. The first three combine the factors of the first and partially the second group, the fourth to the third group (Table 2). It is therefore appropriate to partially differentiate the importance of the dimensions for the competitiveness of the country, e.g., by giving the first three equal weight and the fourth a lower weight. IMD's competitiveness model can be seen as a bridge between the PIC and WEF models. The content of the WEF index shows that some of them combine the first and part of the second group. There is therefore no methodological basis for giving them equal weight. The question arises as to which of the three systems reviewed would be the most suitable for the assessment of the status of the CoC. The criterion may be to accept the complexity of the indicator system. According to the literature, the adequacy of the assessment

of the condition of AP depends precisely on the extent to which the complexity of the system corresponds to the complexity of the AP (Ginevičius, 2019). The competitiveness of a country is a complex phenomenon, since it manifests itself in many different aspects of its nature. When comparing all three CoC indicator systems — dimensions, the groups of indicators included in them, their set and content — the most complex system of WEF indicators, corresponding to the complexity of AP, will be based on it.

2 RESEARCH METHODOLOGY

This study followed the GCI methodology proposed by the WEF, which is based on a multi-criteria assessment. This approach to the establishment of GCIs is used because the CoC belongs among complex phenomena, which are manifested by a large number of different aspects. As a result, indicators reflecting these aspects are expressed in different dimensions, may change in opposite directions, and are of varying importance. Even so, multi-criteria methods allow them to be combined into one aggregated size. Due to their versatility in recent years, they have gained a wide range of applications. They address various challenges, both scientific and practical, from technological (construction, energy, etc.) to management and economic problems (Song et al., 2017; Prasevic & Prasevic, 2017; Balin & Baracli, 2017; Gedvilaitė, 2019; Lisinski et al., 2020).

Their philosophy is reflected in the most widely used SAW (Simple Additive Weighting) method:

$$K_j = \sum_{i=1}^{n} w_i \times \tilde{r}_i \tag{2}$$

here the meaning K_j of the phenomenon under consideration, variant *j*, the SAW multi-criteria assessment; w_i— *weight* of indicator I; $\tilde{r}_i$— *normalised* value for indicator I, *n* = number of indicators ($i = \overline{1,n}$).

Indicators reflecting the phenomenon in question, in this case the country's competitiveness, can be expressed in different dimensions and are therefore not comparable with each other. This prevents them from being merged into a single shared size. In order for them to become comparable, their dimensions need to be unified, i.e., to become indivisible. This is achieved by normalising the values of the indicators. The method of normalisation depends on the method of multi-criteria evaluation. The SAW provides the following way to normalise the values of the indicators:

$$\tilde{r}_i = \frac{r_i}{\sum_{i=1}^{n} r_i} \tag{3}$$

this is the value of indicator r_i i.

The dimensions of the GCI have been derived from a combination of lower-level multi-dimensional indicators. In determining dimensional values, the values of these indicators were normalised, so all dimensions are dimensionless. It follows from this that there is no need to normalise the value of the dimensions in the merger.

It follows from formula (2) that for the calculation of the GCI, two values need to be set: the importance and significance of the indicators. The weights of the indicators can be determined by experts. An appropriate questionnaire has been prepared for this purpose. When assessing the number of indicators, a system of 100 points was chosen. Experts were from various fields, directly related to the problem in question — owners of large companies, heads of company

associations, high-status managers, university professors, etc. The consistency of their opinions was verified on the basis of the Pearson test.

The results of the multi-criteria assessment of the GCI according to the proposed methodology make a meaningful comparison with the same assessment when all the weights of the components are the same (WEF methodology):

$$L_j = \left(1 - \frac{K_j{}^{WEF}}{K_j}\right) * 100 \quad (4)$$

this L_j is the difference between the WEF assessment of the EU country j and the proposed methodologies, in %; $K_j{}^{PEF}$ — *significance* of the WEF assessment of country j's GCI.

Based on this methodology, the GCI of EU countries and its impact on their economic development were established.

3 RESULTS AND DISCUSSION

The calculations of the EU countries' GCI were based on the values of the dimensions of this index given in Appendix 1. The data were taken for 2017-2018, i.e., the year before the COVID-19 pandemic (Global competitiveness index, 2017). The expert assessment of the importance of dimensions showed that the actual value of the Pearson criterion is 22.59, and the critical value is 19.68. The opinions of the experts are therefore harmonised. The results of the calculation of the relevance of the dimensions of the GCI are given in Table 4.

Tab. 4: Weights of the dimensions of the GCI.
Source: compiled by authors

Index	Institutions	Infrastructure	ICT Adaptation	Macroeconomic stability	Health	Skills	The product market	The labour market	The financial system	Size of the market	Business Dynamics	Innovation capacity	Total
Weight	0.115	0.053	0.071	0.066	0.052	0.113	0.083	0.088	0.086	0.054	0.084	0.135	1.0
Rank	2	11	8	9	12	3	7	4	5	10	6	1	

In assessing the scope of the initial information, a multi-criteria assessment was carried out on the basis of the SAW method. All components of the GCI are presented as indices, i.e., non-dimensional, that there was no need for normalisation of values. The results of the calculations based on the formula (2) are given in Table 5.

Tab. 5: The results of the multi-criteria assessment of the GCI of EU countries (years 2017-2018). Source: compiled by authors

Verse No.	Country	The importance of dimensions is the same		The importance of dimensions differs in importance	
		meaning	rank	meaning	rank
1.	Austria	5.16	6	5.17	10
2.	Belgium	5.31	8	5.29	7
3.	Bulgaria	4.29	20	4.23	22
4.	Croatia	4.18	26	4.07	25
5.	Cyprus	4.41	24	4.38	20

6.	Czechia	4.88	12	4.81	12
7.	Denmark	5.31	5	5.34	6
8.	Estonia	4.87	11	4.89	11
9.	Finland	5.48	4	5.55	2
10.	France	5.27	9	5.20	9
11.	Germany	5.50	2	5.50	3
12.	Greece	4.15	27	4.04	27
13.	Hungary	4.10	23	4.06	26
14.	Ireland	5.25	10	5.25	8
15.	Italy	4.55	19	4.42	18
16.	Latvia	4.27	21	4.22	23
17.	Lithuania	4.63	16	4.58	15
18.	Luxembourg	5.28	7	5.37	5
19.	Malta	4.61	14	4.63	14
20.	The Netherlands	5.60	1	5.61	1
21.	Poland	4.57	15	4.46	17
22.	Portugal	4.59	17	4.54	16
23.	Romania	4.17	25	4.09	24
24.	Slovakia	4.36	22	4.29	21
25.	Slovenia	4.42	18	4.40	19
26.	Spain	4.81	13	4.68	13
27.	Sweden	5.37	3	5.43	4

On the basis of formula (4) and Table 5, the figure L_j is determined, i.e., the differences in the multi-criteria assessment of the GCI, where its dimensions have equal and different dimensions. It was obtained that the value of L_j ranges within the range of 0 to 3 %. In order to answer the question, it is necessary to determine the impact of the CoP on GDP per capita in order to be able to answer this question to a large or small extent. This can be done on the basis of a correlation regression analysis model:

$$BVP_j = f(K_j) \tag{5}$$

this BVP_j is the gross domestic product of country j per capita in the year in question.

This connection has been shown to be very tight and adequate. The value of the correlation coefficient $r = 0.904$; $T_p = 11.72 > T_{cr} = 2.069$, $F_f = 623.236 > F_{kr} = 2.269$, p- value < 0,001 and it shows that regression coefficient is significant. The regression equation looks like this:

$$GDP = 4.9521K^2 — 25.157K + 33.466. \tag{6}$$

This equation shows a 1 % increase in GDP per capita by 1.04 % or EUR 1232. At a national level, depending on its size, this amounts to between hundreds and billions of euros. This confirms the greater accuracy and meaningfulness of the proposed methodology for quantifying the status of the PPIs.

As regards the significance of the results obtained, the importance of the GCI should be emphasised. This index ranks countries. Their rating depends to a large extent on the country's goodwill, attractiveness for foreign investments, the arrival of foreign companies, the creation of their branches, trade representative offices, etc. All this leads to further economic

development of the country and the well-being of the people. Therefore, the more precise the methodology for determining the GCI, the greater the positive impact will be on the parties.

Since all studies examining the impact of competitiveness on the economic development of a country take GDP per capita as an indicator, it is appropriate to develop studies for a more accurate determination of this indicator in the future. According to the scientific literature, GDP is not an adequate indicator of the economic development of the country. Such investigations may give rise to difficulties in obtaining certain information. This may require a change in the structure of the information provided by international statistical publications.

CONCLUSIONS

Competitiveness is an essential condition for the country's economic development and is therefore analysed in a broad and diverse way. In these studies, a particular role is played by the quantification of its condition. All proposed methodologies have one and the same feature: the index reflecting it consists of many indicators. This is because CoC is a complex phenomenon that manifests itself in many different aspects. Their formalised expression is the indicators and dimensions, which become the CoC evaluation system. Today, the three most widely known methodologies for assessing the country's competitiveness are: The Global Competitiveness Index proposed by the World Economic Forum, Institute for International Management Development, and Institute for Industrial Policy Studies. They differ from each other in the set of indicators reflecting the CoC and their degree of aggregation, i.e., their complexity.

The methodology of the Institute for Industrial Policy Studies combines two 12 dimensions of the International Institute of Management and Development, while the Global Competitiveness Index of the World Economic Forum combines four. For more detailed research, it is appropriate to choose the one which, in its complexity, is closest to the complexity of the phenomenon in question, i.e., the competitiveness of the country. This is the GCI of the WEF.

Both the country's GCI and other methodologies foresee that the dimensions of the CoC are equally important. This is not methodologically correct, since the CoC, as a complex phenomenon, can only be reflected in many indicators or dimensions. It follows from this that they cannot be of equal importance to the CoC. This is confirmed by a deeper analysis of their nature. Some of them reflect factors that directly affect competitiveness; others — the effect of these factors. This is also the case with the GCI. Some of its dimensions reflect actions that directly and fully influence the CoP (innovation, qualification of employees, etc.), and the other part is the result of the impact of these factors (health, safety, etc.). This means that their importance needs to be differentiated. This view was confirmed by the results of the expert survey. It shows that all dimensions of the GCI are given different weights.

The GCI is of complex size, expressed in various dimensions, and therefore multi-criteria approaches can be used to combine them. Their essence is reflected in the SAW methodology, which is the sum of the value of the indicators and the product of weight. The weights of the GCI indicators were determined by experts, values taken from Appendix 1.

In order to confirm the validity of the approach proposed in the article to the assessment of the CoCs, the values of multi-criteria assessment have been compared, where the importance of the dimensions is the same and when differentiated. The difference is between 0 and 3 %. The answer to the question of whether this is much or less gives the correlation-regressive analysis of the impact of a country's competitiveness on its economic development, expressed in terms of GDP per capita. These effects were found to be very significant (r = 0.904). The regression

equation shows that if the country's competitiveness level increases by 1 %, the GDP by per capita grows 1.04 %, which amounts to EUR 1232. Depending on their number, it is hundreds of millions or billions of euros. This can influence the country's ratings according to their economic development. Investments, the arrival of foreign firms, their branches, etc., depend on their preparation.

In order to adequately determine the impact of competitiveness on the economic development of a country, it is necessary to revise the methodology for establishing an integral index reflecting it, since, according to literature sources, GDP per capita does not accurately reflect this development. This may require changes to the structure of the information provided by international statistical publications.

The scientific value of this article is manifested in the fact that it is stated that in quantifying the state of competitiveness of countries by multi-criteria methods, the weights of the indicators must be differentiated. Otherwise, a distorted image is obtained. The practical value of the article is that a more accurate picture of the state of competitiveness of the countries concerned is given. Given that countries' competitiveness has a significant impact on their economic development, it is necessary to revise not only the methodology for determining competitiveness but also economic development, as GDP is not yet an adequate indicator.

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Appendix 1. Structure of the Global Competitiveness Index of the World Economic Forum. Source: Global Competitiveness Index, 2021

Components			Blocks		Indicators	
No.	Title	Importance	Title	Importance	Title	Scores
1	Institutions	8.3	A. Safety	12.5	a. Organised crime	1-7
					b. Assassination rate	0.5-30
					c. Terrorist incidents	0.5-30
					d. Reliability of the Police	0-100
			B. Social capital	12.5	a. Social capital	0-100
			C. Balance	12.5	a. Transparency of the budget	0-100
					b. Legal independence	1-7
					c. Effectiveness of legal regulation	1-7
					d. Freedom of the Press	0-100
			D. Efficiency of the public sector	12.5	a. The burden of state regulation	1-7
					b. Effectiveness of the legal framework in conflict resolution	1-7
					c. E-Participation	0-1
			E. Transparency	12.5	a. Corruption incidents	0-100
			F. Rights of ownership	12.5	a. Rights of ownership	1-7
					b. Protection of intellectual property	1-7
					c. Quality of Land Administration	0-30
			G. Corporate governance	12.5	- Strength of audit and accounting standards	1-7
					- Regulation of conflicts of interest	0-10
					- Management of Shareholders	0-10
			H. Government's Future Orientation	12.5	a. The Adaptiveness of Government	50 %
					- Stability of Government Policy	1-7
					- Government's response to change	1-7
					- Adapting legal regulation to digital business models	1-7
					- The Government's long-term vision	1-7
					b. Determination to Sustainability	50 %
					- Regulation of energy efficiency	0-100
					- Regulation of renewable energy	0-100
					- Application of environmental contracts	
2	Infrastructure	8.3	A. Transport infrastructure	50 %	a. Roads	
					- Road connection	0-100
					- Quality of road infrastructure	1-7
					b. Railways	
					- Density of railways	0 TO 40
					- Efficiency of rail services	1-7
					c. Air transport	
					- Connecting airports	0-100
					- Efficiency of air services	1-7
					d. Sea connections	
					- Transport of vessels	0-100
					- Efficiency of your ports	1-7
			B. Utilities infrastructure	50 %	a. Electricity	
					- Availability of electricity	0-100
					- Quality of electricity supply	1-7
					b. Water	
					- Unsafe drinking water level	0-1
					- Reliability of water supply	1-7
3	ICT Adaptation	8.3			a. Mobile phone subscribers	0-120
					b. Mobile Internet Subscribers	0-0.9
					c. Fixed Internet Subscribers	0-50
					d. Optical Internet Subscribers	0-0.9
					e. Internet users	%
4	Stability of the macro economy	8.3			a. Inflation	4-40
					b. Dynamics of Debt	1-7

5	Health	8.3			a. Healthy life expectancy	40-72
6	Skills	8.3	A. The existing labour force	50 %	a. Education and the existing workforce	50 %
					- Average year of learning	0-15
					b. Skills of the existing force	50 %
					- Scope of personnel training	1-7
					- Quality of vocational training	1-7
					- Skills of graduates	1-7
					- Digital skills in society	1-7
					- Ease of finding educated workers	1-7
			B. The future labour market	50 %	a. Education of the future workforce	
					- Probability of duration in school	0-18
					b. Skills of the future workforce	
					- Critical Thinking in Teaching	1-7
					- Student — Teacher Ratio in Primary Education	1-7
7	The product market	8.3			a. Competition in the local market	50 %
					- Tax and Subsidy Distortion Effect	1-7
					- Market dominance effect	1-7
					- Competition and services	1-7
					b. Openness of trade	50 %
					- Non-tariff barriers	1-7
					- Trade tariffs	0-15
					- Complexity of tariffs	1-7
					- Efficiency of Customs	1-5
8	The labour market	8.3			a. Flexibility	50 %
					- Costs of forgiveness	4-52
					- Admission and dismissal practices	1-7
					- Cooperation between Employee and Employer	1-7
					- Flexibility in wage setting	1-7
					- Labour market policy	1-7
					- Rights of Employees	0-100
					- Admission of foreign workers	1-7
					- Internal mobility of workers	1-7
					b. Promotion of Employees	50 %
					- Based on professional qualifications	1-7
					- Payment and productivity	1-7
					- The relationship between male and female pay	1-0.2
					- Level of Employee Taxes	8-80
9	The financial system	8.3			a. Depth	
					- Local credit for business	
					- Financing of SMEs	1-7
					- Availability of risk capital	1-7
					- Market Capitalisation	0-100
					- Insurance taxes	0-6
					b. Stability	
					- Reliability of banks	1-7
					- Bad loans	0.5-50
					- Lack of credit	2 TO 40
					- Level of capital regulated by banks	0-17
10	Size of the market	8.3			- GDP - Import of goods services	 % from GDP
11	Business Dynamics	8.3			a. Administrative requirements	50 %
					- Time to start a business	0-200
					- Level of Bankruptcy	0-29.9
					- Regulation of Bankruptcy	0-16
					b. Culture of Entrepreneurial	50 %
					- Opinion on entrepreneurship risks	1-7
					- Preparation for delegating leadership	1-7

					- Growth of Innovative Enterprises	1-7
					- Companies looking for innovative ideas	1-7
12	Innovation skills	8.3			a. Diversification and cooperation	
					- Diversification of the workforce	1-7
					- Development of clusters	1-7
					- International co-innovation	0-25
					- Cooperation with the founders	1-7
					b. Research and development	
					- Scientific publications	0-100
					- Patent Applications	0-100
					- R & D costs	0-3
					- Research Institutions Awareness Index	0-100
					c. Commercialisation	
					- The intricacies of buyers	1-7
					- Trademark registration	0-100