Methodology for assessing globalisation development of countries

Abstract. Under the conditions of economic globalisation, new trends are being formed in terms of social and economic development. There arises a need for a comprehensive assessment of the level of socio-economic development of countries in order to identify factors and components of effective globalisation development. Leading global institutions use different approaches and indicators to carry out such an assessment. However, they do not cover the entire spectrum of the development factors. Therefore, the issue of conducting researches to substantiate the optimal methodology for assessing countries’ socio-economic development is relevant. The authors of this research applied the following methods: logical and comparative analysis, monographic method, deduction and induction. To provide a comprehensive assessment of socio-economic development of countries in the context of economic globalisation, it is necessary to calculate an integral indicator. The authors of the article have developed a methodology for calculating such an indicator. To calculate the integral index, five indices, each of which is already an integral one, have been selected. Each of these components is calculated by world scientific, social, economic research institutes and covers all countries of the world. The importance of each component has been determined by the expert assessment method. Thus, GDPonPPP has the highest rating of 5, the Index of Economic Freedom - 4, the Index of Global Competitiveness - 3, the Global Index of Innovations - 2, and the Index of Globalisation - 1. Luxembourg has the highest level of globalisation development among the countries under investigation with its integral index of 0.842. At the same time, the growth potential of the index is 15.8%.

It has been concluded that globalisation is a major factor affecting the current level of development in most countries of the world. To identify the level of globalisation achieved by various countries and the main factors that determine it, a methodological approach has been developed, which involves calculation of the Integral Index of Globalisation Development (IIGD), including five components: gross domestic product of the country on purchasing power parity per person, Globalisation Index, Global Competitiveness Index, Global Index of Innovations, Index of Economic Freedom, each of which has different weight, determined on the basis of expert judgment.

The obtained results allow making managerial decisions concerning the formation of development models of countries under the conditions of economic globalisation.

Keywords: Globalisation; Methodology; Assessment; Development of Countries; Integral Index of Globalisation Development

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Методологія оцінки глобалізаційного розвитку країн

Анотація. Розроблено та обґрунтовано методологічний підхід щодо оцінки рівня глобалізаційного розвитку країн світу на основі аналізу інтегрального індексу глобалізаційного розвитку, який враховує обсяг ВВП за паритетом купівельної спроможності на одну особу, індекс глобалізації, індекс глобальної конкурентоспроможності, глобальний індекс інновацій та індекс економікої свободи. Визначено країни-бенчмаркери за кожною складовою пропонованого індексу, а також складено рейтинг країн за інтегральним індексом глобалізаційного розвитку.

Ключові слова: глобалізація; методологія; оцінка; розвиток країн; інтегральний індекс глобалізаційного розвитку.

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1. Introduction

The development of the world market and economies of most countries has been characterised by the presence of significant structural changes that manifest themselves in various areas of the economy. Generally, modern transformation processes are caused by the growing role of globalisation, which covers various directions of development and interaction between the subjects and objects of socio-economic and environmental relations. Under the conditions of economic globalisation, new trends are being formed in terms of social and economic development. Population growth, as well as the changing structure and culture of consumption, is an impetus for both quantitative and qualitative indicators. There arises a need for a comprehensive assessment of the level of socio-economic development of countries in order to identify factors and components of effective globalisation development. Leading global institutions use different approaches and indicators to carry out such an assessment. However, they do not cover the entire spectrum of the development factors. Therefore, the issue of conducting researches to substantiate the optimal methodology for assessing countries’ socio-economic development is relevant.

2. Brief literature review

Quite a few scholars have focused their attention on the issues of socio-economic development of countries and individual industries under the conditions of economic globalisation. Among the first researchers in the field of global studies are the works by P. Dicken (1998) and Y. Doz (1986). Also, the relevant scientific papers by Ş. Önsel, F. Ulengin, G. Ulusoy, E. Aktaş, Ö. Kabak and Y. İker Topcu (2008), O. I. Koskin (2012), L. C. L. H. W. D. Patthawardeni and M. Theodoratou (2011), V. O. Gurova (2015), I. Alleskielev and L. Fedeyvych (2015), and V. B. Bondarchuk (2015) are of particular importance.

S. Mitchelmore and J. Rowley (2010) investigated the role of management entities in shaping development models at various managerial levels, while K. Sorrells (2013) examined general issues of globalisation in modern conditions. S. E. Sardak and A. V. Stavytska (2015) emphasised that the development of the world economy is accompanied by many negative phenomena: considerable inequalities in personal incomes, imbalances of opportunities of personal fulfillment, economic crisis, etc. While the global trend sees states losing their status as the main subject in the world economic system, as transnational companies and regional mega-blocks assume greater importance, sovereign nations of the 21st century still remain main guarantors of reproduction of human resources and provision of standards of living for people.

A new approach to the competitiveness of nations using hierarchical clustering analysis with 178 criteria and artificial neural networks propose Ş. Önsel, F. Ulengin, G. Ulusoy, E. Aktaş, Ö. Kabak and Y. İker Topcu (2008).

Fitzova and Zidek (2015) analysed impacts of international trade on the economic growth in the Czech Republic and the Slovak Republic. C. Spiliopoulos (2014) points out that Ukraine should find out its own niche in the world economic system. New opportunities may open up as a result of the creation of the free trade zone between Ukraine and the European Union. It is possible to improve the situation at Ukrainian enterprises owing to their integration into global value chains and development of export potential in the frame of the Deep and Comprehensive Free Trade Area (DCFTA). Issues of the development of the agricultural and food market in the context of economic globalisation and the EU’s Common Agricultural Policy (CAP), as well as its enlargements, are revealed in the work by E. Giannakis and A. Bruggeman (2015). Thus, in modern theory and practice, the problems of current development of countries in general, and Ukraine in particular, have been carefully researched. However, these works do not address the full range of factors determining the level of their development. Therefore, it is advisable to improve the methodological approaches to assessing the development of countries of the world.

3. The purpose of the study is to develop methodological approaches to assessing the level of globalisation development of countries on the basis of the integral index, which takes into account a full spectrum of indicators of socio-economic, innovative and environmental development of countries under the conditions of economic globalisation.

4. Results

There are a number of techniques for assessing socio-economic development of countries under the conditions of economic globalisation. To provide a comprehensive assessment of globalisation processes around the world, it is advisable to analyse the KOF Index of Globalisation. This indicator was developed by the Swiss Economic Institute and has been calculated since 2002 to characterise the level of globalisation of countries. This integral indicator combines three directions of globalisation: economic (flows of goods, services, capital and information), political (popularisation of state policies), and social (dissemination of ideas and images). As a whole, the method
Assessing the level of globalisation of countries, it is important to analyse the Global Competitiveness Index suggested by the World Economic Forum. In 2017, this indicator is made up of 113 variables, two-thirds of which are the result of a global survey of company executives, and one-third is based on the public sources.

All variables are grouped into 12 benchmarks, namely quality of institutions, infrastructure, macroeconomic stability, healthcare and primary education, higher education and training, efficiency of the market for goods and services, labour market efficiency, financial market development, level of technological development, size of the domestic market, companies’ competitiveness, and innovation potential.

The World Economic Forum annually publishes data on global competitiveness by analysing trends among countries and causes for changes in key components of global competitiveness. The topicality of the Global Competitiveness Index assessment of competitive-ness is caused by the need to determine the preconditions for further development under the conditions of the fourth industrial revolution; identify macro-economic challenges, strengths and weaknesses of the economies of the world, as well as factors that cause polarisa- tion of the world, development priorities, competitive advantages, contribution of countries to solving global problems. The ranking of countries in terms of competitiveness over the past five years was led by Switzerland, the index of which was 5.86 in 2017-2018 (Figure 2).

The leaders in terms of global competitiveness include the United States, Singapore, the Netherlands, Germany, Hong Kong, Sweden, the United Kingdom, Japan and Finland. At the same time, the ranking of the Netherlands rose significantly from the 8th to the 4th position, whereas Finland’s rating dropped from the 3rd to the 10th position. The upward movement in the table ranking is observed for the United Kingdom, Denmark, New Zealand, Israel and Ireland. The fall in positions was most significant for Austria (from the 16th to 19th position).

Ukraine has improved its ranking by moving from the 85th to the 81st position. It was in 2016-2017 that the index of global competitiveness of Ukraine was the lowest over the previous five years. It was the highest (73rd) in 2012-2013. The pre-competitive development of the country by/on purchasing power parity per person.

Italy, France, Belgium, Austria, Spain, Great Britain, Sweden, Brazil, the Netherlands, Switzerland, Canada and Egypt also have high indices of political globalisation. Consequently, high balanced indices of globalisation can be observed in the Netherlands and Belgium. Ukraine’s place in the overall globalisation space is shown by the data in Figure 1.

In recent years, the index of globalisation of Ukraine ranged from 68.85 in 2013 to 70.24 in 2016, with the 45th position over the previous five years. It was the highest (73rd) in 2012-2013. The Pre-competitive development of the country by/on purchasing power per person.

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Ukraine has improved its ranking by moving from the 85th to the 81st position. It was in 2016-2017 that the index of global competitiveness of Ukraine was the lowest over the previous five years. It was the highest (73rd) in 2012-2013. The main factors that caused the deterioration of the indicators in subsequent years were an unstable political and economic situation in Ukraine and military actions which shifted emphasis in the development. The lowest ratings of Ukraine, among the countries by the Global Competitiveness Index, are observed in terms of indicators such as the State of the Macroeconomic Environment - the 121st position in 2017-2018, though it is by 13 positions or 9.2% higher than in 2015-2016; by the Institutions Development Index - the 118th position, which is by 21 positions or 9.2% higher than in 2015-2016.

To provide a comprehensive assessment of socio-economic development of countries in the context of economic globalisation, it is necessary to calculate an integral indicator. We have developed a methodology for calculating this indicator. The general formula for calculating the integral indicator of globalisation development (IIGD) has the form:

\[ IIGD = 0.333K_{GDPonPPP} + 0.667K_{IGI} + 0.2K_{IEF} + 0.133K_{IEF} + 0.267K_{IEF} \]  

where GDPonPPP is the gross domestic product of the country by/on purchasing power parity per person;
IG - the Index of Globalisation; 
IGC - the Global Competitiveness Index; 
IGI - the Global Index of Innovations; 
IEF - the Index of Economic Freedom; 
Kb - the benchmarking ratio.

The coefficients in each item are calculated as weighed estimates of each indicator of formula (1).

To calculate this integral index, we have selected five indices, each of which is already an integral one. Each of these components is calculated by world scientific, social, economic research institutes and covers all countries of the world. The importance of each component was determined by the expert assessment method. Thus, GDPonPPPp has the highest rating of 5, the Index of Economic Freedom - 4, the Index of Global Competitiveness - 3, the Global Index of Innovations - 2, the Index of Globalisation - 1. Hence, a weighed assessment is calculated (weighted assessment integral index of globalisation development (WAiigd):

$$ WA_{iigd} = \sum_{i=1}^{n} A_{iigd_i} / \sum_{i=1}^{n} A_{iigd_i}, $$

where $A_{iigd_i}$ is the expert assessment of the $i$-th component of the integral index of globalisation development; $i$ - the serial number of the IIGD component; $n$ - the number of the IIGD components.

According to the developed methodology, the indicators of each IIGD component are selected for the country under research; a benchmarker (model country) with the highest indicators for each IIGD component is formed. By the GDPonPPP, the benchmarker is Qatar with a value of USD 127,870 per person. By the Index of Globalisation, the benchmarker is the Netherlands (91.7), and by the Global Competitiveness Index and the Index of Global Innovations - Sweden with the corresponding indicators of 5.86 and 67.69. Hong Kong is the leader by the Index of Economic Freedom, with its 89.8 score. On the basis of the indicators, we calculate the benchmarking ratio ($K_b$):

$$ K_b = \frac{I_i}{I_i}, $$

where $I_i$ is the indicator of the $i$-th component of the integral index of the globalisation development of the estimated country; $I_i$ is the indicator of the $i$-th component of the IIGD of the country benchmarker.

According to this methodology, the countries of the world, Ukraine and Slovakia in particular, have been evaluated (Table 2).

- By the GDPonPPP, for Ukraine, the calculated value of 0.021 is only 6.4% of the potentially possible value, which is the lowest indicator among all the components of the IIGD.
- The benchmarking value for the Globalisation Index is 91.7; for Ukraine the given component is equal to 70.24; the weight of the indicator is equal to one; the integral value is 0.051, which is 76.6% - the highest value among the investigated indicators. Switzerland is the leader by the Global Competitiveness Index and the Global Index of Innovation. For Ukraine, the integral values of these components are respectively 0.14 (70%) and 0.074 (55.6%). The Index of Economic Freedom for Ukraine is 0.143, or 53.6%. The overall indicator, the integral index of globalisation development of Ukraine, is 0.429 (42.9%).
- Luxembourg has the highest level of globalisation development among the countries under investigation with its integral index of 0.842. At the same time, the growth potential of the index is 15.8% (Figure 3).
- The top five countries include Switzerland (0.816), Ireland (0.769), the United States (0.755), Norway (0.740), and the

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Tab. 2: The components of integral indicator of globalisation development (IIGD) of Ukraine and Slovakia, 2016

| Components of IIGD | Indicators’ benchmarker | Countries’ benchmarker | Benchmarking coefficient | Assessing | Weighted assessing | Integral indicator of globalisation development | Percentage value IIGD |
|--------------------|-------------------------|------------------------|--------------------------|-----------|-------------------|-----------------------------------------------|----------------------|
| Ukraine            |                         |                        |                          |           |                   |                                               |                      |
| GDP per purchasing power parity per person, USD | 8,162 | 127,870 | Qatar | 0.064 | 5 | 0.333 | 0.021 | 6.4 |
| Globalisation Index | 70.24 | 91.7 | Netherlands | 0.766 | 1 | 0.067 | 0.051 | 76.6 |
| Global Competitiveness Index | 4.1 | 5.86 | Switzerland | 0.700 | 3 | 0.200 | 0.140 | 70.0 |
| Global Innovation Index | 37.62 | 67.69 | Switzerland | 0.556 | 2 | 0.133 | 0.074 | 55.6 |
| Index of Economic Freedom | 48.1 | 89.8 | Hong Kong | 0.536 | 4 | 0.267 | 0.143 | 53.6 |
| Total | x | x | x | x | 15 | 1.000 | 0.429 | 42.9 |
| Slovakia            |                         |                        |                          |           |                   |                                               |                      |
| GDP per purchasing power parity per person, USD | 30,626 | 127,870 | Qatar | 0.240 | 5 | 0.333 | 0.080 | 24.0 |
| Globalisation Index | 83.62 | 91.7 | Netherlands | 0.912 | 1 | 0.067 | 0.061 | 91.2 |
| Global Competitiveness Index | 4.33 | 5.86 | Switzerland | 0.739 | 3 | 0.200 | 0.148 | 73.9 |
| Global Innovation Index | 43.43 | 67.69 | Switzerland | 0.642 | 2 | 0.133 | 0.086 | 64.2 |
| Index of Economic Freedom | 69.5 | 89.8 | Hong Kong | 0.774 | 4 | 0.267 | 0.206 | 77.4 |
| Total | x | x | x | x | 15 | 1.000 | 0.580 | 58.0 |

Source: Calculated and generalised by the authors based on KOF Globalisation Index 2017, the Global Innovation Index 2017, Seosait 2017, the Global Competitiveness Report 2017-2018, World Bank Open Data 2017.
5. Conclusions

Globalisation is a major factor affecting the current level of development in most countries of the world. Under the influence of this factor, there emerge new economic conditions that change the vector of the development. To identify both the level of globalisation achieved by countries worldwide and the main factors that determine it, a methodological approach has been developed, which involves the calculation of the Integral Index of Globalisation Development (IIGD), including five components: gross domestic product of the country on purchasing power parity per person, the Globalisation Index, the Global Competitiveness Index, the Global Index of Innovations, the Index of Economic Freedom, each of which has different weight, determined on the basis of expert judgment.

Drawing a comparison between the IIGD values for Ukraine and Slovakia made it possible to conclude that both countries have lower indicators than potentially possible values, with Slovakia having by 15.1 percentage points higher than Ukraine. At the same time, the main economic reasons behind the low indicators of globalisation development are:

- instability of the banking system and national currency;
- growth of external public debt;
- decline in investment attractiveness of the country due to the increasing difficulty of contracting, worsening of foreign investors protection, ineffective operation of free economic zones and territories of the priority development;
- increasing monopolisation of the national market, inferior methods of antimonopoly control and economic regulation;
- imperfection of the system of public administration and management at the level of entrepreneurship;
- lack of effective incentives for the development of small and medium-sized businesses;
- excessive migration of the population, with «the outflow of human capital» in particular;
- lack of intellectual business and ineffective development of the intellectual property institute;
- low level of the development of socio-economic infrastructure, road transport network and logistics systems in particular;
- lack of a clear development strategy with a step-by-step action plan in various socio-economic fields;
- lack of competitive advantages and selected development priorities that are globally understood;
- increasing dependence on raw material agriculture, which does not involve production of goods with high added value and occupation of a well-established protected niche in the global market.

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