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Ivashchuk I.O.,  
*dr.sc.(econ.), professor, professor at the  
department of international economics,  
ORCID: <https://orcid.org/0000-0002-4906-799X>,*  
Uhryn B.V.,  
*candidate for the third level of higher education “Doctor  
of Philosophy” in specialty “International Economic Relations”,  
ORCID: <https://orcid.org/0009-0008-3413-2956>,*  
*West Ukrainian National University, Ternopil*

## FINANCIAL ECOSYSTEM OF GLOBAL ECONOMIC INTEGRATION

Іващук І.О.,  
*д-р екон. наук, професор,  
професор кафедри міжнародної економіки,  
Угрин Б.В.,  
здобувач\* третього рівня вищої освіти «доктор філософії»  
за спеціальністю «Міжнародні економічні відносини»,  
Західноукраїнський національний університет, м. Тернопіль*

## ФІНАНСОВА ЕКОСИСТЕМА ГЛОБАЛЬНОЇ ЕКОНОМІЧНОЇ ІНТЕГРАЦІЇ

**Statement of the problem.** Global economic integration has undergone a long period of formation under the influence of multi-vector factors that became dominant at a certain stage of development of the global economy. Change of leading countries, expansion of territories, technological progress, deepening of the international division of labour, formation of the structure of international relations and the foundations of the world economy, institutional support of integration processes through regional economic integration, opening of new markets and trade and financial liberalization – this is an incomplete list of processes that have become catalysts of global economic integration.

At the same time, the growth of global interdependence of economies, the emergence of new technologies, and the expansion of global economic integration of entities have shown that new vectors are emerging as a response to global challenges and threats. And the emphasis in these processes is shifting to the financial sphere, where a new global financial ecosystem is being formed.

**Analysis of recent research and publications.** Issues of global integration have remained the subject of research by scientists and think tanks for decades. Quite a few publications by domestic and foreign researchers are devoted to the issues of the development of various forms of integration processes, regional aspects of economic integration, and institutional factors of integration. However, innovative development and global progress, interdependence of countries require the use of an ecosystem approach in the analysis of economic processes.

It has been used in scientific research on the global economy, in particular in the context of the formation of business ecosystems [1], digital ecosystems [2]; ecosystems in the financial sector were studied by T. Oleshko and A. Maryna [3]. O. Borysyuk and M. Datsyuk-Tomchuk [4], I. Yatskevich [5], L. Borysova [6] and other scientists highlighted the peculiarities of the role of ecosystems in the financial market, in particular in financial and payment intermediation. However, global economic integration is not limited to financial markets or digital transformations; under the influence of new challenges, the transformation of the global environment is taking place, which requires an ecosystem approach to the financial aspects of integration processes. This makes the issues of this study relevant.

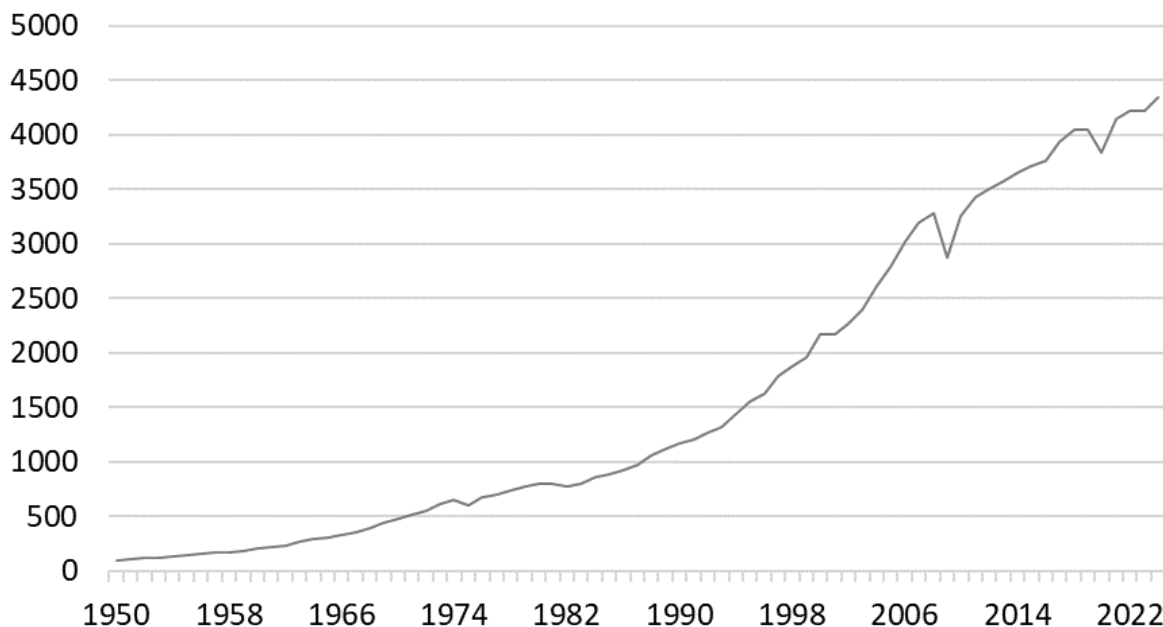
**Statement of the task.** The aim of the article is to substantiate the formation of the financial ecosystem of global economic integration as its multi-level environment and identify its characteristics.

**Presentation of the main material of the study.** Global economic integration in recent decades is a reflection of global transformation processes and national integration strategies of countries, therefore it is constantly evolving to adapt to growing challenges. This evolution is an objective response to the deepening of the growing interdependence of countries, especially in the economic sphere.

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\* *Наук. керівник: Іващук І.О. – д-р екон. наук, професор*

In this regard, scientists note the ancient origin of economic globalization as a historically nonlinear process, if we interpret it as “economic interdependence of geographically separated peoples. Only after the “Age of Great Geographical Discoveries” of the 15<sup>th</sup>–16<sup>th</sup> centuries did this concept begin to mean the economic integration of the five continents. As for “globalization” in the sense of the participation of most of the world’s countries in a market economy and free trade, it began only in the early 1990s” [7]. An assessment of the trade activity of countries from 1950 to 2024 (Fig. 1) confirms the long-term growth in the physical volumes of world trade, which indicates the deepening of global economic integration in the second half of the 20<sup>th</sup> – early 21<sup>st</sup> centuries.



**Fig. 1. Dynamics of world trade, 1950–2024. (Volume index, 1950=100)**

Source: [8]

Researchers measure the level of global economic integration in different ways. They often use indicators of a country's openness by determining the share of trade in GDP and investment in GDP [9], the involvement of countries in global value chains, composite indices [10], the cumulative impact of openness indicators on industrial development and economic growth [11–13]. And this, to a greater extent, depends on the environment in which ties between countries are formed, and which is transformed into an ecosystem in which these indicators are not enough to assess the level of integration.

The ecosystem, unlike the environment as a set of integration conditions, makes it possible to identify the features of the interaction of the main actors in the process of global economic integration. The functional purpose of the financial ecosystem, according to Ukrainian scientists, is that “it creates conditions for the functioning of capital markets, providing credit, risk management and providing a wide range of financial services” [3].

The financial ecosystem of global economic integration is complex in nature and, from a functional perspective, encompasses both core components and cross-cutting elements that permeate the entire system. We propose the following cross-functional components of the ecosystem that form the environment of global integration: institutional and regulatory, human capital ecosystem, information, risk and sustainable development ecosystem. Accordingly, the basic systems are: monetary and financial, investment, payment and settlement, trade, production, digital, innovation and technological. A feature of the financial ecosystem as a multi-level dynamic environment is its complex nature (Table 1).

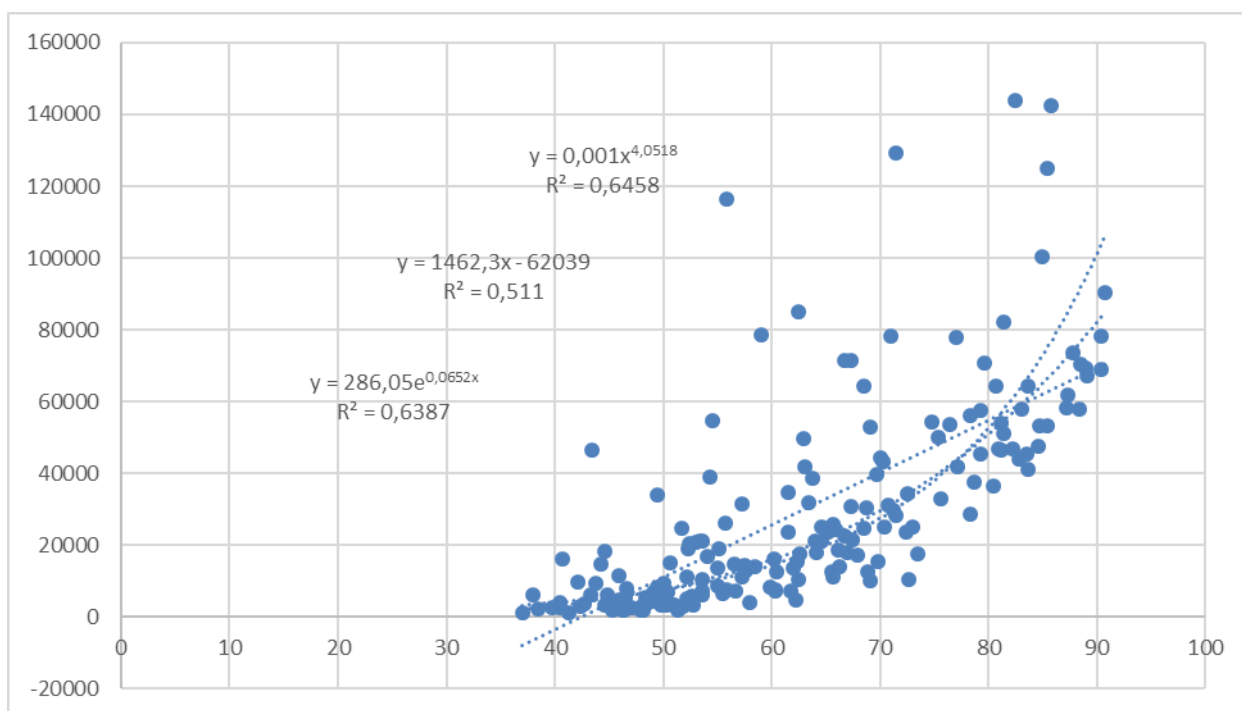
At the same time, it is important to note that countries are integrated into the processes of global economic integration to varying degrees. An analysis of the positioning of 182 economies in the coordinates [Globalization Index (KOF); GDP per capita, PPP (*Purchasing Power Parity*), (current international \$)] indicates significant differences between them, and confirms that a high level of globalization (integration into the global environment) is not always accompanied by a high level of economic well-being (Fig. 2). The analysis results show that countries with a low level of globalization have a relatively low level of GDP, but among countries with an average level of globalization, a group of countries is also formed where GDP per capita indicators are below the average.

Table 1

**Cross-functional and core systems of the financial ecosystem of global economic integration**

Ecosystem component	Key function	Basic elements	Role in global integration
Monetary and financial	Regulation of cash flows and credit, redistribution of monetary resources	Banks, credit market, financial market, capital market, foreign exchange market, credit institutions, FinTech	It provides cross-border capital movement and financial basis for integration processes
Payment and Settlement	International Settlements and Liquidity	Payment Systems, Clearing, Currency Mechanisms	It ensures the Continuity of Transactions between Economies
Investment	Accumulation and placement of capital	Direct and portfolio investments, funds	It contributes to long-term integration of economies
Trade	International exchange of goods and services	Export-import channels, trade networks	It forms the basic interdependence of markets
Manufacturing	Coordination of production between countries	Global value chains	Deepening integration through joint production
Digital+ Information	Coordination and data exchange	Platforms, digital services	It accelerates and scales integration processes
Institutional and regulatory	Formation of rules and standards	Agreements, norms, regulators	It provides stability and predictability
Innovative and technological	Dissemination of knowledge and technology	R&D, startups, technology transfer	It increases dynamics and competitiveness
Human Capital Ecosystem	Labour and Knowledge Mobility	Migration, Education, Skills	It supports the Adaptation of Economies
Risk-stabilization	Managing systemic risks and supporting sustainable development	Insurance, hedging, reserves	It increases ecosystem resilience

Source: developed by the authors



**Fig. 2. Positioning of economies in coordinates [Globalization Index; GDP per capita, PPP (current international \$)]**

Source: constructed by the authors based on [14; 15]

This may indicate the existence of structural and institutional development problems in these countries, large discrepancies in the structure of the globalization index. If we consider the group of economies with a high level of globalization, it, accordingly, demonstrates higher values of GDP per capita. The analysis confirms that global integration is not the only determinant of economic development, so it is worth considering the impact of its components on economic well-being.

We will conduct a correlation analysis using the Statistica program and construct a correlation matrix to identify pairwise relationships between indicators and the strength of the relationship between them. In our case, the sample was formed by 182 economies (countries and territories); the values of the indicators were taken for 2023 based on World Bank data [14] and the report of KOF Globalisation Index [15]. The following characteristics of the financial ecosystem were selected: GDP per capita – GDP per capita (PPP, current international \$); IG – information globalization; FG, de facto – financial globalization, de facto; FG, de jure – financial globalization, de jure; PG, de facto – political globalization, de facto; IG, de facto – interpersonal globalization, de facto; CG, de facto – cultural globalization, de facto. There is a connection between almost all indicators, but it has different strengths (Table 2).

**Table 2**

**Correlation matrix between characteristics of the financial ecosystem of global economic integration**

	GDP per capita.	TG	IG	FG. de facto	FGI. de jure	PG. de facto	IG. de facto	CG. de facto
GDP per capita	1							
TG	0.638661	1						
IG	0.716157	0.646687	1					
FG. de facto	0.657975	0.701189	0.639388	1				
FG. de jure	0.646178	0.619789	0.61128	0.594487	1			
PG. de facto	0.261792	0.206675	0.255065	-0.00044	0.344814	1		
IG. de facto	0.714265	0.687208	0.744362	0.732228	0.546622	-0.10389	1	
CG. de facto	0.762217	0.709492	0.774929	0.598296	0.66817	0.472489	0.660724	1

Source: calculated by the authors based on [14; 15]

The exceptions are the very weak and insignificant relationship Financial globalization de facto ↔ Political globalization de facto and Political globalization de facto ↔ Interpersonal globalization de facto. Political globalization de facto demonstrates the lowest relationship with all other indicators. According to the methodology [10], it includes: the number of embassies in the country, UN peacekeeping missions and the number of non-governmental international organizations operating in the country. As a rule, political globalization responds to solving problems, but not to ensuring and maintaining well-being in the country. Although, on the other hand, its high level may be evidence of a favourable political environment in the country.

Using only a single-factor approach in practice is not advisable given the fragmentation of global development and the peculiarities of the economic development of countries, their different involvement in the processes of global integration. Economies are open, regardless of whether to a greater or lesser extent, so the set of factors can weaken or strengthen the impact on the resulting indicator. We will use the tools of multifactor analysis in order to identify the impact of the set of factors on economic well-being. The significance of the model is assessed using p-value and t-statistics (for coefficients) or F-test (for the entire model), multiple correlation coefficient (R) and multiple determination (R<sup>2</sup>). In our case, we have a significant Fisher test for the model, a significant multiple determination coefficient (Table 3).

The obtained multivariate regression shows that after simultaneously controlling for different dimensions of globalization, the largest and most statistically stable positive relationship with GDP per capita (PPP) is observed for: Interpersonal Globalisation, de facto, Cultural Globalisation, de facto; the positive and statistically significant effects of both financial components (de facto and de jure) are less well preserved. At the same time, the information and political components, as well as trade globalization in our study do not demonstrate independent significance. The value of the coefficient of determination is 0.692, i.e. the included indicators explain about 69.2% of the total variation in the GDP per capita indicator in PPP in the studied sample of economies. About 30.8% of the variation of the dependent variable remains unexplained within the framework of this model, i.e. there are factors that were not included in the model. Therefore, the research will be continued and aimed at expanding the model and including other institutional and economic factors.

In further research, we will use the cluster analysis method, which will allow us to form groups of economies according to the characteristics previously selected for correlation analysis and to identify patterns. A hierarchical cluster analysis dendrogram was constructed in the Statistica program for 182 observations to determine the number of clusters, which makes it possible to identify the structure of similarities. Analysis of the dendrogram indicates the presence of a clearly expressed hierarchical structure in the sample and the existence of three or four clusters is traced (Fig. 3).

Table 3

Results of multifactor regression model estimation

Regression Statistics	
Multiple R	0.8315693
R Square	0.6915075
Adjusted R Square	0.6790968
Standard Error	16457.116
Observations	182

ANOVA					
	df	SS	MS	F	Significance F
Regression	7	1.06E+11	1.51E+10	55.71901	3.297E-41
Residual	174	4.71E+10	2.71E+08		
Total	181	1.53E+11			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95,0%	Upper 95,0%
Intercept	-47120.859	10432.263	-4.517	0.000	-67710.928	-26530.790	-67710.928	-26530.79
TG	-93.797	115.491	-0.812	0.418	-321.740	134.146	-321.740	134.146
IG	155.628	177.194	0.878	0.381	-194.099	505.355	-194.099	505.355
FG, de facto	239.209	108.774	2.199	0.029	24.523	453.895	24.523	453.895
FG, de jure	191.111	91.911	2.079	0.039	9.708	372.514	9.708	372.514
PG, de facto	115.260	75.180	1.533	0.127	-33.123	263.642	-33.123	263.642
IG, de facto	410.190	113.737	3.606	0.000	185.708	634.672	185.708	634.672
CG, de facto	302.278	88.709	3.408	0.001	127.193	477.363	127.193	477.363

Source: calculated by the authors based on [13; 14]

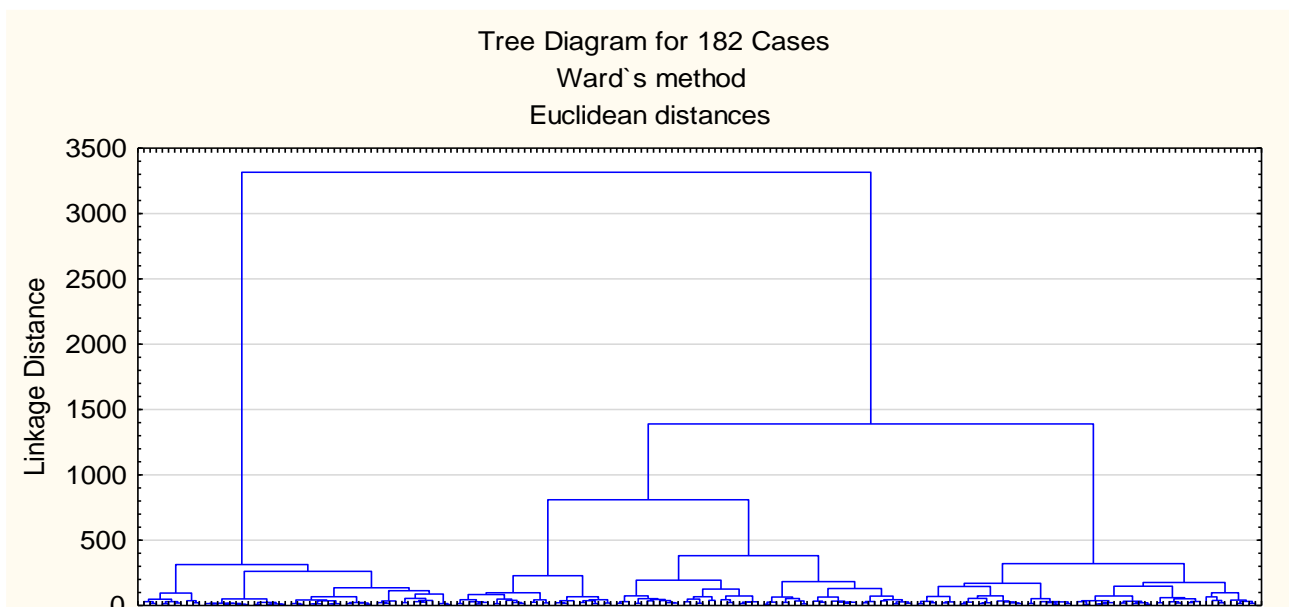
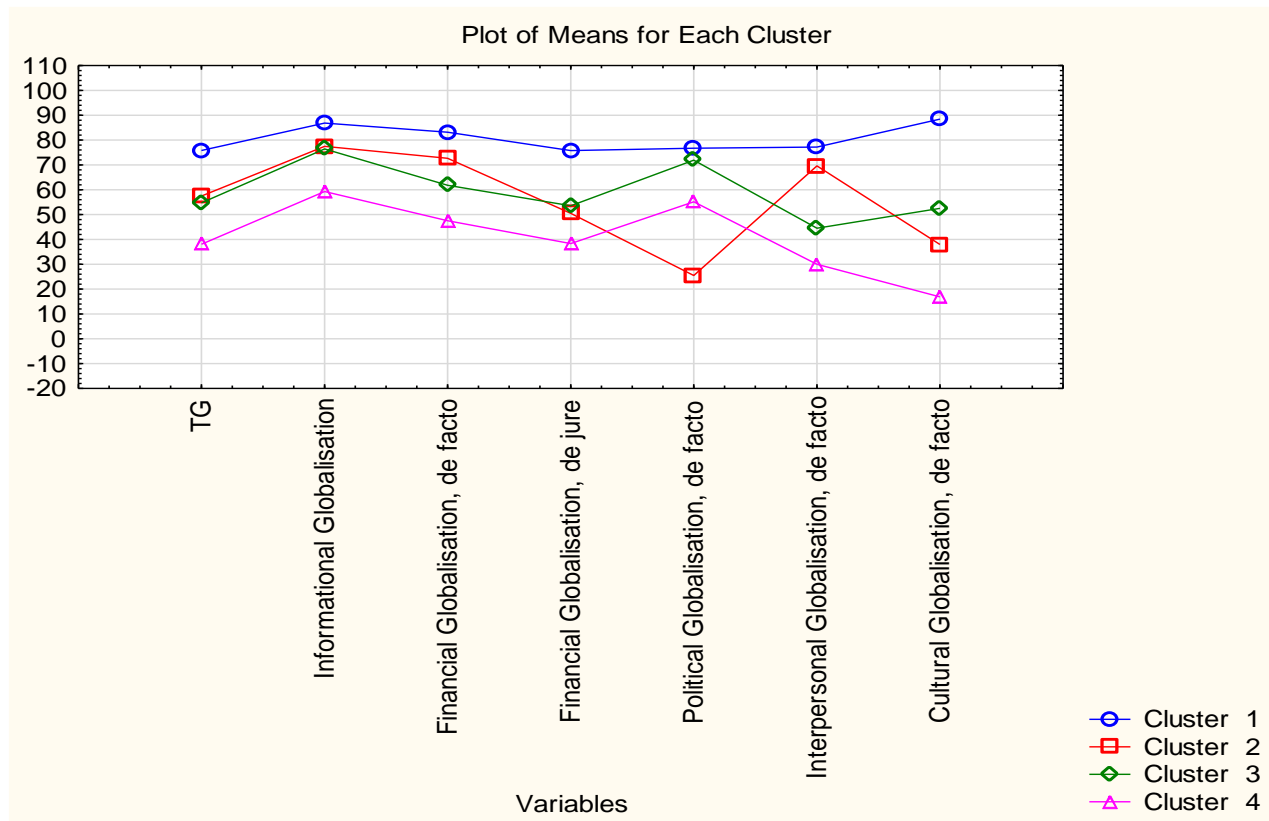


Fig. 3. Dendrogram of cluster analysis

Source: calculated by the authors according to [15]

After determining the number of clusters, we apply the non-hierarchical k-means method to determine the composition of clusters and calculate the average values of variables for further economic interpretation (Fig. 4).



**Fig. 4. Average values of indicators of global economic integration in clusters**

Source: calculated by the authors according to [15]

The first cluster was formed by 49 economies with a high level of economic development, international integration and stable institutions (Table 4).

**Table 4**

**Structure of Cluster 1 and its characteristics**

Australia	France	Latvia	Norway	Slovak Republic																																				
Austria	Germany	Lebanon	Poland	Slovenia																																				
Bahrain	Greece	Lithuania	Portugal	Spain																																				
Belgium	Hong Kong SAR, China	Luxembourg	Qatar	Sweden																																				
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This cluster is characterized by the highest average values for all indicators, which indicates a complex and stably expressed integration into the global space. Particularly high values are observed in cultural, informational and financial globalization, which reflects intensive inclusion in both international market processes and exchanges of information resources. High indicators of political and interpersonal globalization indicate systemic openness and interaction of economies with the external environment. The first cluster can be characterized as a group of economies with a high level of globalization, which form the core of global economic integration.

The second cluster (Cluster 2) demonstrates a mostly average level of integration by most indicators. It was formed by 38 economies (Table 5). Information globalization and financial globalization de facto are most clearly represented in this cluster, which indicates a relatively high degree of involvement in international information flows and actual financial globalization. At the same time, the values of political globalization de facto are lower compared to other clusters, which may reflect less intensive participation in political processes at the international level. Given the economic development of the economies that formed the second cluster, the indicator of interpersonal globalization de facto is relatively high, which may be associated with the activity of transnational contacts of the population (migration, communication or tourism ties), but the level of cultural globalization remains low. That is, the second cluster can be defined as a group with moderately pronounced and structurally uneven globalization, dominated by economic and information determinants.

Table 5

**Structure of Cluster 2 structure and its characteristics**

Albania	Djibouti	Kyrgyz Republic	Palau	Suriname																																				
Antigua and Barbuda	Dominica	Lesotho	Samoa	Tonga																																				
Aruba	Eswatini	Maldives	San Marino	Trinidad and Tobago																																				
Bahamas	Georgia	Mauritius	Sao Tome and Principe	Uzbekistan																																				
Barbados	Grenada	Micronesia, Fed STS	Seychelles	Vanuatu																																				
Belize	Guyana	Montenegro	St Kitts and Nevis	West Bank and Gaza																																				
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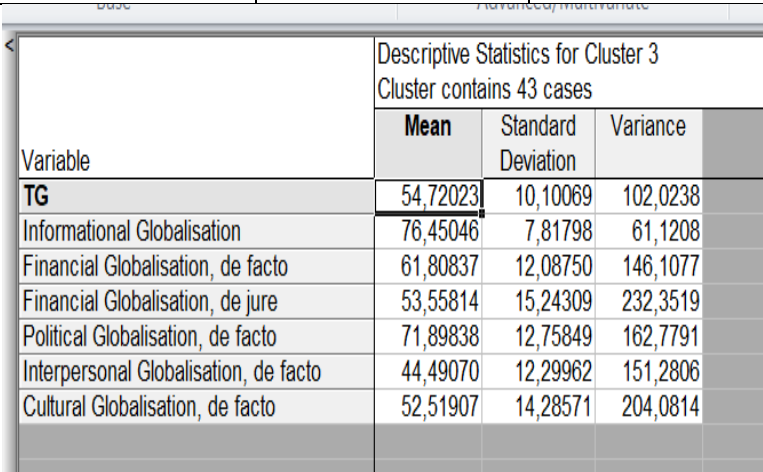
Source: created by the authors

These economies are integrated into global financial flows, but, as the analysis shows, they do not have a sufficient institutional basis, which negatively affects the stability of financial flows. In addition, the cluster is quite heterogeneous in structure, because it includes both small island states and resource economics (for example, Oman, Botswana, etc.). Globalization in these economies has a compensatory nature: it is a necessary condition for economic functioning, but does not always transform into sustainable long-term growth.

Cluster 3 includes 43 countries, geographically diverse, typically with medium levels of economic growth (Table 6). This group also includes the so-called emerging economies. The countries in this cluster are characterized by an orientation towards external markets and international financial interactions, a medium level of financial integration, and a high level of political globalization. That is, they are significantly integrated globally, but their degree and quality vary depending on the region, economic structure and institutional policy.

Table 6

Structure of Cluster 3 and its characteristics

Argentina	Costa Rica	Kazakhstan	North Macedonia	Sri Lanka																																
Armenia	Dominican Republic	Libya	Panama	Thailand																																
Azerbaijan	Ecuador	Mexico	Paraguay	Tunisia																																
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The fourth cluster (Table 7) shows the lowest scores in the sample for the studied indicators of global integration, in particular in the interpersonal and cultural dimensions, which reflects limited integration into humanitarian, social and cultural global processes. At the same time, within this cluster there is an increased level of de facto political globalization, which contrasts quite well with the general trend of low values of other indicators. This combination may indicate a situation where international interaction is supported mainly through political channels, but does not have intensive economic, cultural or interpersonal ties.

The fourth cluster was formed by 52 economies, as a rule, these are the so-called countries of the Global South with a low or lower average level of economic development, whose economies are in a state of transformation. The economies of the fourth cluster have limited diversification of production, a high share of the agricultural sector or extractive industry in the structure of the economy, and a low ability to finance social development programs.

The conducted cluster analysis confirms that financial ecosystems of global economic integration may have common features, but in each group of economies (in our case in a cluster) form special characteristics. Thus, in the studied sample of countries, financial ecosystems of integration are formed mainly around international bank settlements, direct investments, migrant transfers and external financing, while full-fledged integration through capital markets is characteristic only for some large economies. The revealed difference between de facto and de jure financial globalization reflects a structural asymmetry: actual flows can be significant even under conditions of incomplete liberalization, or, conversely, formal openness does not guarantee a high intensity of real integration in the presence of institutional risks.

Analysing the financial determinants of global economic integration, we will determine the relationship between the de jure financial globalization index (normative and institutional dimension) and the de facto financial globalization index (actual integration into international financial flows). According to the methodology for determining the KOF Globalization Index, these indicators have different components, which are given in Table 8.

Table 7

## Structure of Cluster 4 and its characteristics

Afghanistan	Chad	Haiti	Mozambique	Sudan																																								
Algeria	Comoros	Iran	Myanmar	Syrian Arab Republic																																								
Angola	Congo, Dem. Rep.	Iraq	Nepal	Tajikistan																																								
Bangladesh	Congo, Dem. Rep.	Kenya	Niger	Tanzania																																								
Benin	Cote d'Ivoire	Lao PDR	Nigeria	Timor-Leste																																								
Bhutan	Ethiopia	Liberia	Pakistan	Togo																																								
Bolivia	Gabon	Madagascar	Papua New Guinea	Uganda																																								
Burkina Faso	The Gambia	Malawi	Rwanda	Venezuela, RB																																								
Burundi	Ghana	Mali	Sierra Leone	Zambia																																								
Cameroon	Guinea	Mauritania	Solomon Islands	Zimbabwe																																								
Central African Republic	Guinea-Bissau	<table border="1"> <thead> <tr> <th colspan="4">Descriptive Statistics for Cluster 4</th> </tr> <tr> <th colspan="4">Cluster contains 52 cases</th> </tr> <tr> <th>Variable</th> <th>Mean</th> <th>Standard Deviation</th> <th>Variance</th> </tr> </thead> <tbody> <tr> <td>TG</td> <td>38,04865</td> <td>9,11602</td> <td>83,1018</td> </tr> <tr> <td>Informational Globalisation</td> <td>59,31808</td> <td>7,24797</td> <td>52,5331</td> </tr> <tr> <td>Financial Globalisation, de facto</td> <td>47,50423</td> <td>15,30052</td> <td>234,1059</td> </tr> <tr> <td>Financial Globalisation, de jure</td> <td>38,31693</td> <td>13,58012</td> <td>184,4198</td> </tr> <tr> <td>Political Globalisation, de facto</td> <td>55,16462</td> <td>16,21962</td> <td>263,0762</td> </tr> <tr> <td>Interpersonal Globalisation, de facto</td> <td>29,99154</td> <td>10,82764</td> <td>117,2377</td> </tr> <tr> <td>Cultural Globalisation, de facto</td> <td>16,85885</td> <td>8,64561</td> <td>74,7465</td> </tr> </tbody> </table>			Descriptive Statistics for Cluster 4				Cluster contains 52 cases				Variable	Mean	Standard Deviation	Variance	TG	38,04865	9,11602	83,1018	Informational Globalisation	59,31808	7,24797	52,5331	Financial Globalisation, de facto	47,50423	15,30052	234,1059	Financial Globalisation, de jure	38,31693	13,58012	184,4198	Political Globalisation, de facto	55,16462	16,21962	263,0762	Interpersonal Globalisation, de facto	29,99154	10,82764	117,2377	Cultural Globalisation, de facto	16,85885	8,64561	74,7465
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Source: created by the authors

Table 8

## Financial globalization in the structure of economic globalization of the Globalization Index: de facto and de jure components

<i>Financial globalization (de facto)</i>	<i>Value (%)</i>	<i>Financial globalization (de jure)</i>	<i>Value (%)</i>
Financial globalization in general	50.0	Financial globalization in general	50.0
Foreign Direct Investment	25.7	Investment Restrictions	31.0
Portfolio investments	15.3	Capital account openness	38.5
International debt	29.9	International investment agreements	30.5
International reserves	0.5		
International income payments	28.6		

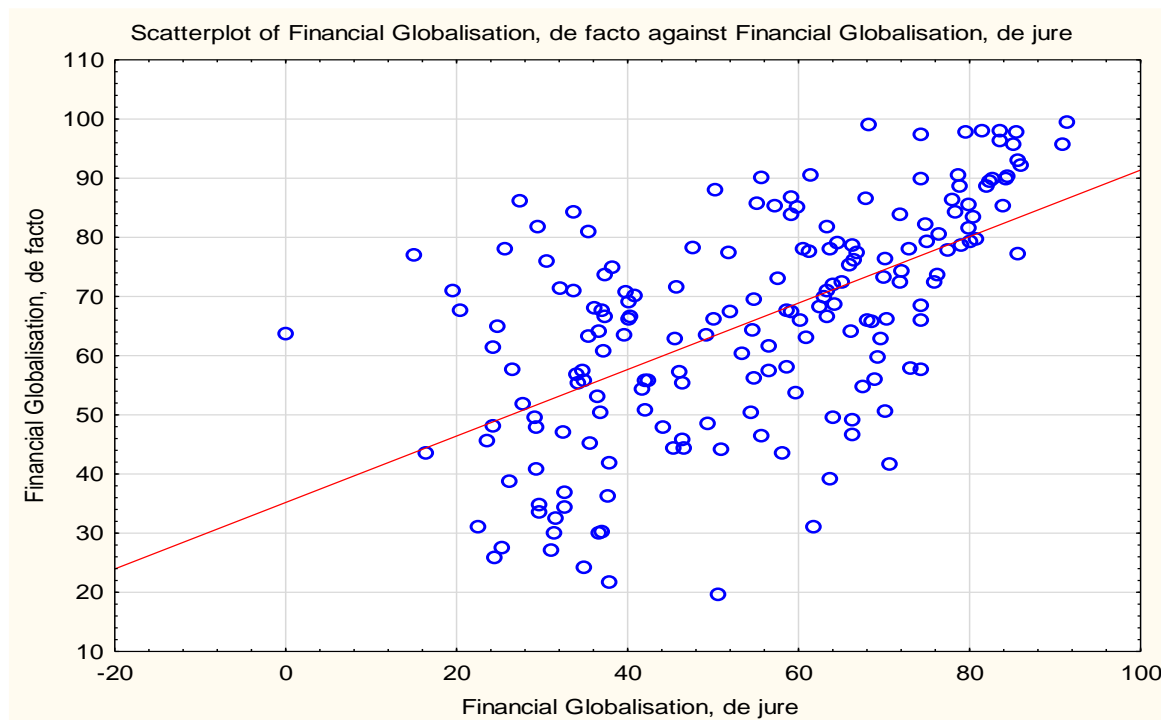
Source: [15]

The obtained results (Fig. 5) indicate a positive relationship between the two indices of financial integration, since economies with a higher level of formal financial openness, as a rule, also demonstrate a higher level of actual participation in global financial processes. At the same time, there is significant variability in the values of de facto financial globalization for medium and even high values of the de jure indicator. This indicates that the liberalization of financial legislation does not always automatically transform into real financial flows.

The indicators of financial globalization de jure characterize the regulatory and institutional conditions for the liberalization of capital movements and the protection of foreign investments, therefore they include the following indicators: the level of restrictions on foreign ownership and the regulation of international capital flows, the openness of the capital account (the Chinn–Ito capital account openness index), international investment agreements (the number of bilateral investment agreements (BITs) and treaties with investment provisions (TIPs)).

For the financial ecosystem, the institutional factor plays a crucial role, because, as the developers of the famous Chinn–Ito Index note, “financial openness does contribute to the development of the stock

market, but only when a threshold level of general development of legal systems and institutions is reached. The general level of legal development is more important than the level of financial and specific legal/institutional development” [16].



**Fig. 5. Positioning of world economies in coordinates [Financial globalization de jure; Financial globalization de facto]**

*Source: constructed by the authors based on [15]*

However, economies characterized by relatively high values of financial globalization de jure and moderate or low values of de facto may have structural and institutional constraints that negatively affect macroeconomic stability, the development of financial markets, and the level of investor confidence. Economies with relatively high values of financial globalization de facto with moderate regulatory openness may be financial hubs or play an important role in international capital flows.

Analysing current trends in global economic integration and the relationship between the levels of de facto and de jure financial globalization, we can distinguish the following models of financial ecosystem integration. If financial globalization de facto > de jure, a model of real integration is formed without full formal financial openness. In this case, countries regulate financial openness, institutional capacity is not sufficient, and globalization manifests itself through trade globalization, migrant remittances, foreign direct investment, etc. A model of formal openness but superficial globalization is formed when financial globalization de jure  $\geq$  de facto and other forms of integration are quite low due to the vulnerability or conflict of national economies.

Financial flows that enter countries in the case of this model are donor aid, remittances from migrants; capital markets are poorly integrated, investment risks are quite high. For countries in which financial globalization is combined with integration into global value chains and trade integration, an export-production model of financial integration is formed. Countries in which there is a significant gap between de facto and de jure financial globalization and financial revenues from raw material exports dominate may have a resource integration model. Such a model is characterized by dependence on the conditions of world markets and pricing processes, developed state mechanisms of control and restrictions on liberalization, with a strong institutional base. The model of regional-institutional integration is typical, as a rule, for countries with economies in transition, where there is well-developed banking integration, the regulatory framework is adapted to international standards, the system of supervision and regulation is built correctly, but real financial activity is subject to fluctuations. Integration in such countries depends on reforms and is cyclical in nature.

The conducted research confirms differences in basic conditions and sectoral levels of global integration, which have a mixed impact on countries' economic development and maintaining well-being.

**Conclusions from the study.** Thus, financial ecosystems of global economic integration are formed around international banking settlements, direct investments, migrant remittances and external financing, while full-fledged integration through capital markets is characteristic only for a part of the studied sample. The difference between de facto and de jure financial globalization revealed in the analysis reflects a

structural asymmetry that can be strengthened or weakened by other types of globalization. The analysis confirms our thesis that the processes of global economic integration are nonlinear, and the financial ecosystem cannot be limited exclusively to financial factors, that is, a significant dispersion of observations indicates the important role of additional factors.

### Література

1. Moore James F. Business ecosystems and the view from the firm. *The Antitrust Bulletin*. 2006. Vol. 51. Issue 1. P. 31-75. DOI: <https://doi.org/10.1177/0003603X06051001>.
2. Бречко О. Цифрові платформи та екосистеми: рушійні сили глобальної економіки. *Вісник Хмельницького національного університету. Економічні науки*. 2023. Т. 320. № 4. С. 418-426. <https://doi.org/10.31891/2307-5740-2023-320-4-63>
3. Олешко Т., Марина А., Сушириба Р. Напрями розвитку фінансових екосистем. *Сталий розвиток економіки*. 2025. № 1(52). С. 116-120. DOI: <https://doi.org/10.32782/2308-1988/2025-52-16>
4. Борисюк О., Дацюк-Томчук М. Перспективи діяльності екосистем бігтех-компаній у платіжній сфері на фінансовому ринку. *Економіка та суспільство*. 2023. Випуск № 51. DOI: <https://doi.org/10.32782/2524-0072/2023-51-19>.
5. Яцкевич І. Екосистема FinTech на ринку фінансових послуг: особливості, форми взаємодії та розвиток. *Економічний простір*. 2022. № 180. С. 190-194. DOI: <https://doi.org/10.32782/2224-6282/180-31>
6. Борисова Л. Є., Колесник О. О., Шрамко О. О. Фінансова екосистема як інноваційна бізнес-модель сучасного банкінгу. *Причорноморські економічні студії*. 2021. № 68. С. 77-82. DOI: <https://doi.org/10.32843/bses.68-11>
7. Huwart J. Y., Verdier L. Economic Globalisation: Origins and Consequences. OECD Publishing, 2013. DOI: <https://doi.org/10.1787/9789264111905-en>.
8. Evolution of trade under the WTO: handy statistics. WTO. URL: [https://www.wto.org/english/res\\_e/statis\\_e/trade\\_evolution\\_e/evolution\\_trade\\_wto\\_e.htm#fntext-1](https://www.wto.org/english/res_e/statis_e/trade_evolution_e/evolution_trade_wto_e.htm#fntext-1) (дата звернення: 06.07.2025).
9. Fujii Eiji. What Does Trade Openness Measure? *SSRN Electronic Journal*. September 2017. DOI: <http://dx.doi.org/10.2139/ssrn.3043615>.
10. The KOF Globalisation Index – revisited / Gygli S., Haelg F., Potrafke N. et al. *The Review of International Organizations*. 2019. Vol. 14. P. 543-574. DOI: <https://doi.org/10.1007/s11558-019-09344-2>.
11. Sachs J. D., Warner A. M. Economic reform and the process of global integration. *Brookings Papers on Economic Activity*. 1995. Vol. 1995. No. 1. 25th Anniversary Issue (1995). P. 1–118. DOI: <https://doi.org/10.2307/2534573>.
12. Hao Y. The dynamic relationship between trade openness, foreign direct investment, capital formation, and industrial economic growth in China: New evidence from ARDL bounds testing approach. *Humanities and Social Sciences Communications*. 2023. 10. Article 160. DOI: <https://doi.org/10.1057/s41599-023-01660-8>.
13. Nguyen M.-L., Nguyen T.-H. *Trade Openness and Economic Growth in ASEAN-6 Countries: A Panel Threshold Approach*. *Economies*. 2021. Vol. 9. Iss. 3. Article 113. DOI: <https://doi.org/10.3390/economies9030113>.
14. World Bank Open Data. URL: <https://data.worldbank.org/indicator> (дата звернення: 02.07.2025).
15. KOF Globalisation Index. URL: <https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html> (дата звернення: 02.07.2025).
16. Chinn Menzie D., Ito Hiro. What Matters for Financial Development? Capital Controls, Institutions, and Interactions. NBER Working Paper No. 11370, National Bureau of Economic Research, Cambridge, MA. 2005. URL: <https://www.nber.org/papers/w11370> (дата звернення: 02.07.2025).

### References

1. Moore, James F. (2006), "Business ecosystems and the view from the firm", *The Antitrust Bulletin*, Vol. 51, Issue 1, pp. 31-75, DOI: <https://doi.org/10.1177/0003603X06051001>.
2. Brechko, O. (2023), "Digital platforms and ecosystems: the driving forces of the global economy", *Visnyk Khmelnytskoho natsionalnoho universytetu. Ekonomichni nauky*, Vol. 320, no. 4, pp. 418-426. DOI: <https://doi.org/10.31891/2307-5740-2023-320-4-63>
3. Oleshko, T., Maryna, A. and Sushyryba, R. (2025), "Directions for the development of financial ecosystems", *Stalyi rozvytok ekonomiky*, no. 1(52), pp. 116-120. DOI: <https://doi.org/10.32782/2308-1988/2025-52-16>
4. Borysiuk, O. and Datsiuk-Tomchuk, M. (2023), "Prospects for the operation of ecosystems of big tech companies in the payment sector in the financial market", *Ekonomika ta suspilstvo*, Issue no. 51, DOI: <https://doi.org/10.32782/2524-0072/2023-51-19>.

5. Yatskevych, I. (2022), "Fintech ecosystem in the financial services market: features, forms of interaction and development", *Ekonomichnyi prostir*, no. 180, pp. 190-194, DOI: <https://doi.org/10.32782/2224-6282/180-31>
6. Borysova, L.Ye., Kolesnyk, O.O. and Shramko, O.O. (2021), "Financial ecosystem as an innovative business model of modern banking", *Prychornomorski ekonomichni studii*, no. 68, pp. 77-82. DOI: <https://doi.org/10.32843/bses.68-11>
7. Huwart, J.Y. and Verdier, L. (2013), *Economic Globalisation: Origins and Consequences*, OECD Insights, OECD Publishing, DOI: <https://doi.org/10.1787/9789264111905-en>.
8. WTO (2023), *Evolution of trade under the WTO: handy statistics*, available at: [https://www.wto.org/english/res\\_e/statis\\_e/trade\\_evolution\\_e/evolution\\_trade\\_wto\\_e.htm#fntext-1](https://www.wto.org/english/res_e/statis_e/trade_evolution_e/evolution_trade_wto_e.htm#fntext-1) (access date July 06, 2025).
9. Fujii, Eiji (2017), "What Does Trade Openness Measure?", *SSRN Electronic Journal*, DOI: <http://dx.doi.org/10.2139/ssrn.3043615>.
10. Gygli, S., Haelg, F., Potrafke, N. et al. (2019), "The KOF Globalisation Index – revisited", *The Review of International Organizations*, Vol. 14, pp. 543-574, DOI: <https://doi.org/10.1007/s11558-019-09344-2>.
11. Sachs, J.D. and Warner, A.M. (1995), "Economic reform and the process of global integration", *Brookings Papers on Economic Activity*, Vol. 1995, No. 1, 25th Anniversary Issue (1995), pp. 1-118, DOI: <https://doi.org/10.2307/2534573>.
12. Hao, Y. (2023), "The dynamic relationship between trade openness, foreign direct investment, capital formation, and industrial economic growth in China: New evidence from ARDL bounds testing approach", *Humanities and Social Sciences Communications*, 10, Article 160, DOI: <https://doi.org/10.1057/s41599-023-01660-8>.
13. Nguyen, M.-L. and Nguyen, T.-H. (2021), "Trade Openness and Economic Growth in ASEAN-6 Countries: A Panel Threshold Approach", *Economies*, Vol. 9, Iss. 3, Article 113, DOI: <https://doi.org/10.3390/economies9030113>.
14. World Bank Open Data, available at: <https://data.worldbank.org/indicator> (access date July 02, 2025).
15. KOF Globalisation Index, available at: <https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html> (access date July 02, 2025).
16. Chinn, Menzie D. and Ito, Hiro (2005), *What Matters for Financial Development? Capital Controls, Institutions, and Interactions*, NBER Working Paper No. 11370, National Bureau of Economic Research, Cambridge, MA, UK, available at: <https://www.nber.org/papers/w11370> (access date July 02, 2025).

**Івашук І.О., Угрин Б.В.**

### **ФІНАНСОВА ЕКОСИСТЕМА ГЛОБАЛЬНОЇ ЕКОНОМІЧНОЇ ІНТЕГРАЦІЇ**

**Мета.** Обґрунтування формування фінансової екосистеми глобальної економічної інтеграції як її багаторівневого середовища та ідентифікація її характеристик.

**Методика дослідження.** Для досягнення зазначеної мети було використано сукупність загальнонаукових та спеціальних методів дослідження, зокрема: для формування теоретико-методологічної бази дослідження використано метод системного аналізу; методи узагальнення, індукції, дедукції – для формулювання висновків та узагальнень; аналізу та синтезу – для виокремлення характеристик та моделей фінансової екосистеми глобальної економічної інтеграції; метод порівняльного аналізу – для виявлення особливостей глобальної інтеграції економік. Емпіричну частину дослідження було побудовано на використанні статистичних та економетричних методів, зокрема, кластерного аналізу, кореляційного та регресійного аналізу.

**Результати дослідження.** Обґрунтовано, що в умовах зростання глобальної взаємозалежності країн формується нова фінансова екосистема. Підтверджено еволюцію процесів глобалізації та зростання відкритості національних економік. Запропоновано комплексний підхід до розуміння фінансової екосистеми глобальної економічної інтеграції та виокремлено її основні складові. Визначено відмінності між економіками за рівнем глобалізації та встановлено, що глобальна інтеграція не є єдиною детермінантою економічного розвитку, тому доцільно враховувати вплив її окремих складових. Запропоновано систему характеристик фінансової екосистеми глобальної економічної інтеграції та побудовано матрицю кореляцій з метою виявлення взаємозв'язків між ними. Для оцінювання впливу сукупності факторів на економічний добробут економік використано інструментарій багатофакторного аналізу. Із застосуванням методів кластерного аналізу сформовано кластери економік за характеристиками фінансової екосистеми глобальної економічної інтеграції. Запропоновано моделі фінансових екосистем інтеграції країн у глобальну економіку.

**Наукова новизна результатів дослідження.** Обґрунтовано концептуальний підхід до трактування фінансової екосистеми глобальної економічної інтеграції як багаторівневого динамічного середовища та виокремлення його складових. У роботі ідентифіковано ключові характеристики фінансової екосистеми глобальної економічної інтеграції з урахуванням рівня залученості економік до

глобальних процесів. Отримало подальшого розвитку виявлення впливу характеристик фінансової екосистеми на соціально-економічний розвиток економік, зокрема на рівень ВВП на одну особу. На основі співвідношення між рівнями фінансової глобалізації *de facto* і *de jure* запропоновано моделі фінансових екосистем інтеграції.

**Практична значущість результатів дослідження.** Результати дослідження можуть бути використані при розробленні стратегій інтеграції національних економік у глобальний економічний простір; для оцінювання рівня інтегрованості країн та визначення пріоритетних напрямів фінансової політики; а також в науковій та освітній діяльності.

**Ключові слова:** глобалізація, глобальна економічна інтеграція, економічний розвиток, фінансова екосистема, Індекс глобалізації, торгова глобалізація, фінансова глобалізація, інвестиції, фінансові потоки, фінансова відкритість.

Ivashchuk I.O., Uhryn B.V.

#### FINANCIAL ECOSYSTEM OF GLOBAL ECONOMIC INTEGRATION

**Purpose.** The aim of the article is substantiation of the formation of the financial ecosystem of global economic integration as its multi-level environment and identification of its characteristics.

**Methodology of research.** A set of general scientific and special research methods was used to achieve the stated goal, in particular: the method of system analysis was used to form the theoretical and methodological basis of the study; methods of generalization, induction, deduction – to formulate conclusions and generalizations; analysis and synthesis – to identify the characteristics and models of the financial ecosystem of global economic integration; method of comparative analysis – to identify the features of global integration of economies. The empirical part of the study was based on the use of statistical and econometric methods, in particular, cluster analysis, correlation and regression analysis.

**Findings.** It is substantiated that in the conditions of growing global interdependence of countries, a new financial ecosystem is being formed. The evolution of globalization processes and the growth of openness of national economies are confirmed. A comprehensive approach to understanding the financial ecosystem of global economic integration is proposed and its main components are identified. The differences between economies in terms of the level of globalization are determined and it is established that global integration is not the only determinant of economic development; therefore it is advisable to take into account the influence of its individual components. A system of characteristics of the financial ecosystem of global economic integration is proposed and a correlation matrix is constructed in order to identify the relationships between them.

A multifactor analysis toolkit was used to assess the impact of a set of factors on the economic well-being of economies. Using cluster analysis methods, clusters of economies were formed according to the characteristics of the financial ecosystem of global economic integration. Models of financial ecosystems of countries' integration into the global economy are proposed.

**Originality.** The conceptual approach to the interpretation of the financial ecosystem of global economic integration as a multi-level dynamic environment and the isolation of its components is substantiated. The work identifies key characteristics of the financial ecosystem of global economic integration, taking into account the level of involvement of economies in global processes. The identification of the impact of the characteristics of the financial ecosystem on the social and economic development of economies, in particular on the level of GDP per capita, has been further developed. Based on the relationship between the levels of financial globalization *de facto* and *de jure*, models of financial ecosystems of integration are proposed.

**Practical value.** The results of the study can be used in developing strategies for integrating national economies into the global economic space; to assess the level of integration of countries and determine priority areas of financial policy; as well as in scientific and educational activities.

**Key words:** globalization, global economic integration, economic development, financial ecosystem, Globalization Index, trade globalization, financial globalization, investments, financial flows, financial openness.

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