

*Economic Theory*

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**PROCESSES OF ECONOMIC GLOBALIZATION
IN INTERNATIONAL COMPARISONS**

Abstract

The paper is concerned with the processes of economic globalization, and paradigms of modern global studies. The most known two methods are analyzed for quantitative and qualitative dimensions of globalization, namely: Swiss Institute of Business Research (KOF) and International Organization of Carnegie Endowment for International Peace (CEIP), and on this basis the method is offered for making the quantitative analysis of globalization level throughout the world countries (QGAM). The essence of the method consists in establishing high quality interconnections between different indicators of social, economic, and political dimensions of globalization, and the indicators of global economic development, also of qualitative and quantitative analysis of globalization with account of the effects of crisis phenomena produced on these processes. Three groups of outcome indicators which define the difference between the countries in the context of globalization. are distinguished Comparison study is made of globalization level in different world countries.

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Global economy is the way how the world manages its economy based on subordination of the domestic and international economic processes to single laws. Globalization is the result of internationalization of all areas of social life, as well as establishment of direct sustained connections among the agents of different countries which results in the production to become a component of a global-scale process. World economy becomes a single market and a production zone with national and regional sectors against that which appears to be a totality of national economies expanding their mutual economic cooperation.

Ukraine has been under the globalization influence since the first years of its independence when its economy and social area became opened for the world. New phenomena have broken new grounds and brought new projects. The accesses to cultural, intellectual, and technological achievements of world community have expanded. The outcomes of the world cinematography, literature, and music very quickly became a common environment for each person. Yet the recent prestigious and expensive things like cars, computers, Internet, systems of communication, mobile connection, and so, have become the essentials for modern people making them more functional and productive. It has become much easier to contact with people all over the world, to reach faster the removed places of destination, either to get the latest news just after it had occurred.

Nevertheless, Ukraine has experienced all contradictions of globalization. On the one hand, its chances to use the globalization advantages have grown, but on the other, it has become more open to new threats. Ukraine's vulnerability grew with the beginning of global economic crisis. Ukraine as a young country was not prepared for these threats, and in most cases appeared to be unprotected.

The strategy of the development of Ukraine can not be formed without full accounting for the factors of globalization and global competition, which would ef-

fect the life of nations. At that, the domestic processes, internal adaptation of the economy should be obligatory prioritized, implying introvert policy enabling Ukraine to fit well with the new historic conditions. But domestic strategy of the development of Ukraine has to be global-oriented, that is; first, effective from the view of counteraction of new destructive globalization effects, and second, pragmatic, from the view of new advantages and opportunities provided by globalization.

The problems and the development globalization processes were researched by national and foreign scientists, namely: O. Bilorus, B. Hubskeyi, M. Deliahyn, H. Kolodko, Yu. Makohon, A. Peresada, A. Filipenko, U. Sharp. However, the scientific literature is poorly concerned with qualitative and quantitative analysis with account of the crisis phenomena effects produced on these processes, also the indexes of globalization dynamics are badly substantiated, and absent are the researches on fragmented behavior of the globalization processes, and the effects produced by the security and socio-economic development indexes on the globalization processes. Thus, the objective necessity of further development of theoretical and methodical applied basics of the globalization processes research makes the topic of this paper urgent.

The essence of globalization and its basic trend of development imply the creation of a single interdependent world, interaction and interdependence of different associations, cultures, and civilizations. In a wide sense and in ideal, globalization transforms the present day's world order in a planetary scale, implements an idea that comes from years ago as for the coming *unity of the human society while maintaining the originality of its components*.

The idea of unity of human existence, global harmony, planetary community, the «globality» of the world is not new. It was put forward over two thousand years ago by ancient Greek philosophers, also its advocates were Christ, Muhammad, Buddha, genii of culture, whose creative work stepped beyond national boundaries. It is difficult to explain why the humanity appeared to be disunited, moreover, by many features, like racial, ethnic, lingual, religious, civilization and others. That unlikeness of «the Babel Tower builders», division after the principle of «friend or foe» was one of the reasons of conflicts, wars, and world cataclysms. However, people of different tribes and nations communicated, traded, shared their knowledge and cultures.

Thus, we can state that the globalization in its primary forms is called by some authors as «proto-globalization». It objectively came along with the history of mankind, though it proceeded unsteadily, in «pulsing» regime focusing either in one, or another region, in the area of certain civilization of ancient and the subsequent times. That is, globalization of world economy is not an unexpected phenomenon, but an evolution of the process of exploration and transformation of our planet.

Proto-globalization proceeded in different areas, i.e. in religion, when the world monotheism replaced polytheism and paganism [1]; in political area, when tribes transformed into peoples, counties and nations were formed, regional communities were set [2]; in geopolitical, when new lands were explored and empires emerged [3]; in ideology, when certain social ideas were spread throughout many territories and countries [4]; in the area of education, when Internet made education accessed to all territories and all strata of society [5].

All that enables to state that globalization is the process which has been inherent to mankind from time immemorial. From ancient times mutual penetration of cultures and economies of different world countries broke new grounds for further development of mankind. «Great Silk Route», also like the cultural way between East and West emerged in the 3^d century B.C., and existed till the 15th century. It happened to be one of the greatest achievements in the history of world civilization. The ramified nets of caravan roads crossed Europe and Asia from the Mediterranean area till China, and served in the old times and in the epoch of Middle Ages an important means of connections and dialogues among cultures of many peoples. Without exaggeration, it was *the first powerful wave of globalization*. It was interrupted for a long time by bloody wars of the 17–18th centuries.

The second wave of globalization is connected with the period, which began in the 1880s and was interrupted for almost sixty years by the First, the Second, and the Cold World wars. That period is viewed as a single unit within a sophisticated interrelation of the art flourishing of «Silver Age», and all phenomena of economic and cultural life of that period (economy, trade, science, philosophy, art, religious and political trends). Rapid development of railways and water transport joined the countries of five continents through their cultural and economic exchange.

Late 20th and early 21st centuries could be related to the *third wave of globalization*. It was growing rapidly since the early 80-s of the last century till 2008, and provided new, unprecedented opportunities. But, at the same time a series of new global threats emerged, which could rather slow down or even suspend the third wave of globalization. Those threats, primarily include the following: devaluation of many fundamental human values; increase of inequality among people and world countries; expansion of regional conflicts; growth of corruption and terrorism; increase of global diseases; reduction of fossil fuel reserves; upset of main biological balances and accumulation of greenhouse gases in nature, etc. Tangle of problems, and first of all the crisis of values gave impetus to the beginning of 2008 global financial meltdown, which resulted in economic stagnation and social decay of many world countries.

The mentioned negative trends are likely to be protracted. They will arise fundamental economic transformations, global redistribution of ownership, and further reconfiguration of the world with new governing centers, and what is the most important, they will become the catalysts of re-thinking of the system of

human values to dominate throughout the Planet, at least in the first half of the 21st century.

Consequently, globalization is a variable, intermittent phenomenon. Under the mentioned trends the urgent issue arises about study of quantitative relationship between the globalization phenomenon and social dimensions of global economic development. We will consider the problem of quantitative evaluation of positive and negative globalization effects produced on the countries plunged into the globalization process. On the first research stage we will apply the most known two methods of quantitative and qualitative dimension of globalization. *The first one* was developed by Swiss Institute of Business Research – Konjunkturforschungsstel der ETH Zurich (KOF) [6], and *the second* – by International Organization of Carnegie Endowment for International Peace (CEIP) [7].

The globalization index according to KOF method is determined through three following dimensions: economic (*Ige*); social (*Igs*); political (*Igp*), and is calculated as the sum of its components – $Ig = 0.34 * Ige + 0.37 * Igs + 0.29 * Igp$ with relative weight coefficients. After the CEIP method this index is determined through four dimensions, namely: economic (*Ige*); personal (*Igp*); technological (*Igt*), and political (*Igp*), and is calculated as the sum of its components with equal weight coefficients.

Comparing the dimensions of globalization indexes after both methods, it is easy to see, that the personal and technological dimension after the CEIP system practically comes to the social dimension according to KOF system. Therefore, for convenience and comparison we will combine social and technological dimensions into a social dimension after CEIP system.

Economic dimension of globalization (Ige) reflects permanently growing interrelation between the needs of people, on the one hand, and the possibilities of production, and distribution of goods and services through international trade, and foreign investments and development of trans-nationalization processes, on the other hand. In both methods that dimension is described by the common indicators, namely: trade ratio in kind of the sum of all exports and imports; foreign direct investment as the sum of its inflows and outflows. The KOF method applies additional indicators, like portfolio investment in kind of the sum of absolute value of its inflows and outflows, and incomes of non-residents as their wages or return on investments. Economic globalization dimension of any country depends much upon its political stability, and the level of legislation system development. That dimension is very sensitive towards the level of investors' confidence.

Social dimension of globalization (Igs) is a factor reflecting the integration ratio of an average person, his/her family, life and work into international social institutions. Formally that dimension in both methods is evaluated through such indicators as intensity of personal contacts of an individual in banking, telecommunication, and tourist areas of other countries; level of development of international tourism; level of covering of an individual with mass media and telecom-

munication. At that, the KOF method additionally includes two more indicators, i.e. percent of foreign citizens in the country and the country coverage of international trade networks.

Political dimension of globalization (Igp) reveals political weight and influence of any country on the world processes, and allows evaluating the scope of its participation in these processes and changes. According to both methods the named dimension is quantitatively evaluated through such common indicators as: membership of the country in international organizations, and in the missions of UNO Security Council. At that, the KOF method applies additionally the indicator of a number of foreign embassies in the country, while the CEIP method – a number of ratified international agreements.

In order to study the quantitative relations between the globalization and the mentioned above social dimensions of global economic development the method of quantitative analysis for globalization level in the world countries is offered (called the QGAM). The essence of this method is to establish qualitative relations between different indicators of social, economic, and political dimensions of globalization and the indicators of global economic development. According to this method the single calculating platform will be set, likewise the system-wise integrity model of global economic development will be substantiated. Due to the application of KOF, CEIP and offered QGA methods [8] the comparative analysis is made of the globalization level of different world countries [9].

After the QGA method applying the indicators of the global economic development the following dimensions were made: State Fragility Index (Isf), Democracy Index (Id), Global Peace Index (Igp), Gini Index (Ig), GDP per capita, Index of Sustainable Development (Isd), Index of Global Security (Igs), Index of Corruption Perception (Icp), Index of Potential Terrorist Acts (Ita), and Crime Control Index (Icc).

The KOF/CEIP globalization index and its economic, social and political components are naturally under certain dependence upon the named ten indicators of global economic development and their social, economic, and political and stabilization dimensions. To reveal that dependence the qualitative and quantitative analysis was made of ten KOF/CEIP globalization indexes and their totality applying for two phases of global community development, i.e. for the pre-normalized values of crisis period (up to the second half of 2008) highlighted in this paper, and for the crisis period (after August-September 2008) to be studied in further research.

While analyzing table 1, showing the pre-crisis period, we can see that the first twenty countries *after social dimension* include Denmark, Slovenia, Sweden, Norway, Finland, Singapore, Canada, Holland, Austria, Japan, New Zealand, Iceland, Great Britain, Switzerland, United States, Germany, Australia, France, Luxembourg, Ireland, and Estonia. Russia and Ukraine are rated the 51st and the 69th respectively.

Table 1

**Normalized values of the main dimensions for the world countries
 global economic development in the pre-crisis period**

Country	KOF/ CEIP globalization index					Dimension of political stability						Social dimension			Еко- номі- чний вимір ВВП на душу населення	
	General index	Rating	Economic index	Social index	Political index	General index	State fragility index	Democracy index	Global Peace index	Potential terrorist acts index	Index of global security	General index	Crime control index	Index of corruption perception		GINI- index
1. Belgium	0,921	1	0,919	0,908	0,942	0,779	1,000	0,711	0,814	0,761	0,610	0,703	0,604	0,687	0,819	32,119
2. Austria	0,914	2	0,885	0,925	0,939	0,802	1,000	0,769	0,830	0,761	0,649	0,774	0,684	0,753	0,885	33,7
3. Sweden	0,900	3	0,895	0,874	0,947	0,884	1,000	0,895	0,822	0,978	0,724	0,813	0,600	0,885	0,953	32,525
4. Switzer- land	0,886	4	0,831	0,954	0,862	0,847	0,960	0,804	0,822	0,978	0,671	0,753	0,600	0,852	0,807	35,633
5. Denmark	0,884	5	0,880	0,886	0,887	0,834	1,000	0,857	0,881	0,761	0,671	0,845	0,680	0,896	0,958	33,973
6. Nether- lands	0,884	6	0,880	0,894	0,874	0,810	1,000	0,872	0,761	0,761	0,658	0,776	0,620	0,852	0,854	32,684
7. United Kingdom	0,867	7	0,792	0,879	0,955	0,690	0,921	0,704	0,677	0,543	0,606	0,755	0,711	0,786	0,769	33,238
8. Czech. Republic.	0,855	8	0,877	0,849	0,833	0,761	0,960	0,714	0,807	0,761	0,561	0,676	0,647	0,434	0,947	20,538
9. France	0,854	9	0,774	0,842	0,986	0,755	0,960	0,703	0,718	0,761	0,632	0,724	0,683	0,665	0,824	30,386
10. Finland	0,847	10	0,889	0,837	0,801	0,830	1,000	0,857	0,837	0,761	0,696	0,805	0,596	0,896	0,922	32,153
11. Germany	0,830	11	0,742	0,833	0,952	0,798	1,000	0,783	0,819	0,761	0,628	0,747	0,622	0,720	0,898	29,461
12. Spain	0,824	12	0,822	0,775	0,915	0,736	0,960	0,732	0,728	0,652	0,605	0,672	0,628	0,599	0,790	27,169
13. Hungary	0,825	13	0,888	0,770	0,819	0,798	1,000	0,646	0,775	0,978	0,590	0,653	0,592	0,445	0,922	17,886
14. Portugal	0,816	14	0,838	0,763	0,865	0,786	1,000	0,712	0,846	0,761	0,610	0,668	0,699	0,577	0,727	20,41
15. Canada	0,812	15	0,808	0,869	0,732	0,827	1,000	0,809	0,829	0,761	0,736	0,780	0,694	0,819	0,826	33,375
16. Ireland	0,798	16	0,855	0,777	0,749	0,854	1,000	0,803	0,847	0,978	0,643	0,693	0,595	0,687	0,797	38,505
17. Norway	0,794	17	0,758	0,845	0,782	0,871	0,921	0,860	0,876	0,978	0,720	0,811	0,675	0,819	0,940	41,42
18. Italy	0,794	18	0,761	0,719	0,956	0,753	1,000	0,667	0,741	0,761	0,596	0,576	0,527	0,434	0,769	28,529
19. Poland	0,784	19	0,735	0,747	0,911	0,777	1,000	0,621	0,727	0,978	0,561	0,595	0,667	0,324	0,794	13,847
20. Singa- pore	0,784	20	0,959	0,923	0,321	0,721	0,921	0,471	0,733	0,761	-	0,783	0,805	0,885	0,659	29,663
21. Australia	0,774	21	0,677	0,815	0,848	0,766	0,921	0,811	0,742	0,652	0,705	0,737	0,619	0,808	0,782	31,794
22. United States	0,768	22	0,632	0,765	0,967	0,622	0,921	0,719	0,492	0,435	0,546	0,748	0,901	0,654	0,688	41,89
23. Slovakia	0,758	23	0,793	0,796	0,651	0,783	0,960	0,632	0,775	0,978	0,572	0,631	0,552	0,401	0,940	15,871
24. Malaysia	0,756	24	0,772	0,661	0,879	0,659	0,842	0,481	0,712	0,761	0,499	0,504	0,543	0,423	0,547	10,882
25. Greece	0,734	25	0,736	0,665	0,839	0,739	1,000	0,709	0,648	0,761	0,576	0,589	0,603	0,368	0,797	23,381
26. New Zealand	0,734	26	0,797	0,724	0,659	0,818	0,960	0,803	0,873	0,761	0,692	0,770	0,647	0,896	0,765	24,996
27. Luxem- bourg	0,729	27	0,951	0,781	0,330	0,811	1,000	0,812	0,831	0,761	0,648	0,712	0,638	0,786	N/A	60,228
28. Estonia	0,722	28	0,908	0,744	0,421	0,772	0,960	0,668	0,720	0,978	0,533	0,688	0,714	0,577	0,772	15,478
29. Israel	0,718	29	0,862	0,772	0,431	0,445	0,644	0,619	0,133	0,326	0,503	0,608	0,575	0,533	0,715	25,864
30. Slovenia	0,703	30	0,801	0,714	0,545	0,818	1,000	0,691	0,812	0,978	0,610	0,815	0,674	0,874	0,896	22,273
31. Croatia	0,702	31	0,772	0,637	0,699	0,713	0,802	0,632	0,623	0,978	0,532	0,599	0,599	0,313	0,886	13,042

Country	KOF/ CEIP globalization index					Dimension of political stability						Social dimension				Економічний вимір ВВП на душу населення
	General index	Rating	Economic index	Social index	Political index	General index	State fragility index	Democracy index	Global Peace index	Potential terrorist acts index	Index of global security	General index	Crime control index	Index of corruption perception	GINI- index	
32. Turkey	0,700	32	0,699	0,582	0,879	0,543	0,644	0,451	0,415	0,761	0,443	0,462	0,431	0,313	0,641	8,407
33. Russia	0,698	33	0,579	0,644	0,960	0,509	0,723	0,379	0,252	0,761	0,428	0,443	0,512	0,115	0,703	10,845
34. Chile	0,696	34	0,851	0,518	0,744	0,786	0,921	0,684	0,775	0,978	0,573	0,585	0,672	0,632	0,451	12,027
35. OAR	0,691	35	N/A	0,755	0,382	0,612	0,881	0,103	0,701	0,761	-	0,591	0,694	0,489	N/A	25,514
36. Iceland	0,670	36	0,813	0,832	0,219	0,951	1,000	0,877	0,949	0,978	-	0,768	0,662	0,874	N/A	36,51
37. Malta	0,670	37	0,919	0,760	0,183	0,868	1,000	0,737	N/A	N/A	-	#####	N/A	N/A	N/A	19,089
38. Jordan	0,659	38	0,673	0,558	0,794	0,582	1,000	0,262	0,604	0,543	0,501	0,570	0,609	0,379	0,722	5,53
39. Cyprus	0,659	39	0,864	0,693	0,314	0,792	0,881	0,653	0,657	0,978	-	0,521	0,596	0,445	N/A	22,699
40. Kuwait	0,655	40	0,676	0,769	0,451	0,561	0,842	0,174	0,683	0,543	-	0,519	0,704	0,335	N/A	26,321
41. Romania	0,653	41	0,697	0,484	0,848	0,736	0,842	0,653	0,760	0,978	0,447	0,586	0,637	0,269	0,853	9,06
42. Ukraine	0,646	42	0,624	0,577	0,782	0,676	0,802	0,583	0,549	0,978	0,466	0,512	0,477	0,159	0,901	6,848
43. China	0,646	43	0,615	0,491	0,924	0,545	0,605	0,161	0,599	0,978	0,382	0,483	0,616	0,247	0,585	6,757
44. Bulgaria	0,644	44	0,698	0,549	0,709	0,749	1,000	0,600	0,633	0,978	0,536	0,553	0,464	0,313	0,883	9,032
45. Lithuania	0,639	45	0,790	0,614	0,461	0,728	0,960	0,635	0,711	0,761	0,571	0,555	0,507	0,390	0,769	14,494
46. South Korea	0,636	46	0,594	0,526	0,863	0,769	1,000	0,683	0,725	0,978	0,461	0,624	0,606	0,423	0,843	22,029
47. Latvia	0,632	47	0,814	0,699	0,271	0,736	1,000	0,629	0,711	0,761	0,579	0,554	0,531	0,390	0,740	13,646
48. SAR	0,630	48	0,694	0,440	0,828	0,584	0,565	0,686	0,411	0,978	0,277	0,321	0,138	0,423	0,402	11,11
49. Argentina	0,622	49	0,550	0,525	0,874	0,723	0,921	0,550	0,636	0,978	0,528	0,357	0,378	0,181	0,511	14,28
50. Uruguay	0,622	50	0,685	0,503	0,710	0,800	0,960	0,691	0,762	0,978	0,609	0,595	0,567	0,599	0,619	9,962

According to the dimension of *political stability* the first twenty countries included the following: Iceland, Sweden, Norway, Malta, Ireland, Switzerland, Japan, Denmark, Finland, Canada, Slovenia, New Zealand, Luxembourg, Holland, Austria, Uruguay, Costa-Rica, Germany, Hungary, and Cyprus. Ukraine, United States, and Russia respectively rated 48, 56 and 87.

The first twenty countries after *economic indicator* (GDP per capita under the parity of purchasing capacity) were: Luxembourg, United States, Norway, Ireland, Iceland, Switzerland, Denmark, Austria, Canada, Great Britain, Holland, Sweden, Finland, Australia, Japan, France, Singapore, Germany, Italy, and Spain. Russia and Ukraine were on the 51st and 69th positions respectively.

Fourteen countries are included into the twenty best world countries *after the three mentioned dimensions*. They are: Denmark, Sweden, Norway, Finland, Canada, Holland, Austria, Japan, Iceland, Switzerland, USA, Germany, Luxem-

bourg, and Ireland. Ten out of the named are among the most globalized twenty world countries according to KOF/CEIP index. The exception made Japan, Iceland, USA, and Luxembourg.

The named ten countries are described by very high indications of the global peace index, democracy index, global security index, crime control index, and at the same time low corruption rates and Gini index. This group includes mainly the countries, which are not members of G8, except Germany and Canada. They have no domination of economies and do not try to impose their will to other countries on the geo-politic map of the world.

It is worth noting that according to KOF/CEIP globalization index the USA (22d rating position) and Japan (51st rating position) have very high indications of political globalization component, and at the same time they fall behind the countries of the first twenty in economic and social components. Luxembourg (27th position) having very high indication of economic globalization component, is characterized by average social component, and very low political index component. At that, the 22d rating position of the USA according to KOF/CEIP is completely grounded. That country's global peace index is very low (0.492), likewise low is its index of global security (0.546), great probability of terrorist acts (0.435), and significant Gini index (0.688). Nevertheless, the 51st KOF/CEIP rating position of Japan, and the 27th rating position for Luxembourg do not meet very high indicators according to almost all requirements of QGAM.

While analyzing Ukraine individually, we will point at its peculiarities in the context of globalizing processes. The country has a powerful human capital that is 46-million highly educated people (according to the UNO figures, the index of education in Ukraine makes 0.94). Its geographic and resource potential provides great opportunities for economic and cultural cooperation both with Russia, and with the countries of Central and Western Europe. Ukraine is situated at the Black and Azov seaside, and has fertile soils, and powerful gas and transport network. From the transit point of view, it appears to be a modern «Silk Route» for energy, cultural and commodity exchanges between the East and West. For Ukraine it is strategically important to keep stability of that corridor. Its destabilization which occurred in early 2009 because of gas transit sustainability brought about to almost 40% drop of Ukrainian economy, and multibillion losses for the economies of Russia and the countries of Western Europe.

In pre-crisis period Ukraine rated the 42d position in globalization rating according the KOF/CEP method. The analysis of the state in Ukraine after the QGA method shows that the index of corruption here is very high, while the crime control index is low, the Gini index is ever growing, the state fragility index is also rather high, and all those complicates its further integration into global economic and cultural environment.

Further analysis after QGA method provides for clusterization (based on the method of K-average) and calculation of mathematic probability of each indicator value shown in table 2.

Table 2

The mean error of missing data estimation

Cluster	SF	DI	GP	PTA	GS	CC	CP	GINI	GDP
1	0,002	0,013	0,007	0,021	0,004	0,007	0,034	0,011	0,020
2	0,019	0,041	0,033	0,030	0,007	0,015	0,048	0,018	0,038
3	0,040	0,026	0,016	0,065	0,005	0,037	0,007	0,020	0,006
4	0,081	0,030	0,013	0,019	0,003	0,012	0,007	0,011	0,005
5	0,014	0,017	0,015	0,015	0,002	0,036	0,003	0,013	0,001
Maximum	0,081	0,041	0,033	0,065	0,007	0,037	0,048	0,020	0,038

Generalized mean error per one indicator makes 0.039 against 0.073 calculated after the method [6].

Application of correlation analysis for setting the available statistically significant relation between the components of general globalization index (indicators of social, economic, and political globalization dimensions) and indicators of global economic development is an important task, upon the solution of the latter depends the application of certain modeling methods. Since it is assumed that all figures are expressed in interval scales, the degree of linear relation can be estimated using Pearson's coefficient. Therefore, we will calculate the coefficients of pair correlation between the indexes and outcome indicators (table 3).

Table 3

Matrix of pair correlation coefficients for economic, social and political indexes, and outcome indicators

	SF	DI	GP	PTA	GS	CC	CP	GINI	GDP
le	0.72	0.66	0.62	0.26	0.76	0.51	0.76	0.38	0.73
ls	0.75	0.71	0.67	0.25	0.85	0.61	0.84	0.50	0.86
lp	0.18	0.35	0.26	-0.01	0.37	0.30	0.33	0.42	0.27

As we can see the economic and social indexes of globalization are closely or averagely connected with almost all outcome indicators (but for the relations between the index of potential terrorist acts, Gini index, and the economic index). We will find the dependence between the outcome indicators themselves (table 4).

Table 4

Matrix of pair correlation coefficients for outcome indicators

	SF	DI	GP	PTA	GS	CC	CP	GINI	GDP
SF	1.00	0.65	0.68	0.34	0.74	0.50	0.65	0.44	0.66
DI	0.65	1.00	0.62	0.27	0.73	0.34	0.72	0.40	0.67
GP	0.68	0.62	1.00	0.57	0.71	0.68	0.75	0.48	0.65
PTA	0.34	0.27	0.57	1.00	0.20	0.18	0.25	0.04	0.17
GS	0.74	0.73	0.71	0.20	1.00	0.64	0.86	0.54	0.82
CC	0.50	0.34	0.68	0.18	0.64	1.00	0.67	0.55	0.64
CP	0.65	0.72	0.75	0.25	0.86	0.67	1.00	0.49	0.88
GINI	0.44	0.40	0.48	0.04	0.54	0.55	0.49	1.00	0.50
GDP	0.66	0.67	0.65	0.17	0.82	0.64	0.88	0.50	1.00

As the results (table 4) show, the average and close connection is observed not only within the groups of indicators according to the calculation of economic, social and political indexes of globalization, but also between the groups of indicators.

Thus, it is found that the indexes because of some or other reasons are correlatively dependent. In order to get rid of that dependence, we will apply the factor analysis and proceed to the system of synthetic independent indications (illustrative factors). The objective of the factor analysis application is search and interpretation of featured factors with simultaneous minimization of their quantity, and the degree of their dependence on the residual random components.

Matrix of factor loadings (table 5) shows the basis of outcome space into the space of major components, where the substance and interrelation between the outcome indicators could be estimated.

It follows from table 5 that the heaviest loadings on the first factor is produced by the index of state fragility, democracy index, index of global security, index of corruption perception, and index of GDP per capita. The loading of the second factor has the index of potential terrorist acts, and the third factor – crime control index. It is worth noting that the global peace index has equal loading on all three factors.

Table 5

Matrix of factor loadings

Indicator	Factor 1	Factor 2	Factor 3
SF	0.725	0.306	0.285
DI	0.896	0.171	0.051
GP	0.538	0.586	0.502
PTA	0.100	0.968	0.017
GS	0.821	0.110	0.439
CC	0.302	0.180	0.844
CP	0.799	0.158	0.448
GINI	0.287	-0.062	0.781
GDP	0.791	0.049	0.451

Thus, we can distinguish three groups of outcome indicators which determine the difference between the countries in the context of globalization. The first group includes the index of state fragility, index of democracy, index of global security, index of corruption perception, and index of GDP per capita. To the second group belongs only index of potential terrorist acts. The third group includes index of crime control, and GINI-index. A specific place belongs to global peace index

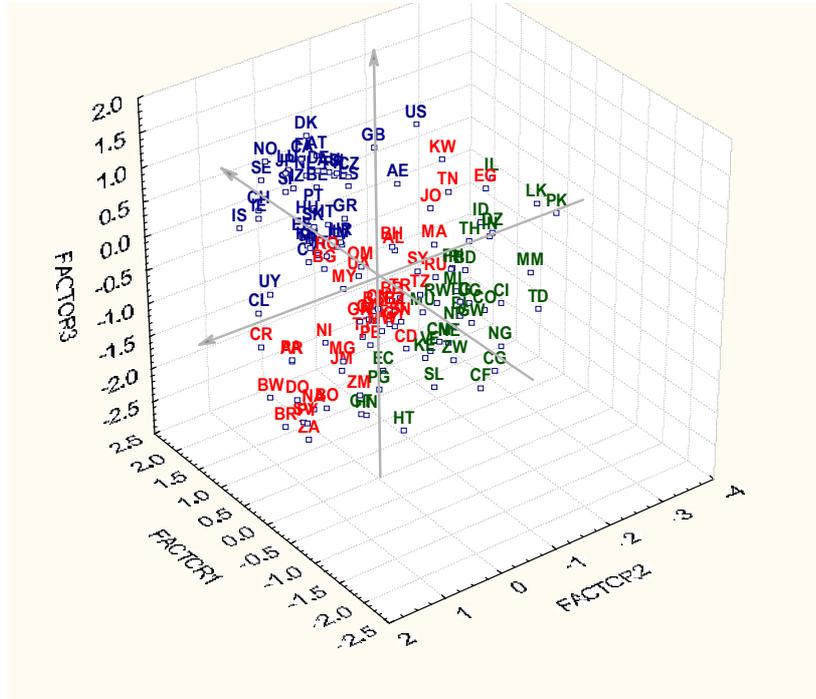
Then after the QGA method it is necessary to make the clusterization of the countries in factor space. To meet that task we shall apply fast method of cluster analysis known as «K-means method». The idea of that method is that the given fixed number k of clusters is put in line with countries in such a way as to maximize the inter-cluster distances (fig. 1).

As follows from fig. 1, the first cluster (blue color) includes the following countries: Belgium, Austria, Sweden, Switzerland, Denmark, Netherlands, United Kingdom, Czech Republic, France, Finland, Germany, Spain, Hungary, Portugal, Canada, Ireland, Norway, Italy, Poland, Singapore, Australia, United States, Slovakia, Greece, New Zealand, Luxembourg, Estonia, Slovenia, Croatia, Chile, United Arab Emirates, Iceland, Malta, Cyprus, Lithuania, South Korea, Latvia, Uruguay, and Japan.

The peculiar for these countries is that the indicators for the first cluster are within the range of above average and up to the highest. In general, these countries have the meaning of the second factor within the range of standard deviation. Nevertheless, it is worth paying attention to the United States and the United Kingdom, where the index of terrorist acts security is very low. According to the third factor these countries are rated above average position.

Figure 1

Visualization of clustrization results in factor space



To the second cluster (red color) belong the following countries: Malaysia, Turkey, Russia, Jordan, Kuwait, Romania, Ukraine, China, Bulgaria, South Africa, Argentina, Brazil, El Salvador, Bahrain, Peru, Jamaica, Panama, Mexico, Morocco, Costa-Rica, Egypt, Oman, Tunisia, Namibia, Ghana, Paraguay, Guyana, Dominican Republic, Bolivia, Gabon, Trinidad and Tobago, Zambia, Fiji, Bahamas, Nicaragua, Belize, Barbados, Senegal, Malawi, Botswana, Albania, Tanzania, Benin, Syria, Republic of Congo, Madagascar. The specific for these countries is that the indication of the second factor is exceeding the average. According to the first factor the second cluster countries take the position within the range of very low to average. After the third factor all possible range of indications is observed.

Opposite the second cluster the third cluster countries (green color), namely: Israel, Philippines, Thailand, Nigeria, Ecuador, Indonesia, Honduras, Venezuela, Columbia, Mauritius, Pakistan, Guatemala, India, Sri-Lanka, Zim-

babwe, Cote d'Ivoire, Algeria, Kenya, Togo, Uganda, Mali, Chad, Cameroon, Bangladesh, Papua New Guinea, Nepal, Sierra-Leone, Iran, Congo, Guinea Bissau, Niger, Haiti, Central African Republic, Rwanda, Myanmar Burundi have low index of potential terrorist acts. After the descriptions of the first and the third factors these countries are like the ones included into the second cluster.

The research showed the following:

- the world country that is the least vulnerable to economic crisis from the view of globalization peculiarities loss appeared to be Canada. Though having its GDP dropped by 6.14% it increased by seven points in rating of the most globalized world countries after KOF index. At that, the country has preserved its export-import balance on the level of previous years, the volumes of its foreign and domestic markets, ratio of foreign property, and gross domestic product. The fall of rating from five to seven points after KOF method at the primary stage of economic crisis underwent Australia (-5), Mexico (-5), Ukraine (-5), South African Republic (-6), and France (-7) . At that, Australia, having dropped its GDP by 10.3% significantly improved its export-import balance, while other countries of that group preserved it on previous level, except Ukraine, where it rather worsened. A significant (19.3%) restriction of capital flows is observed in Ukraine On the other hand, Canada (-3.9) and Australia (-12.1) suffered from enormous brain drains mainly for the sake of the USA, while Ukraine had the growth of intellectual potential by 6.6%. The drop of GDP in France made 8.27%. Other indices for the countries of that group remained without certain changes at the initial stage of economic crisis.
- The group of countries with powerful economies where the globalization indexes fell from ten to twenty points is the following: Italy (-10), Germany (-11), South Korea (-13), Argentina (-14), USA (-16), Japan (-19), Great Britain (-20). Out of them the USA and Great Britain preserved rather high balance surplus of export-import, while Japan and South Korea significantly aggravated it. Rather great GDP (-16.1%) drop and significant reduction of capital flow (-16.2%) was observed in South Korea. Significant GDP drop occurred in Germany (-12.9%) and Argentina (-8.96%) All countries of that group preserved their domestic and foreign markets, and foreign property ratios on the previous levels. Great Britain had almost 5% of brain drain, mostly to the USA.
- At the beginning of economic crisis great changes occurred in the countries of BRIC group, in Turkey and Indonesia. Those countries (but Turkey and Russia) did not have significant GDP drop, but their KOF globalization indexes fell from 25 to 48 points. Thus, in Turkey it made -19, Brazil – -27, Russia – -28, Indonesia – -34, India – -41, China – -48. In general, they preserved their domestic and foreign

markets, but rather aggravated their (except Turkey and Russia) export-import balance. At that, Turkey and Indonesia rather increased presence of foreign capital in their countries. Enormous brain drain was observed in India (-13.5%), while Russia managed to improve the conditions to preserve its intellectual capital by 12.5%.

- Having applied the method of multivariate statistic analysis the research was made of mutual relationship of socio-economic indicators and the globalization index, and its components for the countries of Great Twenty. The general trend was established for rating decline of the globalization index (by 17 points), which occurred due to the restriction of social dimension of globalization. Also, it is stated, that the degree of statistic correlation between variations of social and economic components approaches the average ratio (correlation coefficient is 0.36), while the change of political component does not depend upon the changes of social and economic components (respective correlation coefficients make 0.06 and 0.11). As for the outcomes of socio-economic indicators the statistic significant dependence is observed between the changes in import-export, while changes in volume of foreign market and export have statistic correlation of average level.
- Method of factor analysis enabled to establish three independent factors according to which the G20 countries differ from the point of view of the outcome indications effecting the change of globalization index. The first factor includes the change of import, export, and scale of foreign market, the second factor consists of the changes in brain drains and GDP, and the third factor is change in the ratio of foreign property. Within the factor space four clusters of the countries are distinguished according to the signs of the proximity of outcome indicators changes. Against the countries of the first cluster, China and Mexico though having the great difference in GDP change and in brain drain index, and where the most significant reduction of foreign markets and import-export volume was observed, those countries possessed average and above average indications in change of foreign property ratio. The second cluster including the most developed countries (i.e. Great Britain, USA, Canada, Germany, France, Japan, India, and Indonesia) is described by change of all indicators within the standard deviation, which manifests the sustained trend of globalization of those countries. For the third cluster (Argentina, Australia, Brazil, Italy, Russia, SAR) in spite of great difference in the ratio of GDP changes, the trend is observed connected with the growth of foreign property, scales of foreign markets, and volume of import-export (transition of big productions into these countries due to cheap labor force and favorable business climate). The peculiarity for Ukraine, likewise for Turkey and Korea,

which are included into the fourth cluster is increase of foreign markets and import-export volumes at the background of significant GDP drop, and reduction of foreign property (unjustified privatization of national assets, illegal creation of foreign markets in offshore zones, etc.)

- Within its cluster Ukraine has the highest rates under the first and third factors, and the lowest under the second factor. Proceeding from the analysis of the effects the outcome indicators produce on the globalization index components, it is stated that the growth of economic component of KOF index in Ukraine is influenced by the growth of export volume, reduction of domestic market scale, and increase of brain drain index. The growth of social component is effected by the growth of capital flows restriction, and decrease of foreign property volume, which influences the intensity of temporal migration of the population. The growth of political component is related to the growth of foreign market volume, and growth of GDP in the country.

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