

THE GLOBALIZATION AND INNOVATIVE DEVELOPMENT OF COUNTRIES AT UNSTABLE ECONOMIC ENVIRONMENT

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Abstract:

The paper is devoted to the analysis of the nature of globalization in the context of the innovative development process. Modern globalization is explained through qualitative changes in the internationalization processes under the influence of innovative and technologic factors. The dynamics of KOF Index of Globalization in 1990-2008 is analyzed. The stable long-term trend of the Globalization Index growth is revealed for all countries. The correlation between the KOF Index of Globalization and the Global Innovation Index developed by INSEAD for factor- driven, efficiency - driven and innovation-driven economies demonstrates the high interdependence for innovation - driven economies, and substantially diminishes for the factor-driven economies. The transition to “innovation and globalization” model of development is an important attribute of a new stage of evolutionary process. The conceptual basis of such a model is created by a systemic synergetic interaction of globalization and innovation development.

Keywords: globalization, innovation development, integration, KOF Index of Globalization, Global Innovation Index

JEL Classification: F₀₁, N₃, O₃₁, O₅₇

1. Introduction

The fundamental changes occur on the global landscape as a result of the convergence of the innovation process and modern institutional shifts. Growth and dynamism of innovative sphere as well as acceleration of development of hi-tech industries, emerging markets, international integration in the S&T sphere are the main characteristics of the modern globalizing world. It is the basis for steady economic development at the beginning of the 21st century. The average annual growth of the world GDP in 2000 – 2007 was 3,2 % as compared to 2,6% in 1990. However, 2007 was the peak of GDP growth. The 2008-2009 world economic crisis, a

long depression and slow renewal proved the strengthening of cyclic fluctuation and general instability of the world economy. The contradictions of the world economic development were caused by the influence of globalization processes which become more significant under the conditions innovative technological changes.

The globalization accelerates the dynamics of innovative development. In this environment, product innovation is not the most powerful form of innovation. In the globalised world, product life cycles are compressing. Innovation in management practices becomes more powerful because it provides the key to accelerating and sustaining the product innovation (Held, D., MacGrew, A., 2007, pp. 51-58).

The globalization also provides new significant opportunities for companies and countries to innovate and build the strategic advantage. To do that they should develop competitive strategies aimed at adopting the national economies to the changes in the global economy.

John Hagel and John Seely Brown at the paper “Globalization & Innovation: Some Contrarian Perspectives” prepared for the Annual Meeting of the World Economic Forum in Davos wrote: “Much has been written about globalization and innovation as distinct topic, but few analysts have focused on exploring the connection between the two. Those who understand this connection – whether they are well-established Western enterprises or entrepreneurial companies in emerging economies like China and India – will be able to create economic value on an unprecedented scale” (www.johnseelybrown.com).

A comprehensive analysis of connection between innovation and globalization under the conditions of modern trends in countries’ economic development is in the centre of the present study. It focuses on the correlation between the KOF Index of Globalization and the Global Innovation Index developed by INSEAD.

2. Measuring countries’ integration into the globalised world system

In the process of globalization some countries are deeply integrated in the new type of international economic relations whereas others remain relatively isolated. Therefore, pros and cons of the globalization are unevenly distributed.

Measuring globalization as a level of countries’ integration into the globalised world system is determined by the index of globalization. The first calculations of the index of globalization were made by World Markets Research Centre which in 2001 presented the WMRS G-Index as well as by AT Kearney Consulting Group in cooperation with Foreign Policy Magazine which

calculated A.T. Kearney/Foreign Policy Globalization Index (ATK/FP GI) in 2001 – 2007. Those were the first attempts of quantitative measuring of globalization through the selection of its separate constituents. Experience of WMRS and ATK/FP influenced considerably the development of other methods such as the Maastricht Index of Globalization (MGI) and the KOF Index of Globalization calculated by the International rating agency of the Swiss Economic institute KOF. It is given in percentage and consists of three groups of factors: economic, social and political.

According to the KOF Index of Globalization rating 2010 (KOF Swiss Economic Institute. Index of Globalization 2010) calculated for 208 countries, the leaders are the most developed countries with an Index value 87% - 93%: Belgium, Austria, the Netherlands, Switzerland, Sweden, Denmark, Canada, Portugal, Finland and Hungary. The “outsiders” of globalization processes with the Index value below 20% are Monaco, Puerto Rico, Somali, Montenegro, South Korea, Iraq, Liberia and others. The difference in the value of KOF Index of Globalization between the most globalised and the least globalised countries is on the average about 60 percentage points.

The dynamics of the Index of Globalization KOF for the world economy in 1980 – 2007, and the dynamics of Indexes of Economic, Political and Social globalization as sub- indexes of the integral Index are shown on Figure no. 1.

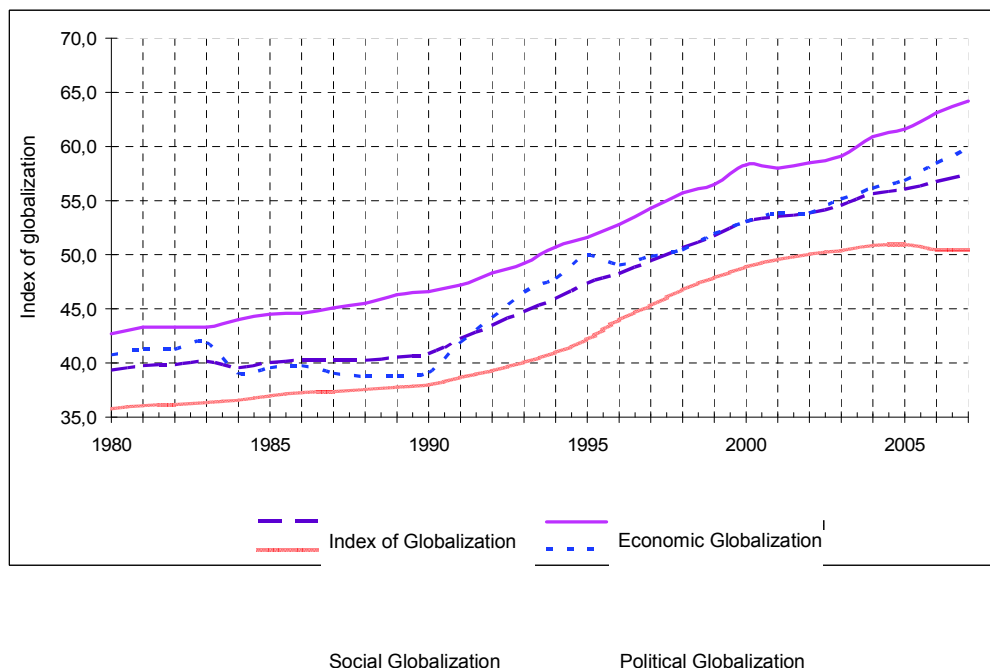


Figure no. 1. Dynamics of the KOF Index of Globalization, 1980 - 2005

Source: KOF Swiss Economic Institute, Index of Globalization 2010, Press Release, 22 January, 2010

After the growth in 1990 - 2000 caused by rising openness of post-socialist economies, the dynamics of the Index of Globalization slow down. The analysis of sub-indexes proves that the slow-down is caused by the negative dynamics of social globalization.

The dynamics of Indexes of Globalization for Western Europe and industrial countries (Figure no. 3) show considerable correlation with the dynamics of the Index of Globalization for the world economy. At the same time the value of the KOF Index for Eastern Europe and Central Asia demonstrates rapid growth in 1990 – 2000.

The analysis of the Index of Globalization for OECD-member countries and for countries which are not OECD-members with low and high GDP level (Figure no. 2) demonstrates direct correlation between the Index of Globalization value and the level of countries' economic development.

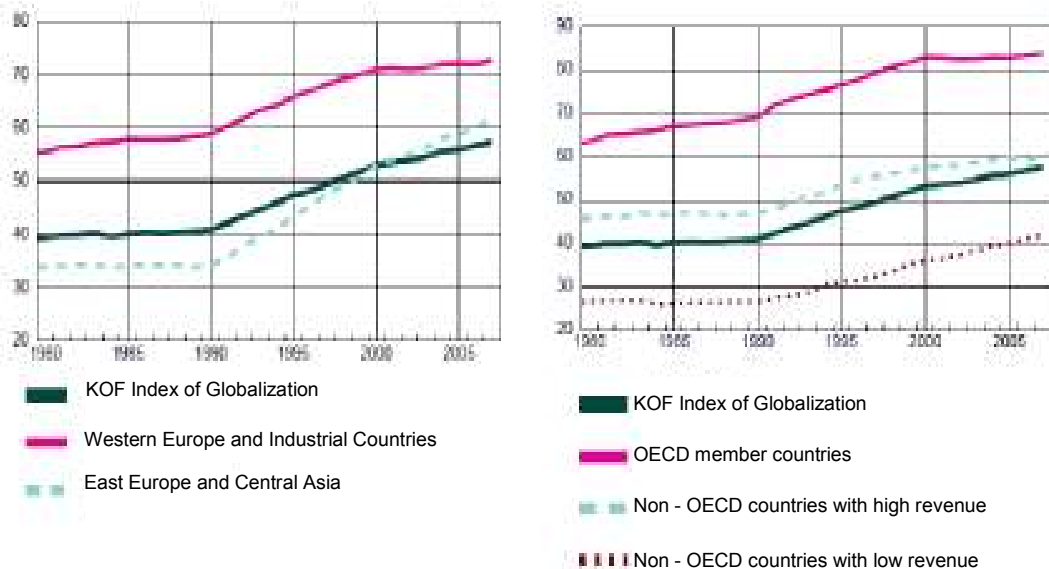


Figure no. 2. Dynamics of the KOF Index of Globalization for groups of countries

Source: KOF Swiss Economic Institute, Index of Globalization 2010, Press Release, 22 January, 2010

For all groups of countries and regions the Index of Globalization demonstrates similar dynamics (Figures no. 1, 2). There was 18 percent growth in 1980 – 2007 due to 20 percent growth of the Index of Economic Globalization.

The current analysis which applies to 2008 shows the consequences of the financial and economic crisis (Table no. 1).

Table no. 1

Dynamics of the KOF Index of Globalization under the crisis

KOF Index of Globalization	2007	2008	Increase, %
Integral Index of Globalization	58,12	58,03	- 0,15
Index of Economic Globalization	63,49	62,52	- 1,52
Index of Social Globalization	50,33	50,18	- 0,30
Index of Political Globalization	60,20	61,00	+1,33

Source: KOF Swiss Economic Institute, Index of Globalization 2011, Press Release, 18 March, 2011

The crisis is clearly visible in the results of the current KOF Index of Globalization: a falling trend in general value of the Index of Globalization (- 0,15%), the Index of economic Globalization (-1,52%) and the Index of social globalization (-0, 30%). Only the third component of the Index of Globalization – political globalization – has continued undiminished (+1,33).

Also the Index of Globalization 2011 shows that a progressive upward trend in globalization in the developing and emerging countries in Eastern Europe and Central Asia stagnated in 2008 (KOF Swiss Economic Institute. Index of Globalization 2011).

3. The correlation between innovation and globalization

The globalization accelerates the dynamics of innovative development. Favourable conditions for the development of innovative economy appear in the globally integrated world. It allows us to assume that countries with the innovation-oriented economies are more actively involved into globalization process.

Such hypothesis is proved by measuring countries' innovative development and the degree of countries' involvement in globalization process on the basis of analytical reports and rankings of international organizations and analytical centres.

Table no. 2 includes the Top-15 countries in the World Innovation development rankings, namely: Global Innovation Index (GII), calculated by the analytical centre of Lausanne School of Business INSEAD and covering 132 countries (column 1); Global Innovation Index BCG (GII BCG), calculated by the experts of Boston Consulting Group and covering 110 countries (column 2); Innovation Capacity Index (ICI), calculated by the international research structure EFD – Global Consulting Network, covering 131 countries and published in The Innovation for Development Report 2009 – 2010 (column 3).

Table no. 2

The Top-15 countries in the World Innovation development rankings

Global Innovation Index INSEAD 2009-2010	Score	Global Innovation Index BCG, 2009	Score	Innovation Capacity Index EFD – GCN 2009-2010	Score
1		2		3	
Iceland	4,86	Singapore	2,45	Sweden	82,2
Sweden	4,85	South Korea	2,26	Finland	77,8
Hong Kong	4,83	Switzerland	2,23	USA	77,5
Switzerland	4,82	Iceland	2,17	Switzerland	77
Denmark	4,72	Ireland	1,88	Netherlands	76,6
Finland	4,66	Hong Kong	1,88	Singapore	76,5
Singapore	4,65	Finland	1,87	Canada	74,8
Netherlands	4,62	USA	1,8	UK	74,6
New Zealand	4,6	Japan	1,79	Norway	73,5
Norway	4,59	Sweden	1,64	New Zealand	73,4
USA	4,57	Denmark	1,6	Luxemburg	73,3
Canada	4,55	Netherlands	1,55	Denmark	73,3
Japan	4,5	Luxemburg	1,54	Taiwan	n/a*
UK	4,42	Canada	1,42	Iceland	72,6
Luxemburg	4,38	UK	1,42	Japan	72,1

* **not available**

Source: *Global Innovation Index 2009 - 10 / INSEAD – 2010; Global Innovation Index BCG; Innovation for Development Report 2010.*

The list of countries in different rankings is almost the same – 12 countries out of 15 are in all the rankings.

Table no. 3 includes 26 countries ranked by the Global Innovation Index INSEAD, Global Innovation Index BCG, Innovation Capacity Index EFD–GCN and KOF Indexes of Globalization and Economic Globalization.

The first eight countries take leading positions in the Global Innovation Index ranking. The USA and Japan are below and take 11 and 13 ranks accordingly. The followers are 16 post-socialist countries of Central and Eastern Europe and former USSR.

Table no. 3

The countries' ranking by the world innovation readiness indexes and globalization indexes

№	Country	Rank				
		GII INSEAD	GII BCG	ICI EFD - GCN	KOF Index of Globalization	KOF Index of Economic Globalization
1	Iceland	1	4	14	40	26
2	Sweden	2	10	1	5	9
3	Hong Kong	3	6	16	n/a*	n/a*
4	Switzerland	4	3	4	4	22
5	Denmark	5	11	11	6	12
6	Finland	6	7	2	9	15
7	Singapore	7	1	6	17	1
8	Netherlands	8	12	5	3	4
9	USA	11	8	3	27	57
10	Japan	13	9	15	45	102
11	Slovenia	26	33	31	28	24
12	Czech Rep.	27	32	32	12	13
13	Estonia	29	23	25	26	7
14	Hungary	36	31	41	10	8
15	Slovak Rep.	37	36	39	16	16
16	Lithuania	39	40	26	33	27
17	Latvia	44	43	27	37	21
18	Croatia	45	48	38	29	35
19	Poland	47	52	40	23	37
20	Bulgaria	49	53	33	32	20

21	Romania	52	61	47	39	44
22	Azerbaijan	57	68	74	95	89
23	Ukraine	61	64	54	46	70
24	Kazakhstan	63	60	57	73	55
25	Russian Federation	64	49	49	42	92
26	Georgia	84	77	42	69	30

*** not available**

Source: Global Innovation Index 2009 - 10 / INSEAD – 2010; Global Innovation Index BCG; Innovation for Development Report 2010; KOF Swiss Economic Institute. Index of Globalization 2010, Press Release, 22 January, 2010

The research of the correlation between the innovation and the globalization indexes shows that higher innovation ranks are occupied by countries which are highly involved in the globalization process (according to KOF Index of Globalization and/or KOF Index of Economic Globalization) such as Switzerland, Singapore, Sweden, the Netherlands, Denmark, Finland.

There is also close correlation between the innovation and globalization indexes for the countries of Central and Eastern Europe and former USSR. Ukraine is ranked 61-st by the INSEAD Global Innovation Index, 46-th – by KOF Index of Globalization and 70-th – by the KOF Index of Economic Globalization.

The Spearman rank correlation coefficient between the INSEAD Global Innovation Index and KOF Index of Globalization is 0,8010. It demonstrates the high correlation between the analyzed parameters.

The hypothesis about different levels of correlation between the innovation readiness and globalization for the countries with different levels of economic and innovation development was suggested.

The research of dependence between the Innovation and Globalization Indexes was conducted for the countries with different levels of economic and innovative development according to the classification of the World Economic Forum (WEF).

The WEF experts suggest three models of countries' economic development that depends on economy – driving factors and GDP per capita (Figure no. 3).

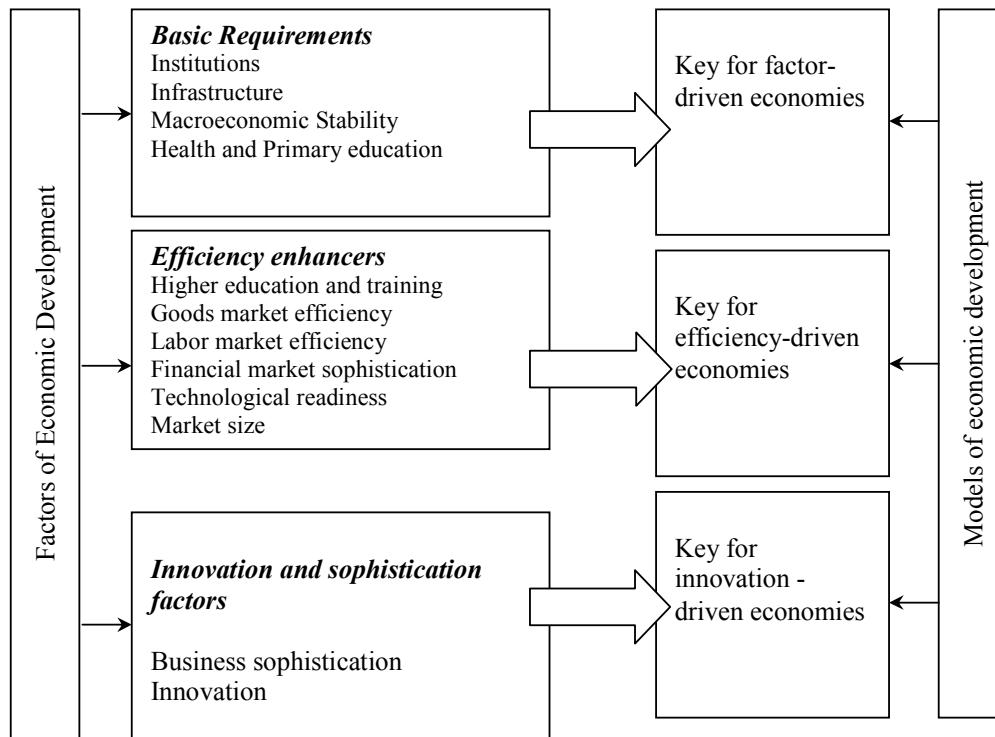


Figure no. 3. Factors and models of economic development (WEF, 2009)

Countries are divided into five groups (Table no. 4):

- factor – driven economies (I);
- efficiency – driven economies (III);
- innovation – driven economies (V).

Besides, there are two transitional groups of countries (II, IV).

The Spearman rank correlation coefficient between the Global Innovation Index INSEAD and KOF Globalization Index rankings was calculated for the aggregated groups of countries:

1. Aggregated group A which includes the factor - driven economies (I), the Spearman coefficient of correlation is 0,2495;
2. Aggregated group B which includes the efficiency - driven economies (III), and transitional economies (II), the Spearman coefficient of correlation is 0,3950;
3. Aggregated group C which includes the innovation - driven economies (V), and transitional from III to V economies (IV), the Spearman coefficient of correlation is 0,6388.

Table no. 4

Groups of countries according to the WEF classification

Aggregated groups	Model of economic development	Countries
A	I. Factor - driven economies	Bangladesh, Benin, Bolivia, Burkina Faso, Burundi, Cambodia, Cameroon, Chad, Cote d'Ivoire, Ethiopia, The Gambia, Ghana, Guyana, Honduras, India, Kenya, Kyrgyz Republic, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mongolia, Mozambique, Nepal, Nicaragua, Nigeria, Pakistan, Philippines, Senegal, Sri Lanka, Tajikistan, Tanzania, Timor - Leste, Uganda, Vietnam, Zambia, Zimbabwe
B	II. Transitional from I to III	Algeria, Azerbaijan, Botswana, Brunei Darussalam, Egypt, Georgia, Guatemala, Indonesia, Jamaica, Kazakhstan, Kuwait, Libya, Morocco, Paraguay, Qatar, Saudi Arabia, Syria, Venezuela
	III. Efficiency - driven economies	Albania, Argentina, Armenia, Bosnia and Herzegovina, Brazil, Bulgaria, China, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Jordan, FYR Macedonia, Malaysia, Mauritius, Montenegro, Namibia, Panama, Peru, Serbia, South Africa, Surinam, Thailand, Tunisia, Ukraine
C	IV. Transitional from III to V	Bahrain, Barbados, Chile, Croatia, Hungary, Latvia, Lithuania, Mexico, Poland, Oman, Romania, Russian Federation, Turkey, Uruguay
	V. Innovation - driven economies	Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, Iceland, Ireland, Israel, Italy, Japan, Rep. Korea, The Netherlands, Luxembourg, Malta, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Great Britain, The USA, Cyprus, Estonia, Puerto Rico, Slovenia, Taiwan, Trinidad and Tobago, United Arab Emirates

Source: Global Competitiveness Report 2009-2010, World Economic Forum, Geneva, 2009

The analysis of the obtained results proves that the correlation between the Global Innovation Index and Globalization Index is the greatest for the innovation - driven economies, and substantially lower for the factor - driven economies.

3. Conclusion

The present paper reveals that there is a close connection between developing the innovation and globalization process. The innovation - driven economies are highly involved into globalization processes, and the factor - driven economies are relatively separated from the world economic system.

The Spearman rank correlation coefficient between the Global Innovation Index INSEAD and KOF Globalization Index rankings for the innovation – driven economies is 0,6388; for the efficiency – driven economies is 0,3950; for the factor - driven economies is 0,2495.

The research results allow drawing the conclusion that in global economic environment, under the conditions of free access to information, development of the world markets of intellectual property and technologies, international integration in S&T sphere the efficient creation of innovative economy on regional, national and global levels is possible. At the beginning of the XXIst century the World economic system entered a new stage of evolutionary process – the transition to innovation and globalization model of the society development. The conceptual basis of the model is systematic and synergetic interaction of globalization and innovation development which leads to the formation of innovative economy and creates incentives for the development of global economic system.

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