Development of Modern World Economy Through The Prism of "Underdevelopment Whirlpools"

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Abstract

The article analyzes the development of modern world economy through the prism of "underdevelopment whirlpools". The author distinguishes the problem of disproportions of world economy development, provides the proprietary methodology of "underdevelopment whirlpools", and studies the world economy through the prism of "underdevelopment whirlpools". Based on the official statistical information of the International Monetary Fund, the author performs calculation of "underdevelopment whirlpools" in regional associations as a part of modern global economy: Advanced economies, of which the Euro area и Major advanced economies (G7) are distinguished and the Emerging market and developing economies, of which the Commonwealth of Independent States, Emerging and developing Asia, Emerging and developing Europe, Latin America and the Caribbean, Middle East, North Africa, Afghanistan, and Pakistan and Sub-Saharan Africa are distinguished. The article proves the thesis that modern global economy is peculiar for presence of deepening "underdevelopment whirlpools" that are largely determined by sectorial structure of economic systems.

Keywords: World economy, "underdevelopment whirlpools", developing countries, developed countries

Introduction

The higher level of development is achieved in the scale of the world economy on the whole, the stronger are the differences in growth of various economic systems that are part of it. A key reason for this phenomenon is the impossibility to ensure fully independent development of these systems that is especially peculiar for modern economic conditions characterized by high level and speed of globalization and integration.

As a result, stable regularity of development of some economic systems (recipient countries) by means of other (donor countries) is

established, which supposes the use of other's resources for realization of one's potential. Thus, underrun of recipient countries from donor countries grows, which leads to deepening of differentiation of countries in the modern world economy.

This differentiation is a cause of unbalanced development of the world economic system and, as a consequence, of periodic geo-economic crises that hinder the global economic growth – so it is a serious global problem of modern time, which is viewed is this paper. The author seeks the goal of studying the tendencies and perspectives of development of modern world economy through the prism of "underdevelopment whirlpools".

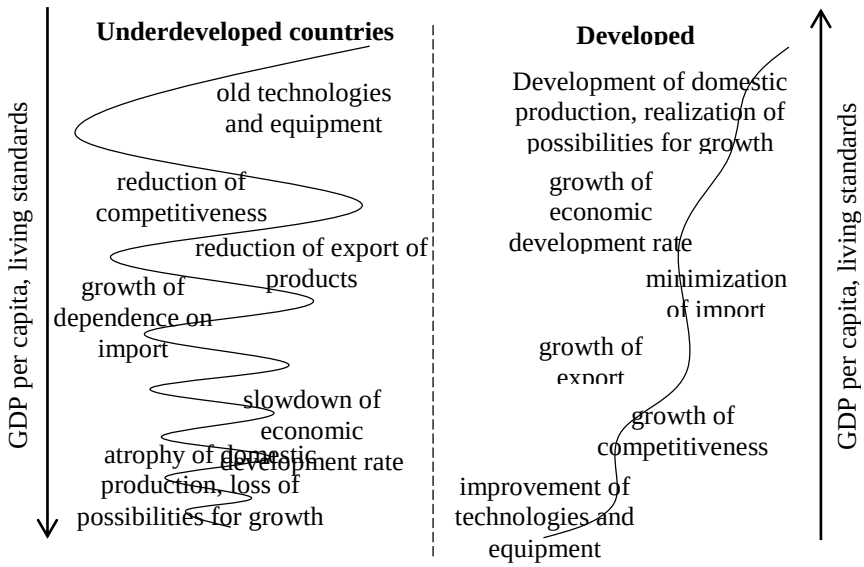
I.

Despite the excess of modern studies and publications in the sphere of theory and practice of development of modern world economy, its disproportions are well-studied only in the short-term. Among the works of conceptual nature it is possible to distinguish (Pogosov, 2015), (Odhiambo, 2015), (Zeira & Zoabi, 2015), (Leonida et al., 2015), (Sarracino & Bartolini, 2015), (González-Pernía & Peña-Legazkue, 2015), (Choi & Shin, 2015), (Lee & Oh, 2015), (Castiglione et al., 2015), (Kolomiets, 2015), (Bere, (2015), (Smékalová et al., 2014), (Dymskill, 2013), (Ravuri, 2012), (Christofakis & Papadaskalopoulos, 2011), (Fuseini & Kemp, 2015), etc.

The mist interesting applied studies in this sphere include (Ilie & Jaradat, 2015), (Docquier & Machado, 2015), (Yakovleva et al., 2015), (Wirtz et al., 2015), (Čaušević, 2015), (Klinov, 2015), (Kornev et al., 2015), (Pulselli et al., 2015), Dudin & Frolova, (2015), (Zhao et al., 2015), (Rodriguez et al., 2015), (McMaster, 2015), (Aytaç et al., 2015), (Heinrich et al., 2015), (Guttmann, 2015), (Galbraith, 2015), (Capello et al., 2015), and (Hieronymi, 2015).

A perspective tool of studying the dynamics of change of the studied disproportions in this paper is the proprietary methodology of "underdevelopment whirlpools" created by E.G. Popkova. It is described in her works, among which are (Popkova et al., 2013b), (Popkova et al., 2013a), (Popkova &Tinyakova, 2013a), (Popkova & Tinyakova, 2013b), (Popkova &Tinyakova, 2013c), (Popkova et al., 2015), etc.

The author offers a hypothesis that modern world economy is peculiar for deepening "underdevelopment whirlpools" that are largely determined by sectorial structure of economic systems. "Underdevelopment whirlpool" is a sustainable reduction of economic growth and development rate and reduction of global competitiveness of economic system, as well as its establishing as underdeveloped countries. The process of its formation is graphically presented in Figure 1.



Source: compiled by the authors

As is seen from Figure 1, the initial cause of formation of "underdevelopment whirlpool" is aging of technologies and equipment that leads to reduction of global competitiveness of a country and its enterprises, reduction of export, strengthening of dependency on import, slowdown of economic development rate, and, as a result, atrophy of domestic production and loss of possibilities for growth.

All of this is accompanied by reduction of GDP per capita. "Underdevelopment whirlpools" establish certain countries' underrun from other countries. That's why the author of this research thinks that it is necessary to distinguish not developing and developed countries but leading and underdeveloped countries. As a result, underdeveloped countries become sources of final products sales for leading countries and sources of cheap raw material and human resources.

Meanwhile, developed countries improve their technologies and equipment, increase competitiveness and export, reduce import, accelerate economic development, actively develop domestic production, and realize their potential and possibilities for economic growth.

"Underdevelopment whirlpool" has stable feature – depth of whirlpool, and dynamic feature – speed of sucking into the whirlpool. Calculation of "underdevelopment whirlpools" is performed in the following way. The model is provided – an object to be compared to all other values. Then statistical data are provided that reflect change of GDP per capita in the "model" and studied economic systems by the years.

After that, values of GDP per capita for the years are compared to the values of these indicators with the "model" and specific years are given. Then the underrun of the economic system from the model is determined by the indicator of GDP per capita through calculating the difference between the current year and the corresponding year. Then the depth of the whirlpool is calculated as difference between the underrun in the current period and previous period, as well as speed of sucking into the whirlpool, determined as ratio of whirlpool's depth to difference in the studied periods.

In this research, the "model" is the world economy on the whole, dynamics of GDP of which in 1995-2015 is given in Table 1.

Table 1. Dynamics of GDP per capita of the world economy on the whole, USD.

Year	GDP per capita
1995	6,043.882
1996	6,257.975
1997	6,166.816
1998	6,082.534
1999	6,240.907
2000	6,417.968
2001	6,409.691
2002	6,741.650
2003	7,794.258
2004	9,273.837
2005	10,142.400
2006	10,993.590
2007	12,542.460
2008	13,771.480
2009	12,218.770
2010	12,983.010
2011	14,489.560
2012	14,372.150
2013	14,742.820
2014	14,808.550
2015	13,094.710

Source: based on materials of the IMF, www.imf.org

In order to fully cover the world economy and stay within the acceptable limit of the research, the objects of the research in this paper are not separate countries but regional associations of countries in the modern world economy: Advanced economies that include the Euro area and Major advanced economies (G7) and the Emerging market and developing economies that include the Commonwealth of Independent States, Emerging and developing Asia, Emerging and developing Europe, Latin America and the Caribbean, Middle East, North Africa, Afghanistan, and Pakistan, and Sub-Saharan Africa.

The results of calculation of "underdevelopment whirlpools" in these regional associations are given in Table 2. Based on the performed research, the author compiled the map of "underdevelopment whirlpools" on the territory of modern world economy, given in Table 2.

Table 2. Calculation of "underdevelopment whirlpools" in regional associations in modern world economy

Region	GRP per capita, 1995	Year of the average global level	Underrun	GRP per capita, 2000	Year of the average global level	Underrun	Depth	Speed	GRP per capita, 2005	Year of the average global level	Underrun	Depth	Speed	GRP per capita, 2010	Year of the average global level	Underrun	Depth	Speed	GRP per capita, 2015	Year of the average global level	Underrun	Depth	Speed
Advanced economies	21,265.04	>2015	0	21,009.83	>2015	0	0	0	32,871.7	>2015	0	0	0	40,250.16	>2015	0	0	0	19,835.76	>2015	0	0	0
Euro area	18,419.28	>2015	0	17,357.10	>2015	0	0	0	29,109.63	>2015	0	0	0	35,356.47	>2015	0	0	0	33,332.94	>2015	0	0	0
Major advanced economies (G7)	27,845.21	>2015	0	27,570.36	>2015	0	0	0	37,276.73	>2015	0	0	0	42,535.68	>2015	0	0	0	40,602.55	>2015	0	0	0
Emerging market and developing eco	2,575.99	1981	14	3,034.40	1986	14	0	0	43,73.01	1990	15	15	3	60,75.91	1995	15	12	2,4	6,298.54	1996	19	16.6	3.32

Region	GRP per capita, 1995	Year of the average global level	Under run	GRP per capita, 2000	Year of the average global level	Under run	Depth	Speed	GRP per capita, 2005	Year of the average global level	Under run	Depth	Speed	GRP per capita, 2010	Year of the average global level	Under run	Depth	Speed	GRP per capita, 2015	Year of the average global level	Under run	Depth	Speed
nomies																							
Commonwealth of Independent States	677.70	1962	33	792.18	1962	38	5	1	20,81.62	1977	28	27	5,4	41,82.13	1990	20	14,6	2,92	4,432.09	1991	24	21.08	4.216
Emerging and developing Asia	2,026.46	1977	18	2,060.25	1977	23	5	1	2,872.21	1978	27	26	5.2	4,250.66	1989	21	15.8	3.16	4,764.45	1992	23	19.84	3.968
Emerging and developing Europe	2,932.49	1983	12	3,058.72	1986	14	2	0,4	6,329.01	2000	5	4.6	0.92	9,077.29	2004	6	5.08	1.016	8,763.35	2004	11	9.984	1.99688
Latin Am	3,869.74	1988	7	4,693.17	1991	9	2	0,4	5,647.58	1994	11	10.	2.1	7,822.47	2003	7	4.8	0.9	8,853.34	2004	11	10.0	2.000

Region	GRP per capita, 1995	Year of the average global level	Under run	GRP per capita, 2000	Year of the average global level	Under run	Depth	Speed	GRP per capita, 2005	Year of the average global level	Under run	Depth	Speed	GRP per capita, 2010	Year of the average global level	Under run	Depth	Speed	GRP per capita, 2015	Year of the average global level	Under run	Depth	Speed
erica and the Caribbean												6	2				8	76				24	48
Middle East, North Africa, Afghanistan, and Pakistan	5,762.91	1992	3	7,525.36	2003	-3	-6	-1,2	10,624.50	2006	-1	0.2	0.04	13,440.55	2008	2	1.96	0.392	12,987.62	2007	8	7.608	1.52216
Sub-Saharan Africa	995.95	1950	45	1,000.47	1951	49	4	0.8	1,807.07	1951	54	53.2	10.64	2,544.43	1953	57	46.36	9.272	2,471	1952	63	53.728	10.74456

Source: compiled by the author based on materials of the IMF, www.imf.org

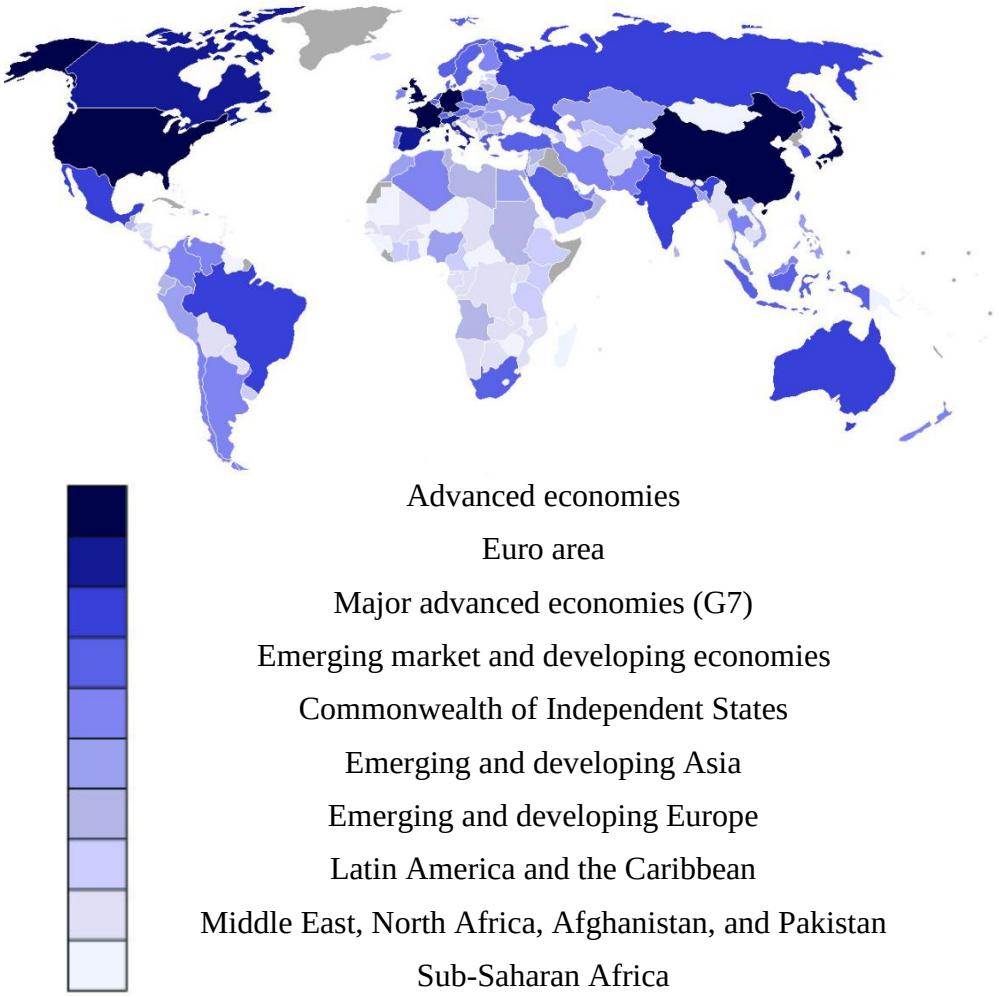


Fig. 2. Map of "underdevelopment whirlpools" on the territory of modern world economy

As is seen from Table 2 and Fig. 2, the Emerging market and developing economies are peculiar for existence of "underdevelopment whirlpools" that have been deepening over the last 20 years, while the Advanced economies develop quickly and are characterized by higher values of GDP per capita than in the world economy on the average.

In order to determine the causes of formation of "underdevelopment whirlpools" in the modern world economy, let us view sectorial structure of gross regional product (GRP) of the studied regional associations. For that, let us use Table 3.

Table 3. Sectorial structure of GDP for the types of economic activities for 2015 (in %)

Region	Service sphere	Processing industry	Extracting industry	Agriculture
Advanced economies	69	17	6	8
Euro area	64	22	4	10
Major advanced economies (G7)	75	12	8	5
Emerging market and developing economies	23	24	21	32
Commonwealth of Independent States	20	29	37	14
Emerging and developing Asia	34	22	37	7
Emerging and developing Europe	56	12	21	11
Latin America and the Caribbean	15	48	25	12
Middle East, North Africa, Afghanistan, and Pakistan	7	18	3	72
Sub-Saharan Africa	4	13	2	81

Source: compiled by the author based on materials of the IMF, www.imf.org

Based on the data of Table 3, the author performed regression and correlation analysis, with the help of which the following model of paired linear regression was obtained: y=1.14+5x. According to this model, growth of the share of processing industry in the structure of GRP (x) by 1% leads to deepening of "underdevelopment whirlpool" of a regional union (y) by 5 years. Correlation coefficient for the obtained model exceeds 99%, which proves is statistical significance and high interdependence of the studied indicators.

Conclusion

Thus, it is possible to conclude that the offered hypothesis is proved – Emerging market and developing economies, which constitute more than 60% in its structure, are in the process of formation of "underdevelopment whirlpools". As the cause of the start of this process is domination (or high share) of extracting industry in the structure of their GRP, and the whirlpools are caused by aging of technologies and equipment, the author suggests that the overcoming of "underdevelopment whirlpools" should be done by development of R&D and service sphere, as well as processing industry in the interests of provision of sustainable development of regional economic systems.

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