

Measurement of Economic Growth as a Factor of Development of Strategies of Economic Transformation

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Submitted: Aug 21, 2013; **Accepted:** Sep 28, 2013; **Published:** Oct 1, 2013

Abstract: The article is devoted to study of problems of measurement of economic growth and to address it as a factor of development of strategy of economic transformation. The author analyzes the cause-and-effect connections of formation of disproportion of economic growth in different countries, creates the model of the analysis of dynamics of cross-country disproportions of economic growth, as well as develops the strategy of economic transformation of countries.

Key words: Economic growth • Economic transformation • Disproportion, polarization • “underdevelopment whirlpool”

INTRODUCTION

Economic growth is difficult and complex phenomenon with many quantitative and qualitative indicators that characterize not only economic but also social impact. Ease of measurement of economic growth that is often taken for its essence actually is only a tip of the iceberg. Economic growth does not contain any intrinsic valuation. To say about n-percent economic growth is to say nothing. Economic growth has its underwater part-base, which increasing or decreasing, determines the economic climate in the space-time plot. Therefore, it is necessary to develop a special approach, which allows measure the qualitative and quantitative component of economic growth.

The Cause-and-effect Connections of Formation of Disparities of Economic Growth in Different Countries: Countries joined the race for economic leadership before the others, secured a significant advantage in this process. It's not just the performance of GDP and GNP—these countries have taken major niche in the global

markets. “An important feature of modern competition is a sharp intensification of the struggle for the leadership. In this context, scientific and technical studies are formed in order to stake out their positions as quickly as possible, ensure the adoption of standards profitable for the leader, license and thereby provide additional income for the company, in particular through the rapid growth of capitalization of its assets”

As a result of the polarization of the world economy there formed the so-called “underdevelopment whirlpools” that are “system of space-time cycles of development, on which the movement of the country occurs, overcoming the barriers of the “perverse circles of poverty” in order to set its place in the international division of labor.

These whirlpools create barriers for the integration of developing countries into the world economy as full participants and are the cause of their isolation from the world economic community. Developed countries are interested in the formation of “underdevelopment whirlpools” because it contributes the spread of their influence and increase aggregate income per capita.

Therefore, instead of the declared commitment to align the economic development of countries and support the countries of periphery and semi-periphery the developed countries that make up the core of the world economy implement the policy of economic expansion, resulting in the formation of “underdevelopment whirlpools”.

According to the theory of O.V.Inshakov, the essence of “underdevelopment whirlpools” is the loss of ability to form a system of transactional factors by countries of periphery and semi-periphery because of the time delay and the need for development of transformational innovation factors for delayed response to changes in the external environment.

To overcome the barriers created by the “underdevelopment whirlpool” it is necessary to abandon the model of catch-up development and form new cycles of development through innovation. Creation of new innovation cycles, forming new circles of development is a feature of the new quality of economic growth (Figure 1).

From the point of view of institutional theory the considered phenomenon is described as “institutional traps” or “blocking effects”, which are “inefficient stable rules (institutions) with the self-replicating nature”.

“Institutional trap” is a qualitative discrepancy of economy to the requirements of economic growth. These traps can occur in any sector of the economy, from industry to the financial system. In this case, the quantitative analysis of these industries can not identify the obstacles to their development (Popkova, 2011). The strategy of catching up of countries will not succeed

as long as the “institutional trap” will not be eliminated by means of overcoming the “underdevelopment whirlpool” that represent a situation of loss of the ability of countries to economic growth and development because of the time lag and necessity to confront the negative impact of globalization (Figure 2).

Time delay can lead to deep tightening of the country in the “underdevelopment whirlpool” in the situation of loss of resources, expressed in the outflow of capital, brain drain and lack of natural resources.

Model of Analysis of the Dynamics of Cross-country Disparities of Economic Growth:

In order to analyze the phenomenon of “underdevelopment whirlpool” it is necessary to define its basic parameters, namely the depth and speed of tightening into the whirlpool. The depth of the funnel reflects the time lag of the country tightened into the whirlpool from the leading countries in the world markets. It can be measured with the use of time map asymmetry. Speed of tightening of the country into the whirlpool reflects the decline in the efficiency of use of factors of production (labor, materials and capital), whereby the ratio of marginal positive effect to the limit the use of factors of production is going to zero and is calculated using the following formula:

$$V = \partial R / \partial C \rightarrow 0, \quad (1)$$

where V-speed of tightening into the whirlpool; ∂R -limit the use of factors of production; ∂C -limit investment factors of production.

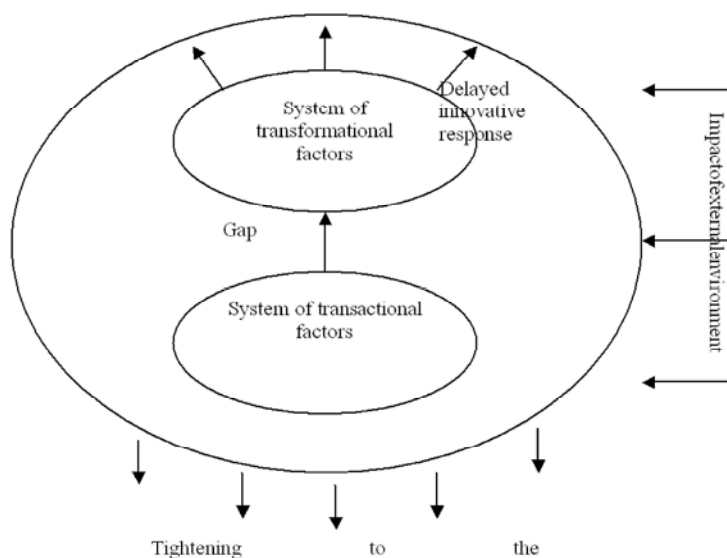


Fig. 1: Mechanism of tightening to the “underdevelopment whirlpool”

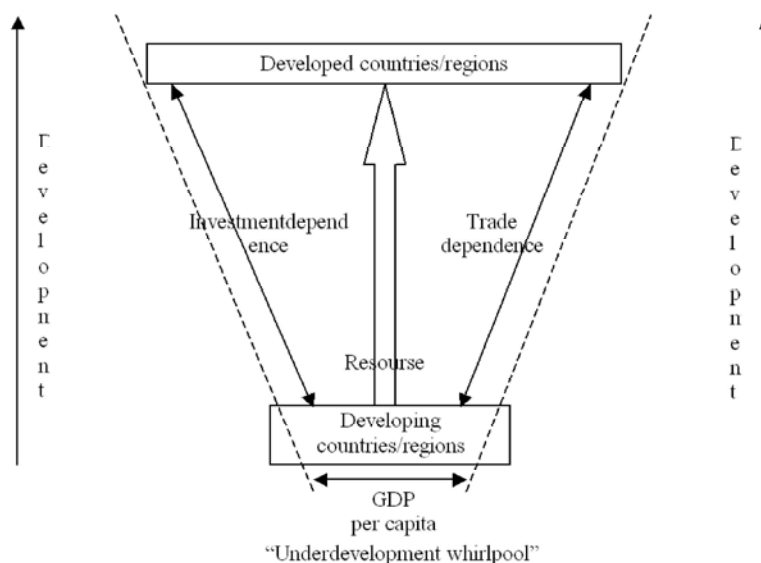


Fig. 2: Process of tightening to the “underdevelopment whirlpool”(Popkova, 2010)

Table 7: Model of calculation of “underdevelopment whirlpools” (Popkova, 2010)

Country/region	$GDP_{C^j}^{Y_i}$	$Y_GDP_{C-developed}$	$Y_i - Y_GDP_{C-developed}$	$GDP_{C^j}^{Y_i}$	$Y_GDP_{C-developed}$	$Y_i - Y_GDP_{C-developed}$	D	Speed	$GDP_{C^j}^{Y_m}$	$Y_GDP_{C-developed}$	$Y_m - Y_GDP_{C-developed}$	D	Speed
C^1													
C^2													
...													
C^i													
...													
C^n													

Notes:

1. C^j -country/region, where $j = 1...n$;
2. $GDP_{C^j}^{Y_i}$ -GDP per capita of the country C^j , where Y_i -years of calculation of backlog of developed countries, where $i = 1...m$;
3. $Y_GDP_{C-developed}$ -year when GDP per capita of the country C^j (from the previous column) match GDP per capita of developed country;
4. D-change of the depth of “underdevelopment whirlpool” in the reporting intervals, $D = (Y_i - Y_GDP_{C-developed}) - (Y_{i-1} - Y_GDP_{C-developed})$;
5. Speed-speed of tightening of the country into the “underdevelopment whirlpool”, $Speed = D / (Y_i - Y_{i-1})$.

Speed of tightening of the country into the “underdevelopment whirlpool” becomes higher during the process of oncoming to zero.

In order to calculate these parameters it is necessary to compare GDP per capita of the analyzed region with GDP of developed area/region. If GDP of development area/region is less, we should make the calculation of the depth of “underdevelopment whirlpool” and the speed of tightening into the “underdevelopment whirlpool”.

The depth is determined by comparing the gap for two consecutive periods of time under consideration. Speed is determined by division of depth of the “whirlpool” on time interval between two successive dates of analysis. The economic sense of depth of “underdevelopment whirlpool” consists in the number of years for which the territory lags behind the considered time interval, speed of tightening shows how much this tightening increase in one year.

The analysis of the dynamics of cross-country disproportions let us build the map of “underdevelopment whirlpools” for separate countries (Figure 3). “Underdevelopment whirlpool” is a dynamic process that can be enhanced and accelerated or slow down and ease off at different times depending on access to resources. Under the impact of globalization of the world economy tightening in the “underdevelopment whirlpools” increases in times of crisis, as the situation on the economies of developing countries heavily depends on the situation on the world (Popkova, 2010).

There is also a scientific theory put forward in the 70-ies, according to which the tightening of a developing country in the “underdevelopment whirlpool” is defined as a positive process, which subsequently provides the lagging country not only to catch up, but even surpass the developed countries. The reason is that during

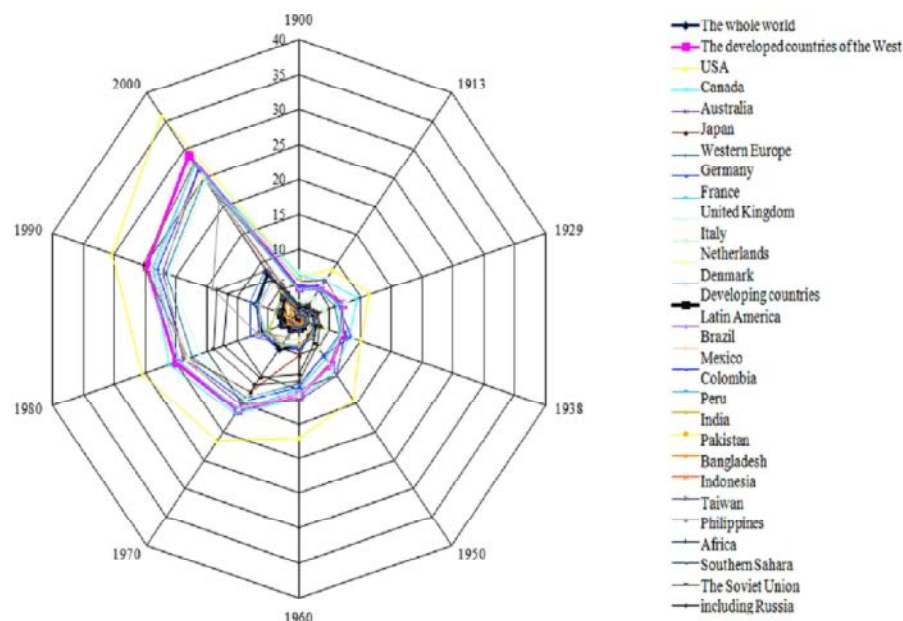


Fig. 3: Map of “underdevelopmentwhirlpools” of developing countries

the development of innovation conducted by the developed countries that are the engine of the world economy requires large-scale investment. Developing countries use ready-made technologies developed and tried out without spending an investment in their creation and not risking, investing in innovation.

Creation of Strategies of Economic Transformation:

There are many examples of successful economic transformation of developing countries from the “underdevelopmentwhirlpool” into the advanced countries. So, for example, Germany and the United States surpassed Britain at the turn of the 19th and 20th centuries. And this process let developing countries take the leading positions in the world economy at the same time with the departure of the developed countries by the back seat, as it happened with Ancient Egypt, Babylon, Athens, Assyria, Sumer, Rome and Persia.

Leadership of the country depends of the level of its GDP, in the creation of innovations and formation of transactional factors. The most important innovations include new technologies the use of which requires a certain scientific and technical basis, which peripheral countries do not have. Therefore, new technologies are available to them. However, they are necessary for the development of these countries and their economic transformation. New technology is the cause of the formation and deepening of the gap between the countries of core and periphery.

By the beginning of 1990s seven leading post-industrial nations had 80.4% of the global computer hardware, controlled 87% of the world's registered patents and provided 90.5% of high-tech manufacturing. The volume of exports of U.S. intellectual property rose from 1986 to 1995 by 3.5 times, while the trade surplus in this region exceeded \$ 20 billion, by 1995 the United States had three-quarters of the world market of information services and processing, current capacity of which is 95 billion dollars.

The inflow of huge financial resources to the developed countries that are not accompanied by decrease of volume of intellectual property, which remains at the disposal of their citizens, let them sequentially increase the pace of scientific and technological revolution. Throughout the 1990's countries-members of OECD spent about \$ 400 billion in prices of 1995 on research and development.

Today the share of only the USA accounted for 44% of global expenditures for these purposes; while Latin America and Africa, taken together, provide less than 1%, the number of scientific and technical workers per 1 million population in the United States is 126.2 thousands of people, while the world average is not more than 23.4 thousand. American companies spend about \$ 30 billion annually only for increasing the educational level of their employees private, which is equivalent to the total appropriations for all areas of scientific research in Russia, China, South Korea and Taiwan.

According to the theory of A. Gerschenkron, the quality of economic growth in the advanced countries depends on the degree of economic backwardness of lagging countries and changes over time (Nikolaeva, Shachovskaya, Popkova, 2004). The concept of economic growth became relevant in the late 16th century, before it we can speak only about the economic development of the countries of the world.

With the absence of socio-economic and technological shocks and shocks lag in economic development could be overcome by copying the innovations of developed countries. In periods of capture of one people by another technology exchange and transmission of knowledge took place in different cultures.

In periods of economic growth leading to a radical change in the economic conditions and the structure of society copying can not lead up to the economic transformation and barely let to slow the catching-up of economies. Here innovation take an important role and innovative wars take place, in which the strategy of catching up is prior to losing.

At the beginning of a strategic lagging in economic development the desire for reduction of the gap in the level of GDP in comparison with the advanced countries, as well as the desire for economic transformation in qualitatively different conditions fundamentally from conditions in developed countries. The failure of these aspirations leads to social unrest in these countries and political instability.

As the result the government tries to implement accelerated inconsistent, selective economic reforms in certain sectors of the economy by borrowing technologies from the developed countries. Catching-up countries are based on historical experience of developed countries and do not take into account current economic conditions and a new quality of economic growth.

In particular, acceleration of industrialization in the era of the information economy, in which creative quality and talent of a person come to the fore and a person, according to K. Marx, is "the measure of all things" (Davis, Meyer, 2000) and can not lead to the same results a hundred years ago. And, as long as all of the countries accept the idea of "catching up", aim to rapid industrialization, it is clear that the task of catching up the post-industrial world with industrial methods is completely unrealistic.

CONCLUSION

Balanced development of the world economy requires the alignment of economic growth in different countries. Strategy of economic transformation let develop measures to bring the country out of "underdevelopment whirlpool". This requires high-quality and full-scale measurement of economic growth. It should be noted that not only developing countries are exposed to this phenomenon, but also countries with developed economies.

The most effective methods of implementation of strategies of economic transformation are investment and innovation. Examples of successful implementation of these strategies are the USA, Germany, Japan, etc. Their experience could be useful for the implementation of the strategy of economic transformation in other countries to improve the welfare of society and reduce of economic disparities around the world.

REFERENCES

1. Popkova, E.G., 2011. Underdevelopment Whirlpools as a Tool of Spatial and Temporal Measurement of Economic Development/. Journal of International Scientific Publication: Economy and Business, 5(1): 298-306.
2. Popkova, E.G. and T.N. Mitrachovich, 2010. The imbalance of economic growth in the regions of Russia: problems of analysis / Е.Г. Попкова, Т.Н. Митрахович// The modern economy: problems and solutions, 2: 24-36.
3. Popkova, E.G. and T.N. Mitrachovich, 2010. Toolkit of analysis of imbalances of economic growth. The Russian economy: from crisis to modernize: mater. intern. scientific and practical. conf., 3: 52-53.
4. Popkova, E.G., L.S. Shachovskaya and T.N. Mitrachovich, 2010. Underdevelopment whirlpools as instrument of world economy polarization measurement /Е.Г. Попкова, Л.С. Шаховская, Т.Н. Митрахович// Global Business and Economics Anthology, 1: 304-309.
5. Nikolaeva, I.P., E.G. Popkova and L.S. Shachovskaya, 2004. Economic theory. Transforming economy: study guide. UNITI-DANA.
6. Davis, S. and C. Meyer, 2000. Future Wealth. Boston (Ma.), pp: 40.

7. Popkova, E.G., L.S. Shachovskaya, M.K. Romaniva and U.I. Dubova, 2013. Bases of Transition of the Territory to Sustainable Development: ModernCity. *World Applied Sciences Journal*, 23(11): 1499-1507.
8. Popkova, E.G., U.I. Dubova and M.K. Romaniva, 2013. Designing the Territorial Marketing Strategy on the Principles of Cluster Policies. *World Applied Sciences Journal*, 22(4): 571-576.
9. Popkova, E.G. and V.I. Tinyakova, 2013. Dialectical Methodology of Analysis of Economic Growth. *World Applied Sciences Journal*, 24(4): 467-475.
10. Popkova, E.G. and V.I. Tinyakova, 2013. Drivers and Contradictions of Formation of New Quality of Economic Growth. *Middle-East Journal of Scientific Research*, 15(11): 1635-1640.
11. Popkova, E.G. and V.I. Tinyakova, 2013. New Quality of Economic Growth at the Present Stage of Development of the World Economy. *World Applied Sciences Journal*, 24(5): 617-622.