NEW PROSPECTS OF ECONOMIC GROWTH IN CONTEXT OF UNDERDEVELOPMENT WHIRLPOOLS PHENOMENA

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Abstract: The author seeks to provide a new complex approach to the phenomena of economic growth. The article covers such issues as the nature and the structure of economic growth as well as the main forms of its manifestation. The author sees economic growth mostly as a social process, following basic humanistic principles. New features of contemporary economic growth are investigated in the paper via the system of economic science tasks and general economic development tendencies. The notion of “underdevelopment whirlpool” is introduced; the main features of the phenomena are exposed. On the basis of the given methodological toolset the temporal development asymmetry of certain economies is traced by comparing the levels of GDP per capita in developing and developed countries throughout different periods of time.

Key words: economic growth, underdevelopment whirlpools, development asymmetry, developing and developed economies, GDP.

1. Introduction

Nowadays economic growth is the key issue of the macroeconomic policy of all countries. The developed countries with high income level and steady GDP growth rate are now concerned with prospective changes of economic growth caused by globalization. They also weigh up social consequences of economic growth for the population of their countries. The developing countries face a different problem: how to prioritize the policy of sustainable and long-term growth rate on a qualitative innovation basis at the state level. For all that, economic growth should be fundamental for the growth of standard and quality of life and serve as the material base for the society’s sustainable development, the guarantee of the countries’ equitable participation in international economic processes along with developed countries.

European economies are still overcoming the consequences of the protracted crisis. Strong trade deficits in many EU countries were not avoided, which led to financial restrictions and have provoked industrial decline (Guisan, 2011). The recession’s “tension” and “depth” indicate clearly that there might be the conceptual, profound reason, related rather to the very macroeconomic models’ unsoundness than any other superficial problems. For example, as Benkovskis et al. (2012) state, the “traditional” CESEE growth model “has come into question in the recent crisis as credit conditions deteriorated and foreign capital inflows receded”. In the scientists’ opinion, this “redirects the focus of

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attention towards domestic growth drivers and the role of technological change for the region's growth potential”. In our previous work, the same issues proved to be true for the Russian economy, while we sought to resolve the problem of Russian economic growth’s unsustainability. In addition, we came to the conclusion that the economic growth based on such factors as raw materials market’s conjuncture can neither lead to public prosperity, nor provide effectiveness and competitiveness growth in the national economy (Shakhovskaya, Popkova, 2006). Under the conditions of globalization it is essential that any national economy should dispose not only qualitative, but also quantitative economic growth factors which effect is the innovative nature of the economy development and capability of national producers to compete in the domestic as well as in global markets. For example, in the opinion of Guisan (2009), social capital, including both government quality and social values, strongly influences on demand and supply, as well as on the behavior of financial institutions and other economic sectors.

The sustainable growth rate in “still-unstable” (e.g. Russian, Eastern European, Baltic) economies, unlike the present dependence on the use of natural resources, must be first and foremost associated with the concentration of “intellectual capital”. From the point of view of economic security, the new prospects of economic growth (NPEG), based on the innovative type of reproduction, may facilitate development of breakthrough (science intensive) industries capable of bringing the economy up to a new level of productive forces, implement the outcomes of scientific and technological revolution, and raise living standards of the population.

We introduce the notion of “underdevelopment whirlpools” in order to assess the loss of opportunity by developing countries to create a system of transactional factors - by comparing the GDP of a country per capita and the GDP of developed country and the very value’s dynamics.

The basic conception of the causes of underdevelopment are dualism theories (Boeke), theory of Balanced Growth (Nurske), Theory of Unbalanced Growth (Hirschman), Theory of Stages of Growth (Rostow), 'Big-push' Theory (Rosenstein-Rodan), Theory of Development Poles (Perroux), Theory of Circular Causation (Myrdal), Sociological Explanation of Socioeconomic Change (Weber, Parsons, Smersel), Theory of Social Change (Hagen), Theories of Circular Deterioration of Terms of Trade (Prebisch), Theory of Immiserizing Growth (Bhagwati), Classical Imperialism Theory (Luxemburg, Lenin), Modern Imperialism Theory (Santos, Galtung) and others.

2. New Prospects of Economic Growth (NPEG) Concept

While conducting theoretical analysis of economic growth one should do a complex research of new prospects of economic growth, defining major methodological framework for this phenomenon as well as determining its quintessence, content, structure, main forms of its manifestation. In spite of the
fact that this phenomenon is constantly considered within the information space of mass media, and researched by politicians and economists, no system approach has been applied so far to the research of new prospects of economic growth (NPEG).

In order to shape the NPEG definition, we will state the following issues. Economic growth is a social process; its new prospects may appear only in case of following the new humanistic principle. In this respect its manifestations, results, antagonisms are predetermined. In the constantly changing world economic processes acquire the new essence, modified categories, notions and priorities.

In developing countries, economic science (and “practice” as well) faces many problems that need both to be indicated and reviewed on the basis of modified vision imperatives and the new paradigm of knowledge. The theory of economic growth evolution including several components such as social developmental theory of economic growth, conception of new prospects for economic growth, quality shifts theory can be considered as a new paradigm of knowledge that helps to create new scientific vision of new prospects of economic growth by expanding existing economic knowledge.

The analysis of abstract concepts of society’s role in its economic and social development and the analysis of economic growth components revealed the following:

1. The traditional theories of economic growth are mainly concentrated and based on determining factors, sources and driving forces of economic growth, regulation of which enables extended reproduction.

2. Factor system is subject to objective changes leading to social factors prevailing, based on “humanistic”, “anthropogenic” paradigm.

3. Every direction of studying economic growth essence along with general features has its specific ones, which cause different meanings and implications of economic growth.

4. The goal of economic growth gradually changes from «growth for growth» to «growth for development».

5. Evolution of economic growth theory preserving separate generally accepted postulates passes under control of developmental theory, acquiring conditionality, modernity, and essentiality.

Undoubtedly, today the development of market economy requires reaching new prospects of economic growth, implying complex, structural and attributive transition of the whole economic system to the new stage of social production; at which economic growth acquires new features and attributes, new effectiveness and new course of development. As the subject matters new prospects of economic growth require holding up to close examination of all hypostasis of social existence and especially the key ones: time and space.

The basis for the present-day economic growth as a phenomenon is its prospective change that is not just a set of qualities, typical for the economic growth, but a fundamentally new stage in the economic development and
innovative transformation of the majority of processes shaping the society development. The reason for prospective changes of economic growth is economic system restructuring. It is the structure, i.e. a certain interrelationship between the elements that measures qualitative and quantitative transformations, as well as economic growth modifications. For all that, the concept of “structure” reflects the most essential interrelationships that provide the sustainability of qualities and functions of the economic growth system in view of its procedural integrity. The dynamic change of economic growth represents an invariant of its behavior, i.e. the features that remain unchanged in its behavior at any duration.

Each economic system is characterized by its own mode of social production that has a correlating system of production relations. Every new turn of economic development adds new elements to the already existing structure. The elements become fundamental for this particular period of development. Thus in the agrarian society the structure of the technological mode of production includes human physical abilities, manual implements and natural factor. In the industrial society the above structure is complemented by machinery and electric power. In post-industrial and further on, in informational society, the dominating growth factors are information, knowledge and institutes. Science under the conditions is turned into the direct productive force of social production. Guisan et al. (2012) states that among various explanatory variables of economic development, from demand and supply side, “most of them are related with the levels of education, investment and savings per head”.

Each mode of social production has its new prospects of economic growth that are formed as the result of transition. Unlike sudden change, transition prepares economy for the new forms and methods of management in the process of the progressive development of productive forces (fig. 1).

(The establishment of interrelationship of social production modes and economic growth types allows us to speak not only of traditional (intensive, extensive, industrial, post-industrial), but also of such new types as natural transformational, mobilization transformational, transactional and institutional.

The natural transformational type of economic growth implies simple transformation from the natural factors to the final products in the pre-industrial mode of social production.

The mobilization transformational type of economic growth is based on the accumulation of industrial capital at the expense of the productive forces progress in the industrial society.

The transactional type deals with the emergence of new relations and relationships between economic subjects, dramatic enlargement of economic space, as well as the influence of international actions on different spheres of societal life. This particular type ensures transactions of natural products that have
been transformed into factors, and binds their producers and consumers with the help of common relations and relationships within the processes of distribution and exchange. Given their common social background, it also integrates them by means of institution, organization and transformation.

The institutional type of economic growth domination characterizes the contemporary informational stage of economic development. This type is based on the prevailing role of institutions which are used as the tools for the growth of social production efficiency. The transition to the institutional type of economic growth provides the establishment and enhancement of the rational order among countries, the order that is less dependable on market uncertainty and implies more liberal organization of social production. Education becomes one of the main factors of development so educational institutions’ modernization in poorer countries is very important for improving real production per inhabitant and for getting real solutions to poverty and stagnation (Guisan et al., 2001). Two main variables, related to the economic development, from this point of view, are human capital and social capital. The former includes, for example, the years of schooling, expenditure on education, R&D activities, and the latter implies “trust in government, trust in society, and others, moderation of population growth, industrial development and foreign trade” (Guisan, Neira, 2006).

2 Methodology of Research

2.1 Downside spirals of poverty

The spatial nature of the new quality of economic growth is revealed in the existence of points (poles), where the properties and characteristics of the growth are concentrated. Theoretical and conceptual frameworks of investigated object’s spatial concentration are enclosed in the theories of unbalanced development of the world economic system.

K. Marx has revealed a number of aspects of the economic system’s internal asymmetry – primarily the impact of the division of labor on the asymmetry between the production factors. The theory of "poles of growth" of F. Perroux, the "centre-periphery" model of J. Fridman, and the model of innovations diffusion of T. Hagerstrand (Hagerstrand, 1968) have made a significant contribution to the analysis of spatial aspects of an economic system development. Special interest to the problem of economic development polarization is caused by problems of the world economy functioning, among which the problems of developing countries take considerable place. Within the framework of neo-keynesian school the range of autarkic theories described in the papers of W. Rostow, N. Rosenstein-Rodan, E. Domar, R. Harrod, A. Nelson was developed (Domar, 1948; Harrod, 1939; Nelson, 1956; Rosenstein-Rodan, 1943; Rostow, 1960).
More clearly the asymmetry of the world’s economic structure can be observed using the following graphic interpretation (Fig. 2).

(Insert Figure 2 here)

In addition to the spatial dimension, there is a temporal aspect, which brings about the substantial changes to the analysis of the phenomenon of the new quality of economic growth. Historic changes are usually considered in terms of formation approach and evolutionary theory. It seems logical to assume the existence of specific properties of economic growth for each formation, and consequently, the corresponding forms of economic organization.

The temporal nature of the new quality of economic growth consists in the irreversibility of global economic development and the movement of the world economy on the path of STSC (Science, Technology & Society).

The concept of economic time allows determining a place for each country in the evolution of economic growth. The solution of a problem of “catching up” development policy creation must be based not merely on the analysis of economic indicators gap, but on the assessing of a temporally defined gap.

As many scientists state (e.g. Warburton, 2012; Miles, 2011), that the consequences of globalization and internationalization, including equity, have been controversial; “essentially because some nations have become poorer, a newer category of workers are increasingly becoming structurally unemployed, and the global economy has become more susceptible to systemic risk and global recessions because of the newer and higher”. Although globalization involves the pace of innovation, the removal of international trade barriers (economic integration), and the transformation of the cost of production, there is still no evidence that capital account openness leads to economic growth.

The temporal development asymmetry of certain economies can be traced by comparing the levels of GDP per capita in developing and developed countries throughout different periods of time. According to Popkova et al. (2010), the majority of developed countries managed to reach the modern level of GNP per capita during the period from 1900 to 1960, having won the time for economic modernization (Table 1, Fig. 3).

(Insert Table 1 here)

(Insert Figure 3 here)

The global conflict of the modern economic growth lies in its inequality. Therefore the dispersion analysis of per capita intergroup GDP in developed and developing countries of the world is of special importance. The above calculations based on the data provided have shown that the higher is the indicator value, the wider is the quantitative gap between the developed and developing country
groups. For all that, the intergroup dispersion itself is an absolute index and the dispersion root, brought to the average index is relative. The quality of the latter allows us to dynamically weigh different years, reflecting structural differences and their changes in time (Table 2).

(Insert Table 2 here)

Polarization of the world economy led to formation of «underdevelopment whirlpools» representing the system of space-and-time developmental spirals, by which countries overcome barriers of “downward spirals of poverty” while trying to occupy their own niche in the international division of labor (Fig. 4).

(Insert Figure 4 here)

"The downward spirals of poverty" impede the entrance of developing countries on equal terms into the modern world. Moreover, they are the reason of international isolation and dualism strengthening, not only domestically but also internationally. “Underdevelopment whirlpools” occur under the pressure of economic expansion from developed countries, thus creating conditions for their economic and political hegemony and additional opportunities for development, measured by GNI (GDP) growth per capita.

2.2 Underdevelopment whirlpools mechanism

«Underdevelopment whirlpools» emerge under pressure of developed countries’ economic expansion, creating conditions for their economic and political hegemony that fosters emergence of additional opportunities for their development, which has an effect on the growth of GNI (GDP) per capita.

The nature of «underdevelopment whirlpool» can be defined as the loss of opportunity by developing countries to create the system of transactional factors (Popkova, Shakhovskaya, 2006). This phenomenon is caused by the necessity to develop the system of transformational factors. The only way to go out of the overglobalized «underdevelopment whirlpool» is not a catch-up development, but generating new developmental spirals on the basis of their own innovative cycle. Therefore the specific feature of new prospects of economic growth is generation of another innovative cycle, which starts new developmental spirals (Fig. 5).

(Insert Figure 5 here)

To determine whether the considered developing country goes into the «underdevelopment whirlpool» it is necessary to compare its GDP per capita with the GDP of a developed country. If the GDP of the developing country is less it is necessary to take into account the speed of the downward spiral into «underdevelopment whirlpool». In addition, the closer to zero the ratio in GDP of
the advanced country is to the GDP of a developing one, the stronger the speed of the downward spiral. The closer ratio aspires to one or more than one, the more poorly the speed of the downward spiral of the country in «underdevelopment whirlpool».

\[
V_{AS} = \begin{cases} 
\frac{S}{t} \frac{GDPR}{GDPR}, & 0 < \frac{GDPR}{GDPR} < 1 \\
0, & \frac{GDPR}{GDPR} = 1 \\
\frac{S}{t} \frac{GDPR}{GDPR}, & \frac{GDPR}{GDPR} > 1 
\end{cases}
\]

(1)

where \( VAS \) – speed of downward spiral; \( GDP_R \) – GDP per capita in developed country; \( GDPR \) – GDP per capita in developing country; \( \Delta S \) – change of depth, the size into which time backlog of developing country has changed for the considered period; \( \Delta t \) – the period for which change of time backlog of developing country is considered.

If the depth of the developing country backlog increases in dynamics, it means that the considered country has been deeply pulled into a whirlpool. In this situation speed has a positive value, and it means number of backlog years for a year. The negative value of speed means only that a considered developing country has not lost in value of GDP per capita, and has increased it for the examined period. However, it is still in the «underdevelopment whirlpool», and will have an opportunity to leave it if the value of GDP per capita increases, that the ratio to GDP of the developed country increases to one or to exceed one.

3. GDP per capita comparison within the developed and developing countries

In order to demonstrate the underdevelopment whirlpools measuring method some calculations were made that provided us with the following results submitted in tables 3, 4, 5.

It should be noticed, that particular countries (Russia) constantly have negative speed of downward spiral in «underdevelopment whirlpool», meaning that these countries have positive economic dynamics. And by means of the certain economic policy they reduce backlog from the developed countries.

(Insert Table 3 here)

(Insert Table 4 here)

(Insert Table 5 here)
An abstract model of “underdevelopment whirlpool” calculation is represented in Table 6.

(Insert Table 6 here)

4. NPEG-Index Calculation and Underdevelopment Whirlpools’ Genesis

We suggest introducing the new prospects of economic growth index (NPEG-index), including three components: economic, social, environmental - each of which in its turn is defined with some specific indices - as the social utility index of national economy transformation.

NPEG-index is valued as the simple average of all comprising indices and can be considered as a total integrated qualitative indicator of social and economic development of a country. In our research NPEG-index was calculated for a number of countries, that makes evident that Russia considerably falls behind in qualitative parameters of economic growth.

Out of the indices under discussion the most thoroughly studied is the human development index, introduced by the experts of the UN Development Program. The index measures a country’s actual potential ion order to meet people’s material and spiritual needs and requirements and is used by specialists to monitor the social progress of various countries and humanity as a whole.

The noted index reflects not only the standard of well-being, but also the life quality of the countries’ population, and is the simple average of these three most demonstrable indices of living standard: expected life length, education standard and per capita real GDP. The closer the index value to 1, the higher is the level of human development potential in a given country, and the nearer is the society to the implementation of its goals.

The next element of the aggregated NPEG-index is access to information technologies (IAIT). It includes eight variables in five fields that define the NPEG value of each country. The fields are: the existing infrastructure, acceptable access costs, education standard, quality of information communication technologies (ICT) and the Internet application. The eight indices are grouped in five categories. Each index is brought to an indicator with the value from 0 to 1, which is calculated when divided by the maximal value or “target index”. After that each indicator is weighed in it category, and the final value is averaged to get the IAIT common value.

(Insert Figure 6 here)

The growth of an economy competitive strength is the fundamental trend of the qualitative socio-economic development. There are various criteria of a country’s competitiveness at macro- and micro-levels. The most authoritative and demonstrable of them is the research of the World Economic Forum. In its annual
"Global Competitiveness Report" there are data on the competitiveness of most countries of the world. The competitive strength of a country is measured with two complimenting indices. The first is the Growth Competitiveness Index, introduced by G.D. Sash and G. Macarthur, the second is the Business Competitiveness Index, based on M. Porter’s competition theory.

The real savings index is the result of the adjustment of aggregate domestic income on the basis of natural resources depletion and environmental pollution losses. The index is calculated in the following way: GNP – Aggregate household and government consumption = Gross Domestic Savings – Capital consumption = Net Domestic Savings + education expenditures – energy recourses depletion – mineral recourses depletion – forest depletion - blowout (CO2 and pollution) losses = Real domestic savings (percentage of GNP). The real savings index is important for Russia as it shows the need to compensate the depletion of natural capital by the increase of investment in human and physical capitals.

The real savings index is a newly introduced indicator that is estimated on the assumption of real savings by analogy with the human development index:

\[ Jx = \frac{(x_i \text{ actual value } - x_i \text{ minimum value})}{(x_i \text{ maximum value } - x_i \text{ minimum value})} \]

NPEG-index is estimated as averaging of all the comprising it indices and is an aggregate, integrated and qualitative indicator of socio-economic development of any country.

5. Conclusion

(a) The analysis that estimates economic growth dynamics and tendencies in world developed countries for the last 100-120 years, prove that economic growth at the turn of the millennium was caused by the concentration of intellectual capital that opens new prospects of economic growth in modern conditions.

(b) The important role of the human factor in modern economic world implies essentiality of creating and keeping at the appropriate level institutions regulating human activity.

(c) The nature of "underdevelopment lags" can be defined as the loss of opportunity by developing countries to create the system of transactional factors as they need to maintain and develop the system of transformational factors. The only way out of the overglobalized “underdevelopment lag” is not a catch-up development, but generation of new developmental spirals on the basis of their own innovative cycle. Therefore the specific feature of new prospects of economic growth is generation of innovative cycles that start new developmental spirals.
References


Tables

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<th>Per capita GDP rate in developed countries, by year</th>
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Table 2 - Intergroup per capita GDP dispersion (developed and developing countries), by year

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Table 3 – Average world GDP per capita dynamics, US$ thousands

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Table 4 - GDP per capita in prices and by purchasing-power parity, US$ thousands

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Source: Historical Data Graphs per Year. Index Mundi.

Table 5 – Underdevelopment whirlpools calculation (USA value as a basis) *

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Table 6 – Abstract model of «underdevelopment whirlpools» calculation**

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Source: Historical Data Graphs per Year. Index Mundi. [http://www.indexmundi.com/g/g.aspx?c=xx&v=67](http://www.indexmundi.com/g/g.aspx?c=xx&v=67); World Development Indicators. [World DataBank](http://databank.worldbank.org/ddp/home.do?Step=3&id=4).

* columns 2, 5, 10 – value of GDP per capita in developing countries in 1999, 2005 and 2011 accordingly;
columns 3, 6, 11 – years with the corresponding value of GDP per capita in USA;
columns 4, 7, 12 – «underdevelopment whirlpool» depth (a time lag);
columns 8, 13 – change «underdevelopment whirlpool» depth in time (for 6 years);
columns 9, 14 – speed of aspiration into an «underdevelopment whirlpool».

** C$^j$ – country / region, j = 1…n;
GDP$_Y^j$ – GDP per capita in C$^j$, где Yi – time lag (in years) between the C$^j$ and the basis country / region, i = 1…m;
Y$_{GDP_C}$ – a year, when GDP per capita in C$^j$ corresponds with the same value in the basis country;
D – «underdevelopment whirlpool» depth change within the current time lag, D = (Y$_i$ – Y$_{GDP_C}$) – (Y$_{i-1}$ – Y$_{GDP_C}$);
Speed – the speed of aspiration into the «underdevelopment whirlpool»; Speed = D/(Y$_i$ – Y$_{i-1}$).

Annex on line at the journal Website: [http://www.usc.es/economet/eaat.htm](http://www.usc.es/economet/eaat.htm)
Fig. 1 - The interrelation of social production modes and socio-economic formations with the types of economic growth
Fig. 2 – Economic development asymmetry (Popkova et al., 2010)
Fig. 3 - The temporal asymmetry of the world economic development
Fig. 4 – Downward spirals of poverty

Fig. 5 - Mechanism of dragging into the “underdevelopment whirlpool”
Fig. 6 - NPEG-index components