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СПЕЦИФИКА ЦИКЛИЧНОСТИ СТРУКТУРНЫХ СДВИГОВ В УСЛОВИЯХ ТЕХНОЛОГИЧЕСКОЙ МОДЕРНИЗАЦИИ ЭКОНОМИКИ

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Аннотация.
Феномен углубления циклической и структурной волатильности экономики, который оказывает негативное влияние на технологическое обновление и экономический рост, сегодня представляет особый интерес для исследователей. Структурно-циклический подход, представленный в статье, раскрывает природу цикличности не только через ее влияние на структурные сдвиги, технологии, инвестиционные потоки, т.е. внутренние факторы, но и через влияние внешних факторов, которые влияют и формируют качественные параметры устойчивости системы национальной экономики. Данный подход позволяет выявить взаимосвязи структурной динамики и циклических колебаний, используя анализ взаимного влияния цикличности и структурных сдвигов, а также оценить обратное влияние структурных диспропорций (устойчивость и нестабильность структурных изменений) на глубину и характер цикла в целом, на индикаторы межфазной и внутрифазной макроэкономической динамики. Это призвано расширить модель взаимодействия цикла со структурой экономики, выявить факторы их переплетения и влияния на развитие технологических платформ и динамику трансформационных процессов. Для преодоления затяжного структурного кризиса и технологического отставания, выхода из долгосрочной рецессии и изменения траектории экономического развития в переходный период необходимо разработать теоретические положения и неоиндустриальные методы реализации антициклической и структурной политики.

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PECULIARITIES OF CYCLIC STRUCTURAL SHIFTS UNDER CONDITIONS OF TECHNOLOGICAL MODERNIZATION OF ECONOMY

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Abstract.
In modern economic theory, certain methodological gaps are observed in substantiating the relationship of structural changes and economic cycles, explaining the reasons and factors for their mutual influence. The views of most economists are based on the endogenous nature of structural changes and, in many respects, the exogenous nature of macroeconomic cyclicality. Moreover, the nature of the nonlinearity of structural changes in the economy, the structural mechanism for translating external shocks into the macroeconomic cycle, and the role of positive structural changes in antirecessive regulation remain without due attention. One of the important aspects of the structural-cyclic methodology is the understanding of the technological development of the economy not only as an exogenous, but also an endogenous condition for structural transformation, associated with profound changes in the system of national reproduction, and having its own non-linearity. The latter, in turn, explains the cyclical nature of the structural shifts themselves, as well as their priority role in ensuring phase transitions of macroeconomic cycles.

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1 Introduction / Введение

In modern environment, when a new technological breakthrough is accompanied by global and national economic instability, cyclical structural shifts patterns are modified, acquiring new content and forms. This is evident by the fact that the dynamics and nature of structural shifts are greatly influenced by cyclical fluctuations in the economic situation, and this process is intensified by feedback, thus forming an integration model of structural-and-cyclical paradigm in economic development. Macroeconomic dynamics show different kinds of cyclical fluctuations, classified according to their prerequisites, causes, duration, depth and social-and-economic implications. In the course of formation of new pro- and countercyclical factors, the impact of economic cycles becomes different, which directly affects the nature, speed and effectiveness of shifts in the structural development of the economic system.

It should be mentioned that, along with the growing research interest in the scientific economic environment in the study of technologically induced structural shifts, the problem of cyclical dynamics of structural shifts in the development of economy is objectively updated, as economic practice is influenced by a systemic crisis. The weakest link in economic research is the absence of an integrated approach to the analysis of modern cyclical, innovative, technological, structural and social development of economy, and the features of these processes in modern Russian economy, due to the peculiarities of the Russian market model and mainly the trends of new technological revolution of convergent type.

It is impossible to study the essence and economic nature of structural shifts without taking into account the cyclical dynamics of economy. At the heart of transformation and development of economy, assuming interaction of all its spheres and levels, there is a synergetic approach. It assumes the possibility of undertaking a dynamic analysis without limiting the research of the states of economic system exclusively to equilibrium and unchanged. Methodologically there is the possibility of analysis in a dynamic field, the very presence of which does not exclude the establishment of equilibrium.

The economy shows the ability to perceive new technologies due to its own synergistic potential. The structure of economy, characterizing the interrelationship and interconnection of its elements, also has properties with synergistic potential. In respect to the economy, the manifestation of self-organization, the ability to transform and the emergence of new qualities is revealed in the form of fluctuations in economic situation when the transfer of new technologies is accelerated. Thus, it can be observed that cyclical fluctuations occur as a result of the successive movement of economy, inspired by scientific and technological progress [1].

There is a certain dualism in the properties of synergy, manifested in the fact that it postulates fluctuations as potentially real factors of further development of the system. On the other hand, cyclicity as a characteristic of economic development implies some dynamic order of processes over time. Cyclical processes interact with self-organizational nature of system and act as a mechanism for adapting to technological innovations that are rightly referred to external influences. The cyclical development of the economy manifests itself as a form of its adaptation to disturbances from the open environment, which are inevitable when obsolete technologies are replaced by new ones, with leaps in productivity and a radical change in the proportions of labor and capital use.

2 Materials and methods / Материалы и методы

In economic development, crises are an indispensable element of cyclical dynamics and are defined as the most painful, chaotic and uncertain phase of the cycle. The special feature of the crisis phase is that it covers the most risky and contradictory period of cyclic dynamics, which results in its formation in a qualitatively new state. The characteristic features of this period are the disruption of the established equilibrium and the formation of a new basis of economy as a result of structural shifts. Within the cyclical dynamics of economic development, crises are an indispensable attribute and mechanism for economic renewal. A common feature of all crises is the impossibility of social development within the framework of the previous model of functioning of society and economy [1]. On the other hand, each crisis is specific because of the different conditions, reasons, factors and scope that determine the direction of economic development.

The establishment of the foundations of capitalist system of economic management by the beginning of the 19th century contributed to the formation of periodic crises, which aroused great interest among researchers of these problems. The works of J. Sismondi [2], K. Rodbertus [3] and T. Malthus [4] recognized the possibility of general crises of overproduction under the capitalist system of economic

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management and raised the question of the ways in which they might arise. J. Sismondi linked the causes of crises to internal contradictions and imperfections in capitalist economy organization. The irrational behavior of economic agents, focused on price and cost dynamics, he deduced from the asymmetry of information in the market. According to T. Maltus, the overproduction crisis is the result of an unrealized portion of the produced product. Under-consumption of the population as a result of slower wage growth compared to the dynamics of the supply of goods is the cause of crises of overproduction, K. Rodbertus explained. The original approach is that of K. Juglar [5], who argued that rising savings were causing higher commodity prices and worsening the trade balance in economy. Under the influence of forced measures, the decline in prices will provoke the bankruptcy of business structures and the slowdown of market activity of agents.

K. Marx paid particular attention to the issue of economic crises. The source of recurrent crises, according to K. Marx, is the specific characteristics of the capitalist mode of production, as well as the uneven implementation of investments [1]. The deep contradictions of capitalism, which are the immediate cause of crises, K. Marx saw in capital increasing and narrowing the basis on which it operates. That is, the investment capacity of enterprises is growing, spurring the growth of production volumes, and the purchasing power of the large masses of population remains the same. That's what causes overproduction. In addition, the crisis reduction may be the result of a sharp decline in the renewal of the means of production resulting from the uneven turnover of fixed capital [6].

The innovative theories of economic cycle that emerged in the early 20th century are related to the work of J. Schumpeter [7], who proposed the interpretation of economic crises in the following context. The periodic imbalance of supply and demand in the market is differentiated by sectors of the economy, manifested in the form of a crisis in monetary sphere, agricultural sphere and industrial sector. Schumpeter saw the cause of economic crises both within and outside the economic sphere and argued that different forms of crises had different signs. The crisis is disrupting the previous course of economic development, interrupting its progressive movement. However, when it is overcome, the economy acquires completely new features: "the mass of values is destroyed, the basic conditions are changed."

A great contribution to the study of fundamental moments of crisis theory was made by A.A. Bogdanov [8], who proposed a general definition of crisis as a change of organizational forms of the complex, which is characterized by the emergence of something fundamentally new, organizational different than before. It defines the essence of crisis as a violation of old and a transition to a new state of economy, the achievement of which is considered as a limit to the changes taking place in the crisis. Exploring the internal structure of crisis, he described the stages of going through the crisis. At the point of rupture of the two systems a certain boundary layer is formed, which transforms and acquires a new structure of exchange with the external environment and new properties. The structural shifts of the boundary layer are diffused onto the inner layer, resulting in a new equilibrium in which the system can exist long enough [1]. The speed of achieving a new equilibrium depends largely on the adaptability of economy to change. The economic crisis is not a single-step act of the general scheme of economic development, but a dynamic process involving a change of phenomena and states in the development of economy.

The primary cause of the cyclical mechanism is also seen within Neoceinsian concepts (the theories of J. Hicks [9], J. Duesenberry [10]) and interpreted as falling returns on investment, entailing massive capital outflows from the investment sector, and a lack of capital in economy to adequately build investment capacity. Summing up the study of theoretical aspects of the economic crisis, it should be noted that periodic crises are an integral phase of the cyclical mechanism of economic development. The attenuation of potential for progress of the fundamental elements of economic order leads to the emergence of a crisis; the economy loses its organizational structure, efficiency and the emergence of elements of new order. The formation of preconditions for transformation of economy and transition to its new qualitative state, becoming an integral element of economic development – such is the property of a crisis.

Analysis of the causes leading the economy to a crisis makes it possible to distinguish the main types of crises on the basis of several criteria: by objects – covering the economy as a whole (systemic) or its separate elements (structural, financial); by periodicity and depth – short-term, medium-term, long-term; by coverage territory – national, regional or local, world, global. The author's study is limited to the consideration of financial, systemic and structural crises, i.e. macroeconomic.

Recognition of the essential role of financial system in economic development is one of the standard provisions of modern evolutionary theory. For the first time J. Schumpeter proved the wrongfulness of linking the activities of financial institutions to the purely technical function of money mediation as acts of exchange [7]. He wrote that any new combination "unlike the existing combination cannot be financed from incoming revenues," so it needs credit to buy the necessary means of production. As a result, financial institutions are becoming a powerful force, which provides entrepreneurs with purchasing power without the immediate creation of a new commodity supply, as they move from servicing economic turnover to providing monetary support for economic development. According to J. Schumpeter, "... the banker makes it possible to implement new combinations and, speaking on behalf of the national economy, provides powers to implement them." [7] In our view, the causes of the financial crisis can be both exogenous and endogenous. The internal prerequisites of the financial crisis are determined by the logic of transition from one phase of the cycle to another. Thus, any upward "wave" of the cycle is preceded by depression, during which excessive amounts of cash resources are accumulated in the financial system. An example of this financial crisis is the spread of the "information economy" in the United States. By the beginning of the upward wave of this cycle (the first half of the 1980s), the share of gross savings in GDP had reached 20.9%, increasing by almost 5 p.p. over the previous 20 years, but by the end of the boom in 2000-2001, the gross income savings rate had no longer exceeded 13.4% [11].

According to C. Peres, two subsystems – technological and institutional – have different speed of change in their interactions [12]. Technological changes are taking place relatively quickly and ahead of changes in institutional structure characterized by high inertia, increased by faith in past successes and human interests. This contributes to an economic crisis that reduces the effectiveness of entrenched behavior models and opens up opportunities for institutional innovation needed to commercialize technological advances. Exogenous factors of the financial crisis manifest themselves as financial shocks, especially if they extend to the financial markets not only of a particular country, but also to the entire block of countries which economies, in the context of the current global trend towards globalization, cannot but be linked in a very wide range of ways.

Sharing the theoretical validity of the above definitions, it’s worth mentioning that technologically inspired cyclic dynamics should be understood as universal form and a pattern of economic development, the essence of which is expressed in the inherent non-linearity of economic development, in stable, repetitive, multiple fluctuations of economic processes and phenomena, in the resolution of contradictions accumulated in it and which have reached a certain critical mass.

Based on N. Kondratiev [13] ideas about the long waves of economic conditions the analysis of cyclical dynamics of structural shifts in the development of economy plays an important role in the theory of Russian structuralism and cyclism. This is due to the fact that technological revolution leads to radical changes in the structure of both productive forces and economic relations, thus initiating a new level of macroeconomic dynamics. In this situation, the tasks of complex structural and technological renewal of the Russian economy are put to the fore, which requires theoretical reflection of modern patterns, their justification and practical implementation.

In economic studies of Western countries conducted in the 1950s, the interrelation of cyclic and structural components of economic dynamics was linked to the technological modernization, which is heterogeneous and introduces certain "perturbations" into the progressive change of structural proportions. The writings of W.C. Mitchell [14], F. Perroux [15] argued that structural, including technological and modernization, changes in the economy are largely determined by cyclical processes. The ideas of complex cyclical nature of the dynamics of the world economy in the context of accelerating scientific and technological progress, the formation of the national characteristics, modification and deformation, the superimposition of various cycles, inter-cyclical and interphase recurrence, their interweaving with the structural crisis, the emergence of a long-term recession and the fading of economic growth are significant issues of economic theory methodology today.

From the point of view of cyclical approach, the basic technologically induced processes of modern macroeconomic cycle include: universal informatization and digitalization, structural transformation of production and the economy as a whole, qualitative growth of human capital, servization of production, knowledge-intensive improvement of production technologies, introduction of new forms of investment support for economic development.

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3 Results and discussion / Результаты и обсуждение

Based on the considered approaches to the study of relationship between cyclical processes and structural shifts in economy, the place of the technological and modernization process in it can be presented in the following form.

First of all, each new techno-economic paradigm is characterized by new properties of structural-forming factors related to the system of national reproduction, in which the investment process mediates technological innovations. Investment in new infrastructure is significant, creating conditions for accelerated development of industries producing and intensively using new technologies as a key factor of production, which contributes to another long-wave rise.

The main characteristics of technological innovation as a pro-cyclical factor of production are the low and constantly growing capacity to diffuse into other sectors of economy. This makes it possible to change the quality of many products and reduce their cost, as well as to transform the work and capital used in production. We believe that the formation of a new technological platform is a consequence of the cyclical nature of economy and its acquisition of new structural and innovative characteristics.

According to our approach, structural shifts in the economy are considered not as a result of cyclical development, but as a dominant matrix of the system, a condition, as a platform and a factor of stability in economic development, experiencing key parameters of market fluctuations. But in turn, they are the foundation of the system and determine the character, trajectory, depth and consequences of the cycle.

Therefore, from the point of view of structural-cyclical approach, technological changes causing non-industrial trends in modern macroeconomic processes in the process of reproduction modernization can be represented in the form of a system of intra-phase transitions, which are characterized by uniqueness of economy transformation. These transitions are the form of linkage between structural shifts and cycles in economy where a positive technologically initiated shift causes the downshift phase of cycle to change to an upswing wave.

We believe that in order to reveal the specifics of the cyclical dynamics of the structural shifts of the Russian economy in the context of deployment of a new technological revolution, it will be methodologically correct to use a recurrent approach. Recurrence is a general economic pattern that represents a multilevel characteristic of connections and dependencies of different cycles and their internal phases, reflected in structural shifts. The main provisions of the recurrent approach are the following:

1. In technological aspect of cyclic dynamics studies, regeneration can be considered as one of the basic cycle parameters characterizing the existence of relationship between phases within a cycle. Such interphase recurrence means that each phase in the next cycle is genetically conditioned by the previous phase (on the basis of continuity of technologies, forms of their investment and transfer), and determines the customized features of the subsequent phase.

2. There is an inter-cyclical recurrence between different cycles: each subsequent cycle is determined by the nature of the preceding cycle and affects subsequent cyclical development, due to the consistent course of scientific and technological progress and radical growth of productivity in each subsequent cycle.

3. Identification and revelation of existing recurrent dependencies between cycles is the basis of development of methods of analysis of current state and subsequent long-term prediction of cyclic dynamics and its impact on structural parameters of economy, applicable in evaluation of efficiency of innovation and technological modernization of economy.

Thus, the isolated inter-cyclical and inter-phase recurrent dependencies make it possible to specify the directions and methods of regulation of cyclical processes in economy and to increase the efficiency of countercyclical policy, the core of which should be the provision of technological "breakthrough" of industry.

Taking into account the identified basic processes of the transitional Russian economy within the framework of the recurrent approach, the identification of the nature of connections, dependence and elasticity between cycles, forming a feature of cyclic processes of economic development in the conditions of the new industrial revolution allows to determine factors of direct and indirect influence on the process of structure formation. In the Russian economy, the high share of informatization, digitization, softization of the production and technological base in the basic processes acts as a catalyst for technological progress and renewal of the active part of fixed capital. This phenomenon is identified as the information base of macro-cycle, which plays an important role in overcoming the crisis phase of the

industrial cycle, as it is integrated into the processes of formation and development of the digital economy.

In the very structure of the cycle, the effects of structural-transformative factors combined by the neo-industrial process are as follows.

The depression phase is characterized by signs of post-industrial structural transformation. During the recovery phase, it accumulates the processes that are characteristic of an innovative, digital economy, which is seen as the recovery phase of the neo-industrial cycle. The dynamics of non-industrial structural transformation in the Russian economy is discrete (a high level of technological heterogeneity) because it is under the negative impact of the first capitalist cyclical crisis. The crisis radically reduced the index of technological renewal, innovative introduction and investment in fixed assets in industry. The industry correlation of innovative diffusion and transfer of technologies of the 5-6th technological layers is sufficiently high, but in general the technological shift is negative and cyclically due.

Digitalization and distribution of production cyber systems in the economy can be considered as a "platform" for innovation and information stage of development, as well as it is the foundation of formation of a new neo-industrial cycle.

Thus, within the framework of the author's structural-cyclical approach, the analysis of cyclic patterns, the identification of its model, the peculiarities of deformation of the economic cycle in Russia allows to argue that fluctuation processes in economic dynamics have an objective cyclical nature, characterized by direct and reverse interphase and inter-cyclic recurrent dependencies, direct connection with technological modernization of economy, which determine the essence and structural filling of modern macroeconomic cycle.

Thus, technological conditionality of interphase transitions in the structure of economic cycle manifests itself at the macro-level of economy in the form of new impulses of acceleration of economic growth due to increase of labor productivity, resource saving, strengthening of international competitiveness. Therefore, we emphasize the need to introduce the concept of "macro-cycle," especially in the domestic economy, because technological lag causes different cycles in it with different intensity of inter-phase transitions, caused by structural deformation of inter-sectorial redistribution of production factors, innovations.

Another circumstance is that these cycles overlap each other with different phase amplitudes. In addition to consistency, the cycle takes the effect of aggregation, because of local elements, spheres, objects it covers macro-space, affects key indices of economic dynamics. Therefore, the macro-cycle category has a reasonable structural determinancy. Thus, the Russian macroeconomic cycle has a transformational character and a hybrid structure: the layering of the information-market, technological, innovative, investment cycle, which has a supporting character, the production cycle – the characterizing, the structural and social cycle – the resulting.

This interpretation of modern macro-cycle significantly expands and deepens research into its structural and technological conditionality as a fundamental basis in transformation processes, and serves as the basis for the development of a methodology for structural and cyclical approach to analysis and the formation of macroeconomic models of structural and countercyclical policies. The modern stage of development has a transformative (transitional) character from industrial to neo-industrial stage of economic development (connected with deep innovation and technological modernization of basic industries and accelerated formation of high-tech sector).

The structural transformations of the Russian economy, linked to reforms and continuing to this day, are closely linked to the fundamental economic, technological and structural shifts of the world economy. A key point and feature of the macroeconomic processes taking place in the world economy in the last 31-39 years is the formation of prerequisites for the formation of a new knowledge economy. The transition to an innovative path of development of the Russian economy is due to the need to achieve a new qualitative level in the context of decline of opportunities for evolutionary development of scientific and technological process, the crisis of models of economy state regulation.

The intensity of integration in the world economy over the past 50 years has been accompanied by a global transfer of new technologies, forming a universal form of scientific and technological revolution. This shows the beginning of a new integration cycle in the development of global economic ties, in which technology transfers take place within the framework of the expansion of transnational corporations. The stable characteristics of the new integration cycle can be presented in the following sequence:

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1. As a result of intensive activities of global corporations in international markets, the international division of labor is deepening and their network in the global economy is growing rapidly;

2. The growing power and influence of multinational corporations has reduced the role of countries in international relations;

3. The expansion of the network of multinational corporations promotes investment flows relative to trade flows, and foreign direct investments reach unprecedented levels;

4. Market reforms in planned economies have led to a shift from the confrontation of polar economies to the integration and globalization of the world economy.

Against the background of integration processes, Russia is increasingly involved in the global economy, and the dominant position not only of the European zone in its foreign trade and capital movement, but also of the new promising markets in the Asia-Pacific region is being established. Thus, it can be argued that cyclical patterns of transformation of the world economy cause fluctuations in the main indicators of development of the Russian economy. Systemic trends of innovation and technological development of the world economy cause these fluctuations and are expressed in the following [1]:

– large-scale restructuring of the world economy, defined by the strengthening of new centers of technology generation and transfer (China, India, Brazil and Indonesia);

– implementation of new technological breakthroughs based on 1990-2011 innovations in biology and medicine, informatics, space research, creation of new materials and energy sources, as well as tightening environmental requirements;

– changing the institutions of the world economic order, including exchange rates, mechanisms for hedging investment risks, regulation of factor markets;

– likely increased instability along the southern and southeastern areas.

For Russian economic development, these processes create a qualitatively new format, which is rather different from the conditions of the 1990s. The growth and use of competitive advantages by the Russian economy will allow it to actively integrate into the world economy, adopting cyclic impulses that determine the development of technologically advanced sectors of economy.

Taking into account the nature and specifics of the study of cyclical foundations of economy structural shifts, we will summarize the following:

1. Cyclic fluctuations do not cancel the processes of system self-organization, but instead act as a mechanism for adaptation of the system to external influences.

2. Long-term cyclical fluctuations are a prerequisite for the formation of a proportional and sustainable structure of economy in conditions of macroeconomic imbalances.

3. Structural shifts in the economy in the process of cyclical development are caused by the emergence and spread of innovation, which leads to a change of technologically leading sectors of economy [1].

4. The transformation of the Russian economy structure, apart from market reforms, is connected with the fundamental changes in the structure of the world economy and the pulses of cyclical fluctuations in the world economy caused by the emergence of a new post-industrial paradigm. The general interdependence and mutual conditionality of world economic development leads to fluctuations in the macroeconomic indicators of the Russian economy.

The global financial crisis, which began in the second half of 1997 in South-East Asia but spread very rapidly to many other regions of the world, was a typical example of deep financial turmoil. This crisis did not only cause periodic panic on certain stock exchanges of the world, but also caused a significant slowdown in the development of a number of countries in South-East Asia, including even traditionally dynamic countries such as South Korea and Japan.

The emergence of structural crises is due to the fact that in the development process, especially as a result of the expansion and growth of science and technology, and sometimes due to political factors, individual countries, their populations or the world economy as a whole face the sudden emergence of large imbalances in the structure of economy. The phases of recession and crisis in the long wave have historically been combined with deeper cyclical crises. These phases are characterized by: long-term stagnation in traditionally important industries and sectors of economy (while new industries can grow at an accelerated pace); long violations in credit and monetary and currency spheres, in finance, international trade; crisis of existing forms of economic organization and regulation.

Each cycle covers all elements of the structure of economy in a certain sequence. This is because there is a certain contradiction between the rapidly growing volume of society's needs and the declining

efficiency of economy unable to meet those needs. This, in turn, leads to changes in technological, and then in the reproduction, sectorial and territorial structures of economy, in the form of organization of production, in the institutional structure, in the system of ownership relations. Structural shifts, as a result of elementary contradictions, materialize in the form of endogenous factors and act as internal drivers of cyclical development of economy. As a result, the entire structure of economy is transformed. These trends are more evident in ultra-long and long-term cycles, and lesss in medium-term cycles.

The structural cycle consists of four phases of structural change that correspond to the stages of economic cycle: crisis, depression, recovery and takeoff.

The economic crisis phase is usually accompanied by a structural crisis in economy, by which we understand the emergence of imbalances in the system of elements in economy. Structural changes in economic recession phase are reflected in bankruptcy and a more rapid collapse of inefficient production, and the release of labor.

In the depression phase, capital, labor and material resources are being transferred in priority areas, and a platform for future economic growth is being prepared. At the same time, there are no negative or positive changes in the structure of economy, as investment activity is extremely weak, and the decline in production has reached its lowest point.

In the recovery phase, the contours of positive structural shifts are defined, which differ mainly in the qualitative development of economy, and its stability is ensured. The recovery phase is characterized by economic growth; structural transformation is taking place through the development of promising industries and sectors of economy. Structural shift as an economic phenomenon is related to other dynamic processes occurring in economic system: cycles, fluctuations, perturbations. A feature of structural shifts is the presence of the resulting component in them. The main result of structural shifts in the economy is changes in the system of public needs, which are not characteristic of disturbances and surface fluctuations. Thus, we conclude that economic cycles are undoubtedly based on a system of structural shifts of different directions.

It can be argued that, in the long run, innovative economic growth is an irreversible component of structural shifts, driven by an objective economic law of rising needs. The dialectical relationship between structural shifts and cycles in economics justifies the fairness of the following assumption: the economic cycle as a collection of several structural shifts does not exclude the possibility of a global shift as a series of local cycles atomized on nano-shifts.

4 Conclusion / Заключение

Thus, a structural crisis arises when the old structure of economy comes into conflict with the demands of innovative technologies, but is not yet ready for change. The inertia of the established structure delays the restructuring, making it painful and prolonged. While the old structure is still prevailing, the overall growth rate is falling sharply, leading to the stagnation of public production, the normal functioning of markets and the monetary sphere is disrupted, and the overall economic conditions remain unfavorable.

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