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## **Системний підхід до розв'язання проблем дослідження трансформацій національної економіки України**

*Основними проблемами досліджень трансформаційного процесу економічної системи є обрання загального теоретичного підходу та методів їх здійснення. Метою статті є визначення перспективного теоретичного підходу до розв'язання проблем трансформації національної економіки України. Проаналізовано парадигми економічної науки: неокласичну, інституційну, еволюційну. Визначено їх як засади формування системної парадигми в межах еволюційної економічної теорії. Встановлено, що використання системного підходу є початковим етапом формування нової наукової парадигми, необхідної для створення моделі ефективної структури національної економіки у ході трансформаційних перетворень. В межах системної парадигми соціально-економічний простір розглядається як сукупність економічних систем, об'єднуючих агентів, інститути та інституції. З точки зору системного підходу реалізується намагання багатоаспектного розгляду соціально-економічних утворень як комплексів, що мають риси технологічних, економічних, соціальних, інституційних, біологічних та інших систем. Доведено, що системна парадигма адаптована до сучасних умов економічних досліджень, відкриває можливості створення структурно-функціональної моделі економіки, а процес моделювання економічної системи характеризується наявністю припущень та спрощень.*

**Ключові слова:** *система, еволюція, розвиток, трансформація, економічна система.*

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## **Системный подход к решению проблем исследования трансформаций национальной экономики Украины**

*Основными проблемами исследований трансформационного процесса экономической системы является избрание общего теоретического подхода и методов их осуществления. Целью статьи является определение перспективного теоретического подхода к решению проблемам трансформации национальной экономики Украины. Проанализированы парадигмы экономической науки: неоклассическую, институциональную, эволюционную. Определены основы формирования системной парадигмы в пределах эволюционной экономической теории. Определено, что использование системного подхода является начальным этапом формирования новой научной парадигмы, необходимой для создания модели эффективной структуры национальной экономики в ходе трансформационных преобразований. В рамках системной парадигмы социально-экономическое пространство рассматривается как совокупность экономических систем, объединяющих агентов, институты и учреждения. С точки зрения системного подхода реализуется попытка многоаспектного рассмотрения социально-экономических образований как комплексов, имеющих черты технологических, экономических, социальных, институциональных, биологических и других систем. Доказано, что системная парадигма адаптирована к современным условиям экономических исследований, открывает возможности создания структурно-функциональной модели экономики, а процесс моделирования экономической системы характеризуется наличием предположений и упрощений.*

**Ключевые слова:** *система, эволюция, развитие, трансформация, экономическая система.*

## Systematic Approach to the Solution of Transformation Research Problem of National Economy of Ukraine

*The main problems of research of the transformation process of the economic system is the election of the general theoretical approaches and methods of their implementation. The aim of the article is to identify promising theoretical approach to the problems of transformation of the national economy of Ukraine. The paradigms of economic science are analyzed: neoclassical, institutional, evolutionary. They are defined as the basis for the formation of the system paradigm within the evolutionary economic theory. It was found that the use of the system approach is the initial stage of the formation of a new scientific paradigm needed to create an effective model of the structure of the national economy during the transformational changes. As part of the systemic paradigm the socio-economic space is viewed as a set of economic systems combining agents, institutions and agencies. With regard to the system approach it is implemented the multifaceted attempt to review the socio-economic formations as the complexes having the features of the technological, economic, social, institutional, biological and other systems. It is proved that the system paradigm adapted to modern conditions of economic research, opens the possibility of creating structural and functional model of the economy, and the process of economic system modeling is characterized by the presence of assumptions and simplifications.*

**Keywords:** system, evolution, development, transformation, economic system.

**Problem statement.** The processes of socioeconomic system transformation of most national economies at the end of 1990s and the economic instability of the following period could not be explained by the existing theoretic positions of neoclassical, institutional and evolutionary paradigms. Nor had a single generally accepted definition of 'economic system' been formulated, with researchers' approaches depending mainly on the chosen degree of abstraction and the selected object of research. The principal ideas of the system paradigm have resulted from the generalization, development, modification or transformation of the evolutionary paradigm idea. That is, the system paradigm can be considered a result of the intensive development of the evolutionary economic theory.

**Connection with important scientific researches.** The economic process and phenomena research from the position of the system approach is based on the scientific achievements of such researchers as S.I. Arkhangelskiy, V.P. Bespalenko, S.U. Honcharenko, F.F. Korolyov, N.V. Kuzmina, V.V. Krayevskiy, L. Bertalanffy A. Rappaport, I.V. Blauberg, V.M. Sadovskiy, Y.G. Yudin, A.I. Uyemov and others. The practice of economic science offers a great number of approaches for forecasting and determining the directions of the further development of the economic system. The system approach is defined as the relevant one, being characterized by an interdisciplinary nature.

**Research analysis.** The study of the evolution of the economic theory basic concepts makes it possible to single out three principal paradigms of the economic science of the XX century, such as neoclassical, institutional and evolutionary. Each of them has originated a corresponding school of economic theory, particularly,

neoclassical economics, institutional economics and evolutionary economics. The evolutionary paradigm has become increasingly popular recently, having originated the evolutionary economy, initiated by the scientific achievements of J.A.Schumpeter. Due to the essential changes of the theoretical economy at the beginning of the XXI century, caused by the financial and economic crisis of 2008 – 2010, a new school of economic theory arose – the system paradigm – which supplements and synthesizes traditional neoclassical, institutional and evolutionary concepts.

The system approach is one of the methodological areas of the modern science, its emergence being connected to the crisis overcoming in the scientific cognition in the XIX-XX centuries. Beginning the study of the notion 'system' from this period, let us draw attention to the principal groups of the notion in view of the common basis of the definition formation and the meaning implied. The theoretic basis of the system approach has formed as a result of the combination of principal areas – general theory of systems and basic cybernetics. While studying development of biopopulation, L. Bertalanffy set the general principles and regularities of the behavior of an integral community, united by internal links. The researcher interpreted a system as a 'set of interacting elements which are in a certain interaction between each other and the outside environment' [3]. He identified three main features of a system: 1) the presence of an integral set of elements; 2) their coordinated interaction; 3) interaction and connection with the outside environment which provides the development of the system.

Another source of the system approach is believed to be the theory of cybernetics based on deductive research

of W. Ashby, whose works are focused on the significance of the specific nature of relations between the system and the outside environment. It was through these relations that he defined the structure of the system, its functioning characteristics, and formed the general principles of control [2]. His interpretation can be reckoned among the second group of definitions since they are connected to the purpose of activity, refer to controlled systems including economic systems. In general, the second group of definitions is described by V.N. Sadovskiy's interpretation: 'a system is a complex integrity formed by many factors that have a common plan or pursue the same objects' [3]. Having developed this position, A. Uhtomskiy identified the notion of the functional system as a temporary combination of processes and structures united together with the aim of pursuing an object, 'system' being defined as '... a functional set of material formations which contribute to the achievement of a certain result essential for satisfying the initial need' [4].

The third group of definitions can be combined by common characteristics of the studied objects. The research of A. Hall, A. Uyemov and Y. Urmantsev formulated the internal organization and purposiveness as the essential properties of the system, particularly the socio-economic system. Such methodological approach disproves the definition of the system based on the principle of the link of its structural parts because the interaction obtains the features of a system through the characteristics of consistency and integrity. In this connection, a particular credit should be given to the research of I.V. Blauberg who provided a wider understanding of the system and the system approach as a new method of studying a system.

From the methodological point of view, formed by I.V. Blauberg, the emergence of the system approach in science can be attributed not only to the necessity of processing the accumulated empirical material, but, to a higher extent, to the radical reconsideration of definitions in different spheres of science. In the field of social cognition, the object of which also includes human economic activity, the new situation was determined by a number of circumstances. Particularly, the appearance of imbalance in development of different social institutions and aggravation of social cataclysms forced to reject the linear-homogeneous nature of social development of Hegel's scheme and to single out the problem of a genuine holistic, multiple-aspect study of the world [5].

The substantiation of the new principles of cognition implied rejecting the conceptual premises of the preceding science, particularly the elementarism and mechanicalism. Per se any period of generalizing the accumulated data in any science is accompanied by exceeding the limits of the elementaristic approach and accepting, to a certain extent, the idea of integrity. The problem of complex object study was substantiated as reduction of the complex to the simple. As opposed to the ideas of the integrity that had existed before, I.V. Blauberg claimed that the concept of integrity argues that an integral object possesses such properties and qualities that can not belong to its parts.

Summarizing the conclusions of the leading researches of the system theory, it should be observed that the notion of integrity and system by I.V. Blauberg as an integral hierarchically organized conceptual system is a subsystem of the scientific knowledge as a whole, considered from the position of integration and synthesis, and is believed to be classical in the sphere of system approach study. From this position, the principle features of a system are considered to be: 1) the presence of an integral set of elements, each of which is an indivisible unit within this system; 2) the presence of functional characteristics of the system as a whole and of the every single component separately; 3) the presence of two or more types of relations that define the structural, functional, communicative and integral properties of the system; 4) hierarchy and control, objectives and purposiveness, processes of self-organization, functioning and development [5].

The new principles of the system approach began to be applied not only in particular specialized sciences, but also for solving complex problems of the XX century. In this connection, the concept of generalized force is of great importance, its methodological ground being inspired by the system-structural idea of V.I. Vernadskiy. This concept considers, on the modern scientific level, the question of the deep unity of biotic and abiotic factors of life existence on Earth. From methodological point of view, Vernadskiy's concept is based on the integrity principle, but for the first time on such a global scale. Whereas the previous researches reproduced systemacities, particularly integrity relative to a certain object separated from its environment, Vernadskiy made the integrity of the biosphere to be the object and, in some sense, the result of the research [6]. In other words, traditional researches viewed integrity as something existing prior to the moment of study, and the basic task was to find out the specific relations that would prove the integrity to be real. The concept of biosphere is built in the opposite way: through a detailed analysis of a certain kind of relations, a conclusion is made about the integrity of the object limited by these relations. The methodological meaning of the system approach in biological disciplines and ecology is most clearly expressed as it is oriented towards singling out and analyzing different kinds of relations within the system being researched.

Generalizing the notion of system approach in different areas of science, one can specify its definition for the economic science. Thus, system approach is a set of theoretical and logico-gnosiological means intended for studying complexly organized systems, their design, creation and control, which can be fulfilled under the condition of detailed research of the relations on the subsystemic and elemental levels [adapted 1,2,3,4,5,6]. At the beginning of the XXI century, the problems in national economies of many countries were related to the process of their globalization and integration, which was accompanied by the transformation of economical, social and political spheres of human activity. The neoclassical, institutional and evolutionary theories that had existed before are characterized, to a huge extent, by

fragmentariness, static nature and failure to determine the interaction of diversiform economic phenomena. According to the most widespread, neoclassical approach, which started developing intensively in 1920, economic system is defined as a set of economic agents that perform the processes of production, consumption and exchange in the conditions of factor limits in a free economic space, with the aim of receiving a maximum profit. The economic agent is chosen as the main object of research, and the agent's actions at the market make the research object.

The development of the world's economic system and countries' national economies in the XX century was influenced by political, social, ecological, cultural, religious and informational factors. Production modernization, resulting from progress in science and technology, made it possible to move to a qualitatively new and higher level of management of enterprises in different spheres, which provided markets with considerable amounts of products. In addition, the change of the economic management principles, the expansion of framework and the need of an improved process of management caused the emergence of a new paradigm of the economic theory – institutional paradigm – since the leading until the 1980s neoclassical theory had stopped being able to forecast the possible transformations and its achievements had lost their practical value. It is

indisputably important to reflect functionality, purposefulness, dynamics and heterogeneity as properties of a system, alongside with such fundamental properties as coherence, integrity, openness and hierarchy. On basis of the existing need of theoretical grounds of the modern economic system organization, J. Kornai singled out the fourth system paradigm. In its network, socio-economic space is considered to be a set of economic systems that unite agents, institutes and institutions, and also genetic mechanisms of the reproduction of agents' populations.

Thus, from the view point of the system approach, the endeavor of multiple-aspect study of socio-economic formations as complexes which have the features of technological, economical, social, institutional, biological and other systems is fulfilled. The main object of study is socio-economic systems, and the research subject is their development based on the interaction of the internal subsystems and the influence of the external systems and environments. Researcher G.B. Kleiner defines that the distinctive feature of economic system is its participation in production, consumption, distribution and exchange of economic welfare, and the economic system itself is a relatively stable in time and space part of the socio-economic space, which possesses the properties of external unity, internal variety and gnoseological integrity (the principle of 'methodological systematics') [6].

Table 1

Principles of system paradigm formation in the network of the evolutionary economic theory

| Concept of evolutionary economic theory  | Concept reproduction in the structure of the system economic theory   |
|--|---|
| The influence of the population of agents upon the evolution process   | The influence of economic systems of different level and of the population of agents upon global economic systems   |
| Taking into account the individuality of the agents  | Taking into account the heterogeneous nature of economic systems  |
| Recognizing the existence of genetic mechanisms of heredity indication transfer  | Recognizing the regularities of the formation of new economic systems on basis of the existing ones   |
| Anisotropy and heterogeneity of time when maintaining the direction of the economic dynamics. Influence of the past upon the present | Heterogeneity of time, presence of changeability and heredity. Systematicity as integrity in space and time   |
| Natural selection as a process of development of a population by means of economic agents that compete successfully                  | System admission as the principle of forming a system by means of voluntary integration   |
| Significance of innovation as the driving power of economic development  | Significance of innovation as the principal source of economic space transformations. Taking into account certain roles of innovational, media and conservational systems |

Source: adapted by authors from [1, 4, 6, 7, 8].

The research of the national economy of Ukraine is rather difficult due to the lack of clearly set relations on the subsystem level and the lack of the evaluation of the influence upon the efficiency of the national economic system. Particularly, the lack of the possibility to determine, in cost indicators, the influence of the political, ideological and religious components. This complicates the scientific research and the transfer from the concrete perception of the economic system in the form of financial and production relations to the level of abstract model using the interdisciplinary level of perception.

It has been proved by the research that the system paradigm is adapted to the modern conditions of economic research, enables the creation of a structural-functional model of economy, but the process of modeling the economic system, as a component, will be characterized by the presence of assumptions and simplifications which allows to reproduce the really existing economic system only approximately. Under these conditions, the accuracy of the reproduction of the object reduces, which impedes the implementation of the system approach, and the research has only a general character. In this case, the classification of systems into

open and closed ones is rather conditional and requires three classes: organized sets (without system characteristics), inorganic and organic sets – characterized by the presence of relations between elements and the appearance of new properties within the integral system – properties not possessed by every separate element (emergence) [4].

Thus, relations, integrity and steady structure conditioned by them are considered to be the distinguishing characteristics of the organic system which develops independently as a whole, which in the process of its individual development goes through the consecutive periods of complication and differentiation. Singling out the economic system as an organic one makes it possible to study the transformational processes from the position of the system approach since it allows to avoid the static nature and one-sidedness of its interpretation, to determine the transformation vector, to choose the criteria for the classification of these processes in the direction of the formation of an integral system [7]. The system approach reveals the most general, system forming relation which realizes the integrity of the economic system in regard to its elements. It is most important here to determine the place of every element, its ability to perform its function rather independently within the system, their functional characteristic being the interconnection between elements. The connections of elements and their integrity can be considered the criteria of the system approach realization. But the transformation processes, from the position of the system approach, do not exclude interruptions in the form of economic crises which have the force of “creative destruction” [8, 9]. It is after sharp recessions that powerful upturns are observed, which constitutes the essence of socio-economic growth mechanism. In this connection, transformation is viewed as a means of economic system development. The economic system transformation includes evolutionary, reformative and revolutionary components. Particularly, the evolutionary transformation is a continuous process of self-development, the source of which is in the system itself, involves the system completely and leads to a gradual formation of the system integrity on basis of the contradictions that emerge within the system. This

transformation can be described as a gradual, smooth process which excludes sharp leaps and bifurcations.

**Conclusions.** From the point of view of the system approach, transformation of economic system is a means of development which operates on evolutionary, reformative and revolutionary basis. The system criteria can be reduced to certain indicators characterizing its changes. Integrity, stability, safety and purposiveness should be considered the uppermost criteria. The basic positions of neoclassical, institutional, evolutionary and system paradigms do not allow to reproduce in full the process of economic system development as a whole and the transformation in particular. On the grounds of the existing theoretic achievements and the practical significance of the economic science, synergetic paradigm in the context of economic system research appeared.

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