Modern Realities of Economic Development in the Conditions of Turbulence of Economic Processes: Challenges and Prospects

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Abstract: The world economy has moved to a new stage of its development, characterized by lower rates of development and increased risks than it was at the beginning of the new XXI century. In addition, the differentiation in the rates of economic growth of the countries of the world has significantly increased. It is difficult to say with certainty how stable (stationary) the future state of the world economy will become. It is established that at this stage of development, the main dynamic uncertainty is associated not so much with scientific and technological innovations and their uneven diffusion, as with accumulated imbalances between the financial and real sectors of the economy; uncertainty associated with the search for an effective development policy, including the problem of the upcoming curtailment of so-called unorthodox economic policy measures. Thus, the paper reveals the methodology of macroeconomic regulation of the turbulent economy in the context of ensuring the dynamic stability of national economies. Special attention is paid in the article to the categorical apparatus of turbulent processes occurring in the economies of the countries of the world, as well as their dynamic stability. The article substantiates that ensuring the dynamic stability of the national economy is possible in the presence of a set of systems, mechanisms, models that provide it. The author pays special attention to the key points of ensuring dynamic stability, which should be taken into account when implementing the state policy of the country.

1 INTRODUCTION

The current economic trends taking place in the world cause heated discussions both in scientific circles and among decision makers and those implementing the economic policy of the state. The reason for these discussions was the uncertainty of modern economic dynamics and methods of its management. It is indisputable that the economic trends taking place in the XXI century, such as integration, regionalization, globalization of the economy, as well as its digitalization, along with positive aspects, have led to a change and complication of the ongoing relationships between economic entities, mechanisms and factors determining structural changes and the dynamics of economic growth in the country, to an increase in the entropy of national economies, their disequilibrium, turbulence and singularity. These characteristics of economic development impose qualitatively new requirements for the study of the nature, content and consequences of economic processes. This statement is confirmed by the appearance in the scientific literature of the statement about the crisis of classical economics, based on the linear methodological paradigm of scientific thinking.

Taking into account the variety of new factors that were not previously included in the research arsenal makes it necessary to develop the methodology of economic science. At the same time, the identification

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of the nature and content of the ongoing processes requires the active involvement of interdisciplinary approaches to the analysis of economic processes, in particular, synergetics as a direction of interdisciplinary research related to the study of self-organization processes in open nonlinear and nonequilibrium dynamic systems.

The need to turn to the methodology of synergetics is due to the fact that the approaches existing in economic theory differ greatly in understanding the conditions, causes and driving forces of self-organization, in explaining the mechanism and establishing the measure of self-organization, as well as in determining the relationship of self-organization with the evolution of economic systems in conditions of economic turbulence. This approach seems particularly promising in relation to the assessment of trends related to self-organization and dynamic stability of economic systems, since the pace and stability of the development of the national economy, the ability to withstand crisis phenomena and effectively manage risks in the transition to a post-industrial society depend on their condition and the quality of their management.

2 METHODS

The study of the evolutionary processes of the world's economies taking place at the present stage, characterized by their disequilibrium, nonlinearity and a high degree of entropy indicates the manifestation of such a phenomenon as ***economic turbulence***. This phenomenon is new and insufficiently researched among scientific circles. Exploring the nature of turbulent economic processes, the need is the application of an interdisciplinary approach, namely synergetics, since such characteristics as nonlinearity, disequilibrium, entropy, singularity are well studied within the framework of physical science.

Within the framework of synergetics and evolutionary economics as separate sciences, there are theoretical developments of economic analysis. However, these developments, in fact, use the approach of equilibrium static analysis, which includes situational analysis, and do not cover the theory of nonlinear dynamical systems. On the other hand, the field of the evolutionary-synergetic paradigm does not include the assessment of economic conditions. Nevertheless, for practical purposes, situational analysis is extremely important precisely within the framework of making specific decisions to regulate the national economy. In this context, it should be noted that assessments of economic dynamics are also equally important. Based on the above, one of the criteria for distinguishing the evolutionary-synergetic approach and the traditional methodology is the time characteristic - statics and dynamics - the process of assessing states from modeling economic processes passing through current states.

The second criterion of differentiation lies within the class of dynamic tasks itself. Thus, the approach under consideration explores the characteristics of nonlinear dynamics, namely instability, chaos and order, dissipative structures, bifurcation states, attractors, in other words, factors that induce this nonlinearity. Thus, this approach develops the already established traditional quasi-stationary theories of economic dynamics, describing the development of a complex economic system as a transition from one equilibrium state to another.

Investigating the nature of economic turbulence, it should be noted that there are a number of definitions of scientific interest in the economic scientific literature. So, V. Burlachkov defines economic turbulence as: "....disordered movement, which is characterized by a rapid change in market trends and strong fluctuations in economic indicators. The turbulent state of the economic system is caused by gaps in the rates of interrelated processes, such as supply and demand, production and consumption, saving and investing" (*Burlachkov, 2009*). V.I. Barkhatov considers this category through the prism of the stability of the economic system, interpreting it as follows: "By turbulence we mean the sequential change of various states of stability of the system, which implies the oscillatory activity of macroeconomic indicators" (*Barkhatov, 2018)*. The most complete definition of economic turbulence, which we adhere to, is given by E.D. Shchetinina: "... a particularly complex trajectory of movement, both of the national economy and of an individual firm in the "vortex flow" of various changes, in which they have to constantly survive and ensure forward movement. Turbulence presupposes the highest point of the degree of instability of the global economic system" *(Shchetinina, 2016)*.

Summarizing the presented terminology, it can be noted that the turbulence of economic processes is instability, disequilibrium of economic dynamics, having high volatility and characterized by uncertainty. At the same time, this phenomenon is characterized by chaos and bifurcation points, at which, taking into account a certain number of attractors, a transition to a new state occurs through self-organizational processes of economic entities. An important point in this context is the fact that the managing entity purposefully programs chaos in the old system, bringing it out of a state of stability, and then creates a new order with pre-programmed properties (*Haken, 1985*), since it is the change of states in the economic system that ensures its qualitative development and is its necessary condition.

The fundamental basis of the study of economic turbulence is the theory of Prigozhin I., where the object is the transition from chaos to order in nature through self-organizing processes (*Prigozhin, 2014*). Thus, economic turbulence as a new phenomenon of modernity is the result of self-organization of economic entities at both the micro and macro levels in the conditions of chaotic development of economic processes, since in conditions of turbulence there are regular or chaotic transitions to order and disorder.

In a turbulent economy, the traditional logic and the usual sequence of many economic processes are violated. A clear example is the violation of the law of the business cycle, when the crisis phase is followed by a revival and economic recovery. However, this did not happen in the real world, since the financial crisis was followed by a stage of recession, the factors of which were the unfavorable political situation in the world and the COVID-19 pandemic. As a result, on the face - the strengthening of the technical and technological polarization of countries, the growth of poverty, the presence of unregulated global economic risks, etc. Thus, the beginning of the XXI century can be marked as a "period of turbulence", which can mature for decades, but always arise unexpectedly, avalanche-like, with unpredictable consequences.

The source of the turbulent economy is a high degree of entropy. According to Prigozhin's law, where order in the system is ensured from disorder on the basis of self-organizing processes, the presence of a high degree of entropy in the economic system increases the potential for further development and growth rates of the economic system. Hence entropy characterizes not only the current level of development of society, but also the potential for its progress (*Prigozhin, 2014*).

3 DISCUSSION

All of the above mentioned leads to a rethinking of state regulation of the national economy. Such phenomena as order and chaos, hierarchy and heterarchy in the economic system have a significant impact on the process of making managerial decisions and the nature of the latter. Since, according to the theory of cybernetics, society is obviously non-linear, unstable and poorly predictable, the main goal of public authorities is the dismantling of systems through the construction of crises. In other words, the regulation of the national economy in a turbulent economy requires ensuring its dynamic stability (*Khakimova, 2022*).

Within the framework of state regulation of the national economy, it is important to understand the nature of the self-organizational processes of an economic entity - its behavior in the system and the impact on the system, how much economic processes are controlled by it, depending on internal and external shocks.

Given the development of economic turbulence in the world economy, there is a need for a completely different approach to the management of the world economy, where the rules of the game should be based on a qualitatively different interaction of states, partnership of states and business, including transnational, close cooperation of international economic organizations. Let's take a closer look at these rules.

Firstly, the dominance of a number of developed countries in the economy and, accordingly, in politics is fading against the background of confirmation of the theory of communicating vessels: when one is emptied, the other is filled. A clear example of this is the fact that the West is "shallowing" – the rest are rising, the United States is weakening – China is strengthening. There is a reason for that. For example, the US national debt currently stands at 73% of GDP, which is the highest in the country's history. Moreover, over the past decades in the United States, there has been an excess of consumption over production, a decrease in competitiveness, and the implementation of inefficient state policies that destabilize the whole world. Against the background of the loss of the role of the global financial leader, these manifestations also indicate the speedy loss of their economic and political leadership. This trend was foreshadowed back in 2007 by the Nobel laureate in Economics, former chief economist of the World Bank, J. Stiglitz, who argumentatively proved that the economic policy of the US administration is leading the country, and with it the whole world, to a deep crisis. China is coming to replace it.

Secondly, in the conditions of economic turbulence, a new type of competition has emerged – institutional competition, which is a system of competition between countries for a system of rules, models of national development, for leading positions in their establishment and expansion of the area of operation. Thus, some countries achieve great results and set their own rules of the game, where other countries, in turn, demonstrate the best results with the institutions they have developed for their national economy. This indicates the difficulty of developing any unified rules of the game that all countries or most of them would be guided by. The economic situation of the countries of the world is changing dramatically. At the same time, economic turbulence imposes significant restrictions on the economic prospects of each country.

In light of the above, a special place in this context belongs to Tajikistan as a player in the international arena. Tajikistan can become a pioneer in the development of new rules, mechanisms for solving global problems at the national level and turn into a country rising to prosperity. Here it is important to take your chance and not miss the opportunity.

Thirdly, entropy is currently increasing as a measure of the randomness and uncertainty of economic development.

Fourth, in the conditions of economic turbulence, the countries of the world are facing the rapid penetration of various powerful transnational corporations, international organizations represented by the International Monetary Fund, the World Bank, the World Trade Organization, interstate associations and interstate structures, which, for their part, dictate to national economies specific actions in the macroeconomic regulation of the country. In the conditions of static economic development, the only macroeconomic regulator was the state. Interstate institutions had only a partial impact, manifested in certain areas of the national economy. In the XXI century, the state is forced to take into account objective trends and play the role of a macro-regulator along with other institutions of the world, global level, thereby gradually losing the status of a monopoly regulator, against the background of joint regulation of national economies with international institutions. Thus, there is a process of strengthening and expanding the international component in the activities of the state as an institution of the national economy, which is manifested in such processes as: regulation and coordination of interstate interaction by global institutions and, more importantly, their influence on the development of the national economy of the countries of the world. But even here the situation can change quickly.

Fifthly, the rules of the game adequate to static economic development have become irrelevant, due to the maturing of qualitative shifts in the fundamental values and goals of society. These shifts include the shift of interests from the accumulation of wealth and the growth of the quality of life to efforts to reduce the risks and threats occurring on the world stage.

The armed conflicts taking place in modern times, the fight against terrorism, the provision of humanitarian assistance to refugees and internally displaced persons, etc., characterize high turbulence and, as a result, require more and more resources. This leads to the depreciation of human and social capital.

Along with this, turbulence multiplies bureaucracy, as the number of institutions and their personnel serving its various forms grows.

Sixth, the manifestation of global economic turbulence predetermines life on loan. A good example is external and internal borrowing, the pumping of the economy by the state with money borrowed from international financial organizations (see Figure 1). In other words, under these conditions, there is a high probability of bankruptcy not only at the micro (firms), but also at the macro level (individual states).

Considering the above, the manifestation of a variety of new factors, such as shocks, imbalances, bifurcation, attractors, singularity, entropy, not previously taken into account in the framework of economic transformations, exacerbate the need to improve the methodology and tools of research. The presence of these phenomena and the need for their deep understanding for the purpose of macroeconomic regulation, determines the use of a synergetic approach.

Considering the sustainability of the national economy in a temporary perspective requires the realization that the concepts of "sustainability" and "sustainable development" are mutually complementary and cannot be considered separately. In other words, the ability of the national economy to restore its initial state determines the presence of current changes in it. At the same time, the very stability of the national economy depends on the disturbance (shock), relative to which the national economy will be stable. Obviously, the stronger the shock, the more likely the system will lose its original state. Based on this reasoning, it is necessary to distinguish between static and dynamic stability. Static stability refers to the ability of the national economy to independently restore its initial position with small disturbances. However, in the case of significant shocks, the system loses its equilibrium and cannot restore equilibrium without additional impact on it. The dynamic stability of the national economy is manifested here.

According to the approach of M.F. Khakimova: "... by dynamic stability we mean a volatile trajectory of economic growth, limited by the stability corridor. Simply put, economic growth, due to the impact of internal and external shocks, has an oscillatory trajectory. At the same time, state authorities set limits (stability corridor) for fluctuations in which the trajectory will not leave this corridor" (*Khakimova, 2021*).

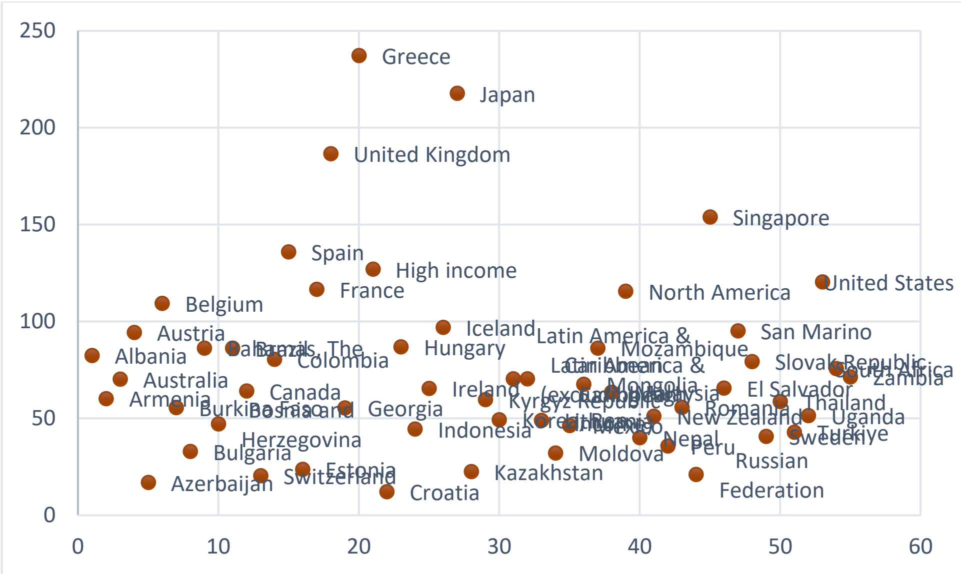

Figure 1: Government debt, 2021 (% of GDP). Source: https://en.wikipedia.org/wiki/List_of_countries_by_public_debt#cite_note-weo-7.

In a turbulent economy, the dynamism of macroeconomic regulation is the ability of government agencies implementing policies not only to respond to shocks, reduce their impact on the national economy, but also to prematurely recognize them and take appropriate measures to eliminate them. Here, the development and operation of an early risk recognition system takes on an important place. The practice of diagnostics and early recognition of sustainability risks requires compliance with certain requirements. In particular, an important role here is played by the availability of adequate analytical capacity that would accurately assess macroeconomic imbalances in the long term. In addition, the identified imbalances should be clearly interpreted from an economic point of view. At the same time, in the context of dynamic stability, it is extremely important to determine the threshold values of the volatility of a country's economic growth. As noted earlier by M.F. Khakimova: ".....Of no small importance in the processes of self-organization of the national economy is the corridor of marginal values of economic indicators established by state economic policy" (*Khakimova, Saidmurodov, 2022*).

The second point that should be paid attention to in the framework of state economic policy is the application of the theory of change approach. This approach makes it possible to assess the impact (impact evaluation) through the prism of cause-and-effect relationships between the implemented economic policy and the achieved end result, i.e. the impact. Along with this, when analyzing the effectiveness of the public administration system, such tools as cost/benefit analysis and a system for monitoring and evaluating the implementation of economic policy are also used.

Well, the third point that requires attention in the framework of macroeconomic regulation of a turbulent economy is to take into account the self-organizational processes of society, since they are the catalyst for the economic development of the country. In other words, within the framework of the early risk recognition system mentioned above, we justify the use of integrated tools for macromodeling and microsimulation.

This approach will allow us to assess the distributional effects of the implemented state economic policy, as well as predict the behavior of economic entities on the economic policy measures taken (feedback). In other words, we are talking about the impact of the implemented state policy on the welfare of households, to determine the winners and losers in the system of state policy. The proposed research methodology is one of the newest in world economic science and has been widely used in the last few years in many developing and developed countries in order to study the impact of various macroeconomic reforms and shocks on various components of the economic system.

The idea behind this approach is to combine a general equilibrium model (GEM) and a micromodeling tool. These two models are used sequentially to study the distributional effect of the tax reform being implemented and compare different reform scenarios for a number of parameters.

The general equilibrium model (GEM) makes it possible to estimate price parameters, as well as the number of parameters of production functions that can reproduce aggregated economic data presented in an industry context, based on Walras theory. Further, the calibrated model evaluates a new scenario of state policy, for example, in the field of taxation and evaluates changes in the structure of production, consumption, employment, prices and budget revenues within the framework of the new policy. Consequently, this approach allows us to assess only the macroeconomic impact of the reform on the national economy, while the microeconomic consequences for households remain outside the scope of the study.

In order to trace the consequences of macroeconomic reforms at the micro level, i.e. at the level of economic agents (households), a simulation model describing a sample of households in the economy is consistently added to the macroeconomic model of general equilibrium. The microsimulation model is based on a significant amount of household survey data that cover the socio-economic and demographic characteristics of the studied households (*Khakimova, 2019*).

Thus, the dynamic stability of the national economy in a turbulent economy is ensured on the basis of certain systems, models, mechanisms that allow resolving dialectical contradictions between strategic goals and tactical objectives of the economic development of the Republic of Tajikistan in conditions of openness and disequilibrium of economic processes (*Khakimova, Saidmurodov, 2022*). Schematically, this can be represented as follows:

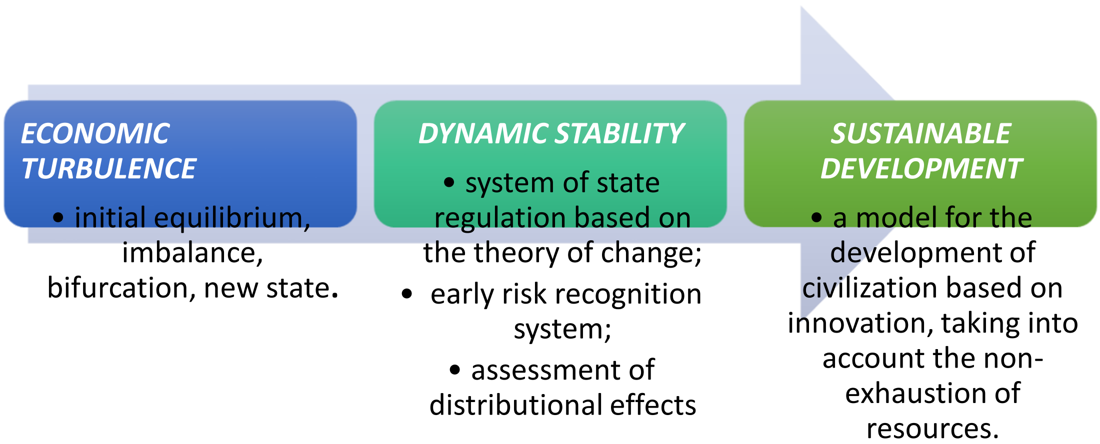

Figure 1: The mechanism of achieving sustainable development in conditions of economic turbulence.

1 CONCLUSIONS

In conclusion, we would like to note that the period of a turbulent economy will be very difficult and complex for all mankind. The picture of the development of the world is changing, requiring a rethinking of approaches both to the formation of an economic development strategy, tactics of its implementation, and for the scientific community. Theoretical and methodological issues of scientific research should be further developed by supplementing the practiced approaches of macroeconomic regulation of post-industrial society, the theory of synergetism, which consists in the study of self-organization processes in open nonlinear and nonequilibrium dynamic systems. This approach, in contrast to the microeconomic prerequisites with the "market failures" of the neoclassics, Keynes' concept of state countercyclical regulation and economic growth, the uncertainty approach and the active macroeconomic intervention of Robinson J., Kaldor

N. and Straff P., concepts of subjectivism and denial of macroeconomics as such by L. von Mises and F. von Hayek, the theory of transaction costs of R. Coase, the concept of "coordinated economy" of neo-institutionalists, the concept of "state dirigisme" of the French sociological school, the quantitative theory of money by M. Friedman, the theory of rational expectations by J.Muth and R. Lucas, the ideas of the self-organizing power of the price mechanism of the Austrian school market, the concepts of reaganomics, expands the theory of macroeconomic regulation by applying the methodology of synergetics to the consideration of modern processes of self-organization of economic systems within the framework of dynamic stability, identifying the scope of state economic policy, its significant characteristics, as well as its effectiveness. In other words, research and development should be aimed at identifying the dynamic characteristics of the ongoing economic processes. In turn, the regulation of the economy in modern conditions should include a set of systems, mechanisms, measures, models that ensure the dynamic stability of the national economy.

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