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ECONOMETRIC MODEL OF SOCIO-ECONOMIC FACTORS AND ASPECTS OF DEVELOPMENT OF THE REPUBLIC OF UZBEKISTAN

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A R T I C L E I N F O.

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Abstract

The article considers a new econometric model of social econometric factors and aspects of the development of the Republic of Uzbekistan.

At present, the digitalization of society at all levels of the organizational and managerial hierarchy is the most important direction of scientific and technological progress, in which the most advanced technologies, methods and forms of organizational and managerial thought are implemented. In this regard, it can be hoped that the implementation of positive processes associated with the introduction of advanced directions and methods of scientific and technological progress, including in the field of digitalization of society, will be able to mitigate the consequences of many negative pathological challenges in the modern world, as a result of which progressive trends in social development will ultimately prevail over negative factors and trends.

INTRODUCTION

Recently, the level of uncertainty and variability of the organizational, economic and environmental environment has increased significantly. This became especially evident in the context of the COVID-19 pandemic, when even in developed countries the level of GDP decreased by 7-8%, social tension in society increased, and at the same time the likelihood of so-called color revolutions with all the ensuing negative consequences increased. All these negatives, often called challenges of the modern world, can be generally called pathologies of a socio-economic and environmental nature (this term is derived from the Greek "pathos", which means disease). The impact of the COVID-19 pandemic on the functioning of the socio-economic system of almost all countries of the world showed firsthand how serious the impact of pathogenic factors on the system of social reproduction can be, showed how seriously the functioning of the so-called normal socio-economic and ecological system can change up to the appearance of social patterns of the pathological type.

ANALYSIS OF RECENT RESEARCH AND PUBLICATIONS

Considering that in recent decades, various crises have become more frequent at different levels of the social hierarchy, which are very painfully experienced by the population; it seems that the development of various types of pathology is very relevant. And we are talking here not only about the well-known

traditional sciences of a biomedical nature (pathoanatomy, pathopsychology, pathophysiology, etc.), but also about new scientific and educational disciplines of a public profile. Since the 90s of the twentieth century, the author in a number of scientific papers has already expressed the idea of the advisability of the emergence and development of this kind of patho sciences [1, p. 14], which were proposed to be called pathoeconomics [2, p.136], pathoecology [3, p.94], etc.

RESEARCH METHODOLOGY

A distinctive feature of modern society is its constant modernization and diversification, and the ongoing changes are ambivalent: some improve, others fall into decay. Therefore, there is a need to analyze the socio-economic aspects of society, one of the tools of which is the modeling of various aspects of social development, such as environmental, demographic, production, etc. five priority areas for the development of the Republic of Uzbekistan in 2017-2021, which set the task of "reducing the role of the state in regulating the socio-economic development of the country, decentralization and democratization of the public administration system"

The relevance of modeling the socio-economic aspects of the life of the population is associated with the transitional processes of transformation of the economy in the context of globalization, when an incorrectly chosen strategic decision threatens the development of society, the prevention of which involves the use of an econometric modeling tool. It is especially important to carry out modeling of social development processes in a crisis, when the level of uncertainty of the socio-economic environment increases, the degree of its variability increases, and the importance of various pathoeconomic factors increases [2, p.247]. Econometric modeling of socio-economic systems is an ambiguous process. However, its rational application is one of the factors for increasing the competitiveness of economic systems, taking into account the capabilities of modern information technologies for making decisions for the future.

The use of models in the study of socio-economic aspects and factors is aimed at performing a number of functions: to deepen knowledge about existing systems; identify ways to improve them; to make a comparative analysis of a real object and its mathematical model, which will allow to determine the features and qualitative characteristics of this object. The heuristic functions of modeling are to identify negative trends and to choose positive ways to solve problems.

The purpose of this article is to analyze and model economic processes in the Republic of Uzbekistan in the face of new pathological challenges and digitalization processes.

Modeling has its own goals: to find out the state of the problem at the moment; identify "critical" moments of contradictions; identify development trends and factors that correct the undesirable development of the modeling object; in order to find the best options for resolving issues, to promote the revitalization of the activities of state and public organizations. The fact that the model cannot reflect the whole picture of the process, but displays only its individual essential aspects, is an integral property of the model. On the one hand, this property of the method makes it difficult to analyze the process as a whole, taking into account all the various interrelations of factors. At the same time, the effectiveness of the model depends not only on how well this process is theoretically studied, but also on how successfully modeling techniques can be applied in each specific case.

On the other hand, the property under consideration provides a valuable opportunity to highlight and simulate in the model the most important conditions and factors and, on this basis, to study their effect and relationships with other significant factors and the process as a whole. Here lie the possibilities for using the modeling method for prognostic purposes: based on knowledge of the functioning of the most important factors that determine the dynamics of the process, one can predict its further development. The use of the strengths of the modeling method and the knowledge of its weaknesses, the combination of this method with others, quantitative and qualitative analysis gives grounds in the process of its application to obtain reliable results.

RESULTS AND DISCUSSION

When modeling social processes, a variety of goals are set and various tasks are solved. With the help of modeling, optimal dimensions are determined, the behavior of the system is predicted, factors are analyzed, as a result of which different living standards are justified [5]. The standard of living of the population is one of the most important indicators of the economic development of any country. For a comprehensive analysis of the standard of living of the population, the following indicators are used: the level of average per capita income of the population, the degree of differentiation of the population in terms of income and consumption, the subsistence minimum, the level of poverty of the population, as well as the standard of living, that is, the minimum amount of consumer goods guaranteed by the state.

The standard of living is characterized by different indicators, the possibilities of their implementation are calculated in the course of modeling, one of which is the indicator of GDP per capita, the dynamics and trend of which is shown in Fig. 1.

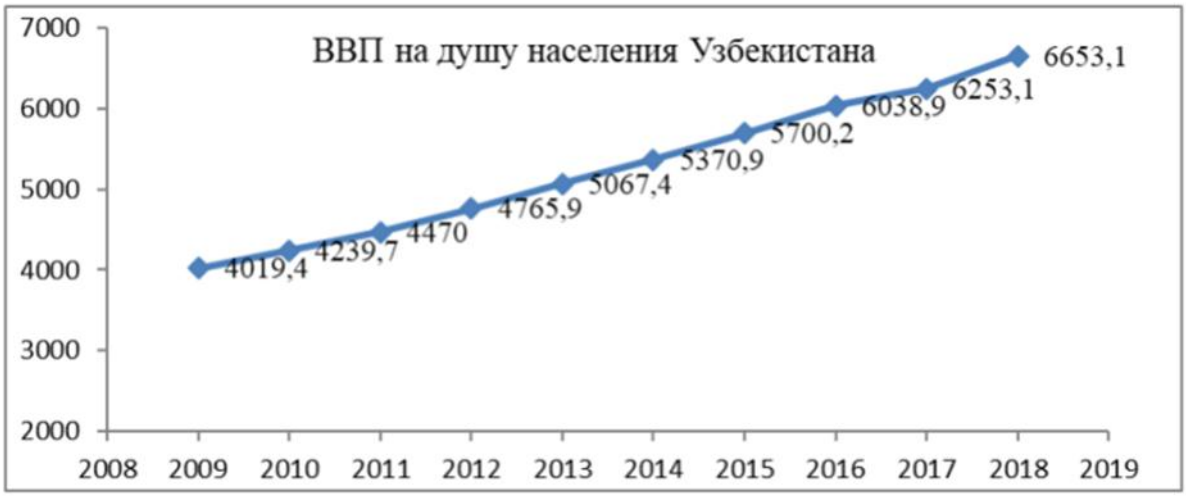

Figure 1 - Dynamics of GDP per capita in soums in Uzbekistan for the period from 2009 to 2018

Indicators of the standard of living of the population, in turn, are studied using a whole system of techniques and methods, in particular, methods of statistical and econometric modeling. Issues of regulation and management of socio-economic processes, including the standard of living of the population, involve the construction and development of econometric models. The particular complexity of modeling socio-economic processes is that it requires theoretical understanding in accordance with the existing social reality.

The relevance of modeling socio-economic processes in a market economy is primarily due to the fact that the modeling process is an integral part of forecasting, which determines the effectiveness of managing the socio-economic sphere. In the analysis of socio-economic processes, including the analysis of the assessment of the well-being of the population based on economic and mathematical methods, a special place is occupied by econometric models that make it possible to identify and measure quantitative relationships between the studied indicators and the factors influencing them.

Econometric models in the study of the standard of living of the population are used depending on the goals and directions of the analysis, as well as on the availability of information. In this regard, a model of dependence of GDP per capita of Uzbekistan on inflation and unemployment rates for the period from 2009 to 2019 was built and interpreted.

Based on the analysis of the matrix of pair correlation coefficients, the absence of the phenomenon of multicollinearity of factors was revealed, and therefore all of the above factors were included in the

model. As a result of multiple correlation-regression analysis, the following model was obtained with a full set of factors:

$$Y = 25180,8 - 2456,83X1 - 103,X2$$

where Y - GDP per capita, million soums.

X1-unemployment rate,%

X2-inflation rate,%

In mathematical modeling, it is necessary to assess the adequacy of the constructed model, i.e., the correspondence of the model to the real process, and this means not just adequacy, but its compliance with those properties that are considered essential for the study. Checking the adequacy of econometric models is a serious problem, because without such a check, the use of modeling results in management decisions may not be possible.

Analysis of the constructed model revealed the following: the factors included in the model contribute to a decrease in the standard of living. In particular, an increase in the unemployment rate by 1% leads to a decrease in GDP per capita by 2456.83 million soums, respectively, an increase in the inflation rate by 1% reduces the value of this indicator by 103.01 million soums, i.e. there is an inverse relationship between the ratio of GDP per capita to unemployment and inflation. At the same time, a comparative analysis of the influence of factors on the volume of GDP per capita indicates a stronger influence of the unemployment rate on it than the inflation rate, which can be a guideline for managing the process of socio-economic development of society in the future.

The multiple correlation coefficient equal to 0.8587 shows that the relationship between the level of GDP per capita and the factors included in the model is strong and this confirms the correctness of the hypothesis about the relationship between the indicators included in the model. The multiple coefficient of determination, equal to 0.7377, shows that the change in the level of GDP per capita by 73.77% depends on the variation of the factors included in the model, which indicates the adequacy of the model. The assessment of the significance of the regression equation as a whole was carried out using the Fisher F criterion, and since the condition Fcalc>Ftabl is fulfilled, the hypothesis of the statistical significance of the econometric model and the expediency of its use for decision making or forecasting for the future is accepted with a probability of 95%.

CONCLUSIONS

Thus, the approach proposed in the article for constructing econometric models on the analysis of socio-economic factors and aspects of the development of the Republic of Uzbekistan is currently very promising and can contribute to obtaining useful information that will be in demand and used in the process of making effective management decisions. As a result of research, it became obvious that the factors of social development and the socio-economic trends arising as a result of their action can be divided into two large groups with a sufficient degree of conventionality. The first group should include factors and trends of a negative nature associated with the action of various pathologies (economic, social, environmental, territorial, legal, etc.) that adversely affect the functioning of the reproductive system (for example, the impact of the COVID19 pandemic on society, called modern challenges of a negative nature, etc.). The second group, on the contrary, includes positive factors and trends, primarily related to the progressive influence of scientific and technical progress and effective organizational and managerial changes and realities.

The confrontation between these two groups of factors and trends largely affects the level of balance and stability of social systems, and also determines the dynamics and prospects for the development of society in the foreseeable future. Which of these two groups of factors and tendencies prevails will largely determine the state of the social structure: whether it will degrade or, conversely, progress and

develop. Obviously, this largely determines the dynamics of the level and growth rate of GDP, the level and quality of life, inflation and many other parameters and indicators that are connected with the daily life of the population as a whole and each of us.

At present, many pessimistic specialists tend to implement a predominantly negative scenario of social development. This is understandable, the depletion of the natural resource base, the deterioration of the ecological environment, the growth of the world's population, not to mention the growth of the huge nuclear potential - all this is unlikely to give strength to the strengthening of optimistic moods. However, in our opinion, do not despair and you need to believe in the best. And the point here is not only in the reasonable nature of mankind and the victory of good over evil, but, above all, in the hope for great opportunities for scientific and technical progress, and especially for technological and managerial progress.

At present, the digitalization of society at all levels of the organizational and managerial hierarchy is the most important direction of scientific and technological progress, in which the most advanced technologies, methods and forms of organizational and managerial thought are implemented. In this regard, it can be hoped that the implementation of positive processes associated with the introduction of advanced directions and methods of scientific and technological progress, including in the field of digitalization of society, will be able to mitigate the consequences of many negative pathological challenges in the modern world, as a result of which progressive trends in social development will ultimately prevail over negative factors and trends.

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