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MODELING SOCIO-ECONOMIC PROCESSES IN THE REPUBLIC OF UZBEKISTAN

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Formulation of the problem. This article reveals the theoretical aspects of the implementation of the process of modeling the socio-economic aspects of society, taking into account the developed development strategy of the Republic of Uzbekistan in the foreseeable future. *The aim of the research* is to characterize the process of modeling socio-economic processes in the Republic of Uzbekistan. *The object of the research* is the processes of development of environmental economics in Uzbekistan. *The methods* used in the research are logical, comparative, analytical, scientific and methodological. *The hypothesis of the research* is the assumption of the dependence of the size of the cost of recovering the ecological balance on the volume of national non-financial production assets. *The statement of basic materials*. The degradation and depletion of natural resources requires capital investments to develop new resources and enhance the exploitation of existing ones. *The originality and practical significance of the research* lies in the fact that the author substantiates the interrelation of the diseases of modern man with unfavorable environmental conditions arising through his own fault. The corresponding state of the environment determines up to 20% of morbidity and 50% of oncological diseases. A multiple correlation-regression analysis of the development of the national economy has been carried out. *Conclusions of the research* consist in justifying the fact that ecologically oriented structural reorganization involves a large-scale redistribution, overflow of resources from primary (agriculture and extractive industries) to secondary sectors of the economy (processing industry, construction, transport, communications), and then to tertiary (intellectual activities and services).

Key words:
modeling of socio-economic processes, multiple correlation and regression analysis, regression model, development strategy, living standards of the population.

МОДЕЛЮВАННЯ СОЦІАЛЬНО-ЕКОНОМІЧНИХ ПРОЦЕСІВ В РЕСПУБЛІЦІ УЗБЕКИСТАН

Постановка проблеми. У даній статті розкриваються теоретичні аспекти здійснення процесу моделірования соціально-економічних аспектів життя суспільства з урахуванням розробленої стратегії розвитку Республіки Узбекистан в доступній для огляду перспективі. *Мета статті* – охарактеризувати процес моделювання соціально-економічних процесів в Республіці Узбекистан. *Об'єкт дослідження* - процеси розвитку економіки природокористування Узбекистану. *Методи, використані в дослідженні* - логичеких, порівняй-вальний, аналітичний, науково-методологічний. *Гіпотеза дослідження* полягає в припущенні наявності залежності розміру витрат на відновлення екологічного балансу від обсягу національних нефінансових виробничих активів. *Виклад основного матеріалу*. Деградація і виснаження природних ресурсів вимагає капітальних вкладень для розробки нових ресурсів і посилення експлуатації вже наявних. *Оригінальність і практичне значення дослідження* полягає в тому, що автор обґрунтовує взаємозв'язок захворювань сучасної людини з несприятливими умовами навколишнього середовища, що виникають з його ж вини. Відповідне стан навколишнього середовища визначає до 20% захворюваності та 50% онкологічних захворювань. Здійснено множинний кореляційно-регресійний аналіз розвитку національної економіки. *Висновки дослідження* полягають в обґрунтуванні того, що екологічно орієнтована структурна перебудова передбачає широкомасштабне перерозподіл, перелив ресурсів з первинних (сільське господарство і видобувна промисловість) у вторинні сектори економіки (обробна промисловість, будівництво, транспорт, зв'язок), а

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потім в третинні (сфери інтелектуальної діяльності та послуг).

Ключові слова:

моделювання соціально-економічних процесів, множинний кореляційно-регресійний аналіз, регресійна модель, стратегія розвитку, рівень життя населення.

МОДЕЛИРОВАНИЕ СОЦИАЛЬНО-ЭКОНОМИЧЕСКИХ ПРОЦЕССОВ В РЕСПУБЛИКЕ УЗБЕКИСТАН

Постановка проблемы. В данной статье раскрываются теоретические аспекты осуществления процесса моделирования социально-экономических аспектов жизни общества с учетом разработанной стратегии развития Республики Узбекистан в обозримой перспективе. *Цель статьи* – охарактеризовать процесс моделирования социально-экономических процессов в Республике Узбекистан. *Объект исследования* – процессы развития экономики природопользования Узбекистана. *Методы, использованные в исследовании* – логичекий, сравнительный, аналитический, научно-методологический. *Гипотеза исследования* состоит в предположении наличия зависимости размера затрат на востановление экологического баланса от объема национальных нефинансовых производственных активов. *Изложение основного материала*. Деградация и истощение природных ресурсов требует капитальных вложений для разработки новых ресурсов и усиления эксплуатации уже имеющихся. *Оригинальность и практическое значение исследования* состоит в том, что автор обосновывает взаимосвязь заболеваний современного человека с неблагоприятными условиями окружающей среды, возникающими по его же вине. Соответствующее состояние окружающей среды определяет до 20% заболеваемости и 50% онкологических заболеваний. Осуществлен множественный корреляционно-регрессионный анализ развития национальной экономики. *Выводы исследования* состоят в обосновании того, что экологически ориентированная структурная перестройка предусматривает широкомасштабное перераспределение, перелив ресурсов из первичных (сельское хозяйство и добывающая промышленность) во вторичные секторы экономики (обрабатывающая промышленность, строительство, транспорт, связь), а затем в третичные (сферы интеллектуальной деятельности и услуг).

Ключевые слова:

моделирование социально-экономических процессов, множественный корреляционно-регрессионный анализ, регрессионная модель, стратегия развития, уровень жизни населения.

Problem statement. A distinctive feature of modern society is its constant modernization and diversification, and the ongoing changes are ambivalent: some are improving, others are falling into decline. 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.

Analysis of recent research and publications. The emphasis on the development of socio-economic aspects of the life of society is made in the Program for the implementation of the Strategy of Action in five priority areas of development of the Republic of Uzbekistan in 2017-2021, which sets 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" [1].

The relevance of modeling the socio-economic aspects of the population's life is associated with the transitional processes of economic transformation 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 simulate the processes of social development 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 also increases [2].

The aim of the article is characteristic the process of modeling socio-economic processes in the Republic of Uzbekistan.

Presenting main material. Econometric modeling of socio-economic systems is an ambiguous process. However, its rational use is one of the factors in increasing the competitiveness of economic systems, taking into account the possibilities of modern information technologies for making decisions in the future.

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

Simulation has its own goals: to find out the state of the problem at the moment; to identi-

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fy "critical" moments of contradictions; identify development trends and factors correcting unwanted development; to search for optimal options for resolving problems, to intensify the activities of state and public organizations.

The fact that the model cannot reflect the whole picture of the process, but only reflects its individual 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 interconnections of factors. At the same time, the effectiveness of the model depends not only on how well the process is theoretically studied, but also on how successfully the modeling techniques can be applied in each specific case.

On the other hand, the property under consideration provides a valuable opportunity to isolate and simulate the most significant factors in the model and, on this basis, to study their action and interrelationships with other essential factors and the process as a whole. Here lies the possibilities for using the modeling method for predictive purposes: based on knowledge about the functioning of the most important factors that determine the dynamics of the process, it is possible to predict its further development. The use of the strengths of the modeling method and knowledge of its weaknesses, the combination of this method with others, quantitative analysis with a qualitative one gives grounds to obtain reliable results.

When modeling social processes, a variety of goals are set and a variety of tasks are solved. With the help of modeling, the optimal sizes are determined, the behavior of the system is predicted, the factors are analyzed, as a result of which a different standard of living is justified [3].

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 per capita income of the population, the degree of differentiation of the population by income and consumption, the size of the subsistence minimum, the level of poverty of the population, as well as the living standard, that is, the minimum amount of consumer goods, which is guaranteed by the state.

Living standards are characterized by indicators, and the possibilities of their implementation are calculated by modeling, one of which is the indicator of GDP per capita.

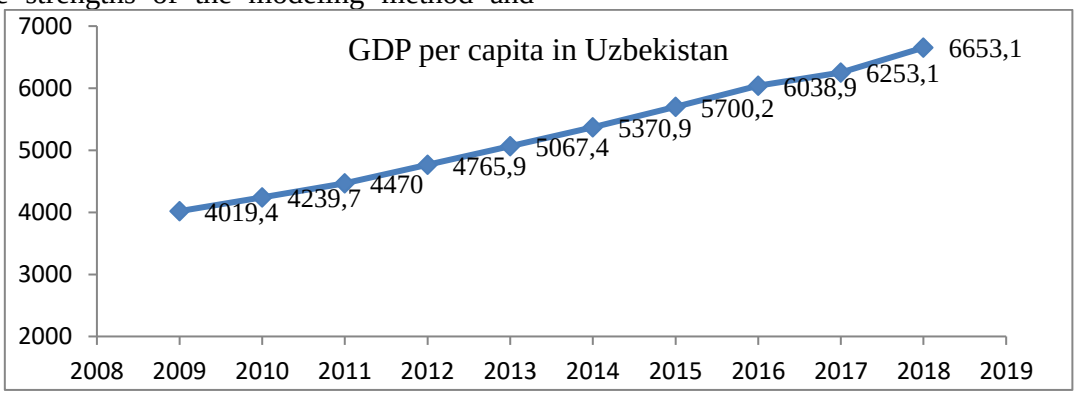

Figure 1 – Dynamics of the GDP per capita indicator in Uzbekistan for the period 2009-2018
Source: developed by the author based on [4]

The indicators of the standard of living of the population, in turn, are investigated using a whole system of techniques and methods, in particular, methods of statistical and econometric modeling. The issues of regulation and management of socio-economic processes, including the standard of living of the population, imply the construction and development of econometric models. The particular difficulty 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 it is an integral part of forecasting, which determines the effectiveness of management of the socio-economic sphere.

In the analysis of socio-economic processes, including the well-being of the population, on the basis of economic and mathematical methods, econometric models occupy a special place, which 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 the dependence of GDP per capita in Uzbekistan on inflation and unemployment rates for the period 2009-2018 was built and interpreted.

Based on the analysis of the matrix of paired correlation coefficients, the absence of the phenomenon of multicollinearity of factors was revealed, in connection with which all of the above factors were included in the model. As a result of multiple correlation-regression analysis, the following regression model with a full set of factors was obtained:

$$Y = 25180{,}8 - 2456{,}83X_1 - 103{,}01X_2, \quad (1)$$

where У - GDP per capita, mln. soums.

X_1-unemployment rate,%

X_2 - inflation rate,%

In mathematical modeling, it is necessary to assess the adequacy of the constructed model, that is, the correspondence of the model to the real process, when we mean not just adequacy, but its compliance with those properties that are considered essential for research. Checking the adequacy of econometric models is a serious problem, since without such a check, the application of modeling results in management decisions may be impossible.

Conclusions and prospects of further researches. The 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 2,456.83 million soums, respectively, an increase in the inflation rate by 1% reduces 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 notes a stronger influence on it of the unemployment rate than the inflation rate, which can be a guideline for managing the 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 variation 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 estimation of the significance of the regression equation as a whole was carried out using the Fisher's F-criterion, and since the condition Fcalc> Ftabl is satisfied, the hypothesis of the statistical significance of the econometric model and its use for decision-making or forecasting for the future is accepted with a probability of 95%.

Thus, the approach to constructing econometric models of socio-economic aspects of society at the current level of research has the right to exist.

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