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МОДЕЛЮВАННЯ ЕКОНОМІЧНОЇ ПОВЕДІНКИ ЕКОНОМІКИ КРАЇНИ

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SIMULATION OF THE ECONOMIC BEHAVIOR OF THE COUNTRY'S ECONOMY

Анотація. Дослідження економічної поведінки країни потребує використання системи макроекономічних показників. Саме вони дають змогу зрозуміти суть взаємопов'язаних процесів на рівні всієї економіки, виявити напрямки і тенденції її подальшого розвитку, розробити необхідні рекомендації для покращення економічного становища в країні. В статті досліджено головний макроекономічний показник – ВВП, який вважається індикатором в аналізі економічної поведінки країни. На основі моделі декомпозиції часового ряду визначено перспективний обсяг ВВП країни на 2022 рік в квартальному розрізі.

Ключові слова: економіка, економічна поведінка, моделювання, прогнозування, країна.

Abstract. The study of the country's economic behavior requires the use of a system of macroeconomic indicators. They make it possible to understand the essence of interrelated processes at the level of the entire economy, to identify the directions and trends of its further development, to develop the necessary recommendations for improving the economic situation in the country. The article examines the main macroeconomic indicator - GDP, which is considered an indicator in the analysis of the country's economic behavior. On the basis of the time series decomposition model, the perspective volume of the country's GDP for 2022 in a quarterly section is determined.

Keywords: economy, economic behavior, modeling, forecasting, country

Today's realities show that the quality and dynamism of the further evolution of individual states and the world economy as a whole largely depend on the ability of theoretical and practical science to accurately assess the current state of economic processes, to give an adequate forecast of their development prospects. It has been proven that any economic system is characterized by a movement that does not follow a straight path, mostly having a wave character - downturns and upswings in business activity. This is especially relevant for the economy of Ukraine, the dynamics of which is prone to the influence of numerous destructive shocks, which have an expression in the crisis phenomena of recent years.

The main indicator and condition for ensuring the stability of the economic system is sustainable economic growth, the difficulty of maintaining which is determined by the strong dependence between this indicator and the occurrence of economic crises - both at the national and international levels. In this case, the most important parameters of the economy deviate from the stable state - production volume, price level, employment of the working population, rate of profit, rate of interest and others. When such deviations from the equilibrium trend reach the largest quantitative values, economic growth is temporarily interrupted by the opposite process - a recession, and then a crisis. Despite numerous measures to prevent crises, level their effects and support the sustainability and stability of the state's development, economic growth is not always positive. In practice, the economy does not develop along a straight line, which characterizes economic growth, but through constant deviations from the trend, through recessions and upswings. The periodic repetition of these recessions, that is, crises and depressions, provided a prerequisite for the assumption of their wave origin. Since the economic crisis is the maximum minimum point in the dynamics of the socio-economic process, the calculation of the amplitude of the deviation from the equilibrium state, as well as the detection of its duration, is used to assess economic growth, which is called the phenomenon of economic cyclicality.

The main indicator that is most often used in the study of the country's economic behavior is the macroeconomic indicator of the gross domestic product (GDP), which is expressed in two forms - actual and potential. Actual GDP is the total volume of

goods and services produced for final use during the reporting period. It characterizes the real state of the economy at the moment. Potential GDP is the maximum possible aggregate of the final manufactured product, created using all the technological and labor resources available in the country. This indicator describes the level that, with competent planning, implementation and use, the country's economy can eventually show.

The concept of potential GDP is determined by the trend of actual GDP dynamics, deviations from which generate cyclical fluctuations. The study of cyclic fluctuations of time series is based on the statement that the fluctuations of the actual levels of the series from the trend are not random, but systematic in nature. In this case, the dynamics of deviations of values from the general trend is subject to the influence of a certain regularity, which is expressed in their repetition at certain time intervals. The decomposition method is a classic method of studying economic dynamics. The main idea of decomposition is the decomposition of a dynamic population into components, where the studied data is not the original series, but its selected stationary cyclical or seasonal component.

Based on the assumption that the non-linear development of the national economy, in addition to exogenous factors, is influenced by endogenous factors that arise within the economic system, it will be appropriate to analyze all components (trend, seasonal, cyclical and random) fluctuations of the gross domestic indicator, as the main indicator of the development of the country's economy. In fig. 1 presents the dynamics of changes in the volume of the country's GDP for the period from 2010 to 2021 in a quarterly section.

Analyzing the data presented in fig. 1, we can conclude that the country's GDP is gradually increasing every year, but there are fluctuations on a quarterly basis. Thus, when building a model of the decomposition of the country's GDP volume, it is necessary to use a multiplicative time series model. Decomposition of the time series was carried out using the Statistica 13.0 package.
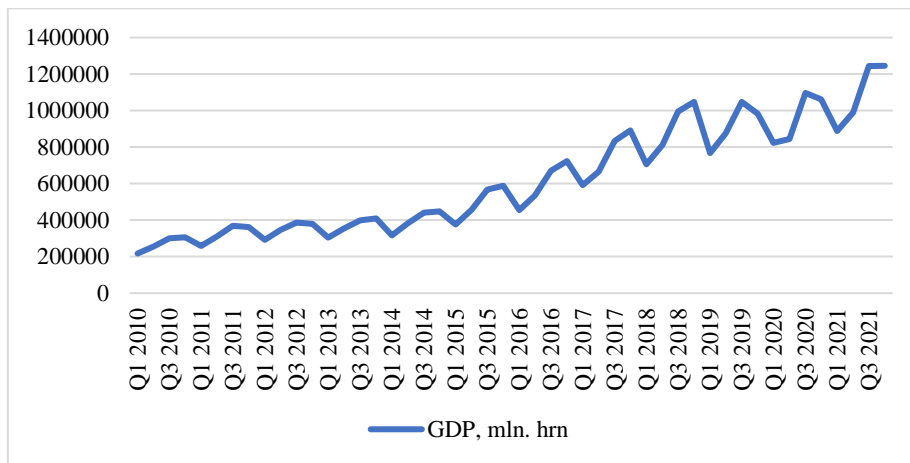
Fig. 1 – Dynamics of changes in the volume of the country's GDP, million hryvnias

The next step in the construction of the decomposition model is the calculation of the trend and cyclical components, which are the basis for the construction of the forecast of the gross domestic product for 2022 on a quarterly basis. The result of constructing the gross domestic product forecast is presented in fig. 2.
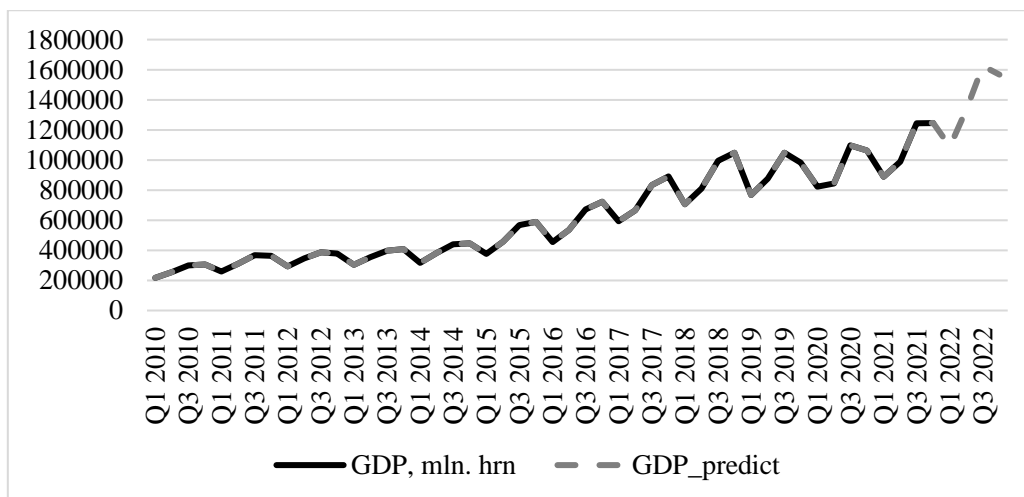
Fig. 2 – Results of forecast construction

Thus, on the basis of the decomposition model, a forecast for 4 quarters of the volume of the country's gross domestic product was built (Fig. 3). In 2022, it is expected to maintain positive dynamics until the country's GDP increases, however, when building the decomposition model, only trend, seasonal and cyclical components

were taken into account, but the influence of external and internal factors that can lead to drastic changes in the development of the country's economy and its economic behavior

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