MATHEMATICAL METHODS, MODELS AND INFORMATION TECHNOLOGIES IN ECONOMY

FORECASTING THE DEVELOPMENT OF THE HIGH-TECH SECTOR OF THE UKRAINIAN ECONOMY

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The article is devoted to topical issues of forecasting the development of the high-tech sector of the Ukrainian economy. The purpose of this article is the statistical research of the current state of the high-tech sector and forecasting its development using quantitative methods. For this purpose, the main tasks are solved. They include the structure analysis, constructing the pair regressive, one- and two-term autoregressive models, evaluation of their significance and adequacy, point forecasting for 2017 and 2018. First, the economic structure of different countries is analysed. It is obtained that in the developed countries, the share of high-tech industries ranges from 25 to 40%. In developing countries, this indicator is less than 10%. Then the author pays attention to the current state of the Ukrainian economy. It is shown that the relationships between constituents of high-tech production change in time and will change in the future. For example, during the period of 2011–2016, the share of production of basic pharmaceutical products and preparations increased by 72% in the total industrial production, the same tendency took place for the aircraft and spacecraft, related equipment (14%), weapons and ammunition (13%). At that time, the share of chemicals and chemical products decreased by 43%, computers, electron and optical products (50%), motor vehicles, trailers and semi-trailers and other vehicles (60%). In general, the share of the high-tech sector in the Ukrainian economy decreases from 13% to 9%. Therefore, Ukraine tends to developing countries. Then the one- and two-term autoregressive models are constructed. A non-autocorrelation of random errors is tested using Neumann criteria. It is shown that the two-term autoregressive model has the minimum relative error and can be used for forecasting trends of Ukrainian high-tech sector.

On the basis of this model, the point forecasts for 2017 and 2018 are made. It is obtained that a point forecast for 2017–2018 will be 8.3% and 7.8% respectively.