MODELING CHANGES IN THE ACTIVITY OF UKRAINIAN DOMESTIC BUSINESS IN TIMES OF WAR

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DOI: 10.32342/2074-5354-2023-2-59-12

Keywords: martial law, aggression against Ukraine, phenomenological modeling, conservatism of the system of equations, ease of doing business index, UBI business activity index, three-component production function

JEL classification: E610; F200; C310

The article examines the effects of changes in the activity of domestic business during the war, as a result of the system of unfavorable factors. The authors analyze the possibilities of using different types of mathematical models to reproduce the dynamics of business activity at the level of a particular country, and selects the most successful one. A phenomenological model describing the dynamics of the process was proposed, which uses the business activity index as the main variable and is based on an ordinary heterogeneous second-order differential equation with a source term. Using a three-component production function, a transition to a system of differential equations describing the dynamics of various components of the business activity index was made, which, in the absence of a source term responsible for the impact of external stimulating factors, is conservative. The modeling results are compared with empirical data, which indicates a good ability of the model to reproduce real processes in the economy under the influence of powerful negative factors, including the restoration of business optimism caused by the return of territories in September-October 2022 and overcoming the consequences of attacks on energy infrastructure in November 2022-January 2023. It is shown that the involvement of other equations describing the dynamics of business activity in the system leads to a loss of conservatism. The frequency and phase-frequency analysis of the dynamics of Ukrainian business activity during the war allows us to conclude that business activity will recover fairly quickly after the cessation of negative depressing factors. Based on the descriptive data, the article clusters the negative factors that suppress domestic business during hostilities and compares them with the parameters that determine the ease of doing business, an internationally recognized indicator that allows assessing obstacles to business activity. Based on the research of recognized foreign experts, a retrospective analysis of obstacles to the development of Ukrainian business was conducted. An empirical study of a number of enterprises from the Dnipropetrovsk region belonging to various business sectors was implemented, which proves that the main problems that emerged during the war are not much more severe than the problems that domestic business experienced before the aggression. The «classical» factors associated with hostilities are reduced to ensuring uninterrupted supply of electricity and preventing the outflow of human resources through conscription and forced migration. It is concluded that an interesting direction for further research on this problem is the use of the Granger model, which will allow for joint analysis of time series and take into account hidden relationships.

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