Shtal, T., Butenko, O., Kot, O., Kozub, V., & Malakhov, V. (2025). Modelling economic productivity of Ukraine in the context of military challenges. *Scientific Bulletin of Mukachevo State University. Series "Economics"*, 12(2), 107-120.

Abstract. Military challenges have transformed the economy of Ukraine, stipulating the necessity of revaluating the sources of its productivity. An attempt was made to model the impact of these factors on Ukraine's GDP using the Cobb-Douglas production function and the Solow residual. Statistical data for 2014-2024 were analysed, regression analysis was performed to determine the relationship between the main economic variables and the elasticity of capital and labour was estimated. The Solow residual was used to estimate the technological level of the economy and identify exogenous factors affecting productivity. The results of the study suggest that spending on scientific and technical activities had a negative impact in the short term due to insufficient funding and macroeconomic instability. Military expenditures failed to provide a significant increase in productivity due to their unproductive focus. In contrast, international aid contributed to macroeconomic stability, although failed to stimulate long-term growth. The partial contribution of factors to the formation of the Solow residual made up 27.92% for innovation, 25.95% for military spending and 20.99% for international aid. The model indicated a high R^2 value (0.96), suggesting its validity in explaining changes in TFP. Recommendations were developed to improve economic productivity of Ukraine, which include improving scientific and technical activity through improved funding for scientific research, rationalising defence spending by integrating military investments into the overall economic strategy, as well as effectively attracting international aid for structural reforms and human capital development. The obtained results can serve as the foundation for shaping economic policies aimed at the country's post-war recovery

Keywords: Cobb-Douglas production function, employment, international aid, expenditures on scientific and technical activities, Solow residual