Economic Sciences

MULTIDIMENSIONAL APPROACH FOR ECONOMIC COMPLEXITY AS A NEW TOOL FOR PREDICTION OF ECONOMIC GROWTH

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Economic complexity as a new approach to measuring international competitiveness of a country was introduced by C.A. Hidalgo and R. Hausmann in their article “Building blocks of economic complexity” (2009). They provided an understanding of economic complexity as a measure of knowledge entitled in goods country produces (Atlas of Economic complexity, 2023). At the same time the authors developed Economic Complexity Index which measures diversity of export baskets assuming that countries with more diverse exports use more sophisticated and endowed know-how how to use resources and technologies. Moreover, better ability to use existing resources allows countries to introduce new export products. Authors also demonstrated that economic complexity measured by their methodology allows to predict economic growth (Hidalso & Hausmann (2009), Tachella et al. (2013)). The methodology was criticized as it generally based on calculation of Balassa index and implies that linear relationships exist between economic complexity and product complexity, which is not obvious (Cristelli et al., 2013).

In 2023 multidimensional approach was introduced (Stojkoski et al., 2023). Standard approach takes into account only trade data, but in reality international competitiveness cannot be determined only by diversity of export basket. Innovation potential and knowledge creation play key role in introduction of new export products (Broekel, 2019). Therefore, authors introduced two more measurements: economic complexity of technologies and economic complexity of innovations. Economic complexity of technology is measured by a geography of patent applications, accordingly the authors employ data on patent applications from World Intellectual Property Organization. To measure Economic complexity of research the authors used data on citations and journal rankings from Scimago database. The main point of this improvement is to overcome a problem of overestimation of ECI Trade for countries which have better ranking because of significant trade volumes with neighboring countries and their economic complexity. At the same time, ECI Trade overlooks countries that are geographically distant, but have a high innovative potential.

In instance by ECI Trade dimension Ukraine was ranked 44 of 131 in 2021, 39 of 96 by ECI Technology dimension, but only 97 of 141 by ECI Research (OEC, 2023). These results allow to make a conclusion that Ukrainian export is mostly consisted of commodities and is not diversified enough. Low rankings of ECI Research and ECI Technology reveal low levels of innovative and scientific activities. Taking into account a destruction of factories and infrastructure in the Eastern part of Ukraine as a result of Russian invasion the best strategy for post-war recovery is a development of knowledge economy, adoption of new technologies and development of service sector.

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