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EVT-BASED METHODS AS SUPPORT FOR THE CONSTRUCTION OF A SYNTHETIC INDEX OF SOCIO-ECONOMIC DEVELOPMENT FOR TERRITORIAL UNITS

Abstract:

Socio-economic development is an important multidimensional issue and its measurement is complex. This process reveals many problems that need to be resolved, such as data availability, selection of indicators and their measurement, selection of appropriate methods for normalization, weighing and aggregation of indicators. The main problem with the real data are atypical observations. In our research, we deal with the solution of this problem. We propose a comprehensive linear ordering procedure to assess the level of socio-economic development of various types of territorial units. It is based on the positional version of Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) and methods of Extreme Value Theory (EVT). In the first stage, we propose to use a two-step procedure based on six automatic methods to identify the tail of the data distribution (atypical observations). In the second stage, we suggest to use the positional TOPSIS method to aggregate indicators and eliminate the impact of asymmetry, mainly in the central part of the data distribution.

Keywords:

extreme value theory, tail distribution, TOPSIS, socio-economic development, territorial units

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