

Fuzzy Linear Programming Approach to Updating Input-Output Technical Coefficients

Topic: Methodological aspects of input-output analysis II

Author: Kathleen Bernardo Aviso

Co-Authors: Joost Reyes Santos, Krista Danielle Sy Yu, Michael Baliwag Promentilla, Raymond Roca Tan

Technical coefficient matrices in input-output (IO) models are empirical and thus inherently historical in nature. Numerous methods have been proposed to update these matrices to enable IO models to be more accurate in forecasting. In this work we propose a fuzzy linear programming approach to updating the technical coefficients of IO tables. This method determines the updated set of coefficients by finding the smallest deviation from the previous set of technical coefficients necessary to satisfy updated final demand and total output data. Trapezoidal fuzzy numbers are assumed to define the allowable bounds for updating the coefficients and max-min aggregation is utilized to identify the optimal set of coefficients. We demonstrate this methodology on two case studies. The first case study will utilize data from literature while the second case study uses the Philippine IO data.