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NETWORK DATA ENVELOPMENT ANALYSIS WITH COMMON WEIGHTS: AN APPLICATION TO THE SUSTAINABILITY MEASUREMENT OF OECD COUNTRIES

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Abstract

This work considers a general common-weights network data envelopment analysis (DEA) model which is applicable to most network systems, except those with feedbacks and cycles. The principle of compromise, of the technique for order preference by similarity ideal solution (TOPSIS), is employed to find the common set of weights in the general network DEA model. The proposed method is applied to assess the environmental sustainability performance of the Organization for Economic Co-operation and Development (OECD) countries. Our results show that most countries have a large difference in the rank of efficiencies between the eco-efficiency and production efficiency stages, which reveals the source that causes the low environmental sustainability scores of the whole process.

Keywords: common weights, data envelopment analysis, decision making, sustainability

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