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A CROSS-EFFICIENCY DATA ENVELOPMENT ANALYSIS (DEA) BASED MODEL FOR MEASURING ENVIRONMENTAL PERFORMANCE

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Abstract

Undesirable outputs are increasingly considered in data envelopment analysis (DEA) for environmental performance assessment because of hot environment issues. However, many practical conditions are not considered during modeling undesirable output together with desirable outputs and inputs. In this paper, we presented several new approaches with considering weight constraints between undesirable outputs and inputs. Then we constructed cross-efficiency models for measuring eco-efficiency. Finally, we applied the developed models to evaluate the performance of 25 OECD nations in the time interval 2007-2009 so as to illustrate the usefulness of the new presented models. Some interesting finds are described as resulting from this application.

Key words: cross-efficiency, data envelopment analysis, eco-efficiency, undesirable outputs

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