

Finding DEA Targets Using Multi-Objective Programming

Authors : Farzad Sharifi, Raziye Shamsi

Abstract : In this paper, we obtain the projection of inefficient units in data envelopment analysis (DEA) in the case of stochastic inputs and outputs using the multi-objective programming (MOP) structure. In some problems, the inputs might be stochastic while the outputs are deterministic, and vice versa. In such cases, we propose multi-objective DEA-R model, because in some cases (e.g., when unnecessary and irrational weights by the BCC model reduces the efficiency score), an efficient DMU is introduced as inefficient by the BCC model, whereas the DMU is considered efficient by the DEA-R model. In some other case, only the ratio of stochastic data may be available (e.g; the ratio of stochastic inputs to stochastic outputs). Thus, we provide multi objective DEA model without explicit outputs and prove that in-put oriented MOP DEA-R model in the invariable return to scale case can be replacing by MOP- DEA model without explicit outputs in the variable return to scale and vice versa. Using the interactive methods for solving the proposed model, yields a projection corresponding to the viewpoint of the DM and the analyst, which is nearer to reality and more practical. Finally, an application is provided.

Keywords : DEA, MOLP, STOCHASTIC, DEA-R

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