

Stability of efficiency in data envelopment analysis with local variations

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Abstract

This paper developed a new sensitivity analysis in the Efficient *Decision-Making Units* (DMUs) for *Data Envelopment Analysis* (DEA) model when the data uncertainty occurred locally. We consider the stability of an efficient DMU by deteriorating a class of DMUs simultaneously in the same directions to keep the test DMU remains on the efficient frontier. The approach generalizes the usual DEA sensitivity analysis in which the data variations are considered either on the single test DMU or on the allover DMUs. This enables the decision maker to take suitable actions that meet the possible local variations.

Keywords : *Data envelopment analysis, Efficiency, Stability region, Non-linear programming.*

1. Introduction

Data Envelopment Analysis (DEA), as first proposed by Charnes *et al* [3], and extended by Banker *et al* [2], has become a popular method for analyzing the efficiency of various organization units. DEA is a multiple input-output efficient technique that measures the relative efficiency of *Decision-Making Units* (DMUs) using a linear programming based model.

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