On the use of DEA models with weight restrictions for benchmarking and target setting

Nuria Ramón, José L. Ruiz and Inmaculada Sirvent

Centro de Investigación Operativa. Universidad Miguel Hernández. Avd. de la Universidad, s/n

03202-Elche (Alicante), SPAIN

Abstract

This paper discusses the use of DEA models with weight restrictions for purposes of benchmarking and target setting. The inclusion of weight restrictions allow us to incorporate value judgments or preferences into the analysis, so that these models may identify best practices that are desirable in addition to technically achievable. Thanassoulis et al. (2008) state that non-radial DEA models are the appropriate instrument for the setting of targets and the benchmarking. In particular, these models ensure that the identified targets lie on the Pareto-efficient subset of the frontier. Moreover, as these authors claim, non-radial targets (within the original PPS frontier) may be preferable under restricted models if one is not certain about the trade-offs implicit in the new facets added to the PPS (as the result of the addition of weight restrictions) and regard these only as a way of incorporating preferences or value judgments into the assessment. Bearing in mind these considerations, we focus on non-radial DEA models which include "assurance region" (AR) weight restrictions. Specifically, we develop a new AR formulation that allows us to find the closest benchmark on the AR efficient frontier taking into account both the standard slacks and the residues associated with the weight restrictions. Identifying the most similar referent enables the setting of the targets that show the unit under evaluation the easiest way for improvement.

Keywords: DEA, Value judgments, Assurance Region (AR), Benchmarking, Target setting.