

A Unified DEA Approach for Decomposing Economic Inefficiency

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Abstract

The decomposition of economic inefficiency in any of its versions – cost, revenue or profit inefficiency – has been achieved only for a reduced set of DEA models. Specifically, and beside the first proposed multiplicative decomposition by Farrell (1957), designed exclusively for radial models, Chambers et al. (1996, 1998) proposed an additive decomposition based on the directional distance function. So far, the subsequent proposed decompositions are all additive and quite recent, and have considered the weighted additive model (Cooper et al., 2011), the output-oriented weighted additive model (Aparicio et al., 2013) and the two Russell oriented models (Aparicio et al., 2015). Recently we have proposed, for the first time, a decomposition for the Enhanced Russell Graph Model (Pastor et al., 2015). Based on it we devised here a unifying approach for getting an additive decomposition of economic inefficiency into its technical and allocative components, which works for any known DEA inefficiency model. In particular, we finish by comparing, for the additive model, the new proposed decomposition with the former decomposition proposed by Cooper et al. (2011).

Keywords: DEA, Economic Inefficiency Decomposition, Directional Distance Functions