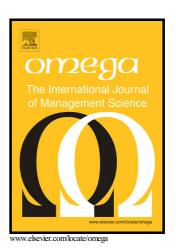
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ACCEPTED MANUSCRIPT

Graph Productivity Change Measure Using the Least Distance to the Pareto-Efficient Frontier

in Data Envelopment Analysis

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Abstract: This paper proposes a new method to measure productivity change of decision making units

in the full input-output space. The new approach is based on the calculation of the least distance to the

Pareto-efficient frontier and hence provides the closest targets for evaluated decision making units to

reach the strongly efficient frontier with least effort. Another advantage of the new methodology is

that it always leads to feasible solutions. The productivity change in the new approach is

operationalized as a Luenberger-type indicator in the Data Envelopment Analysis framework and it is

decomposed into efficiency change and technical change. The paper empirically illustrates the new

method using recent data on the Spanish quality wine sector.

Keywords: Data Envelopment Analysis, productivity change, closest targets, least distances, Principle

of Least Action, graph measures

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