New Directions in Benefit-of-the-Doubt Composite Indicators: the use of weight restrictions and assessment of convergence

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Abstract

This presentation reviews the construction of Benefit-of-the-Doubt Composite Indicators (BoD CIs) that allow the aggregation of individual indicators to obtain an overall measure of performance. This involves using frontier methods to reflect the relative performance of multidimensional concepts beyond the traditional production setting involving the transformation of inputs into outputs.

The talk presents refined indicators developed to represent the phenomena studied rigorously and give accurate policy recommendations. The approaches reviewed include the Directional BoD CI, based on a Directional Distance Function model, which allows aggregating desirable and undesirable indicators and dealing with variables with negative values.

CI models often require the specification of weight restrictions to reflect the relative importance of indicators. Alternative formulations for indicator-level and category-level restrictions are discussed. The advantages and limitations of using virtual weight restrictions, expressing the importance of indicators in percentage terms, are also explored.

Convergence in productivity examines if entities in an industry get closer to the best practices (σ-convergence) and if the gap between the frontiers of the best and worst performers decreases over time (β-convergence). In a multi-input multi-output setting, the assessment of σ- and β-convergence can be measured using non-parametric frontier techniques, such as Data Envelopment Analysis. This talk presents an innovative approach to estimate convergence in the context of performance assessments resting on 'Benefit-of-the-Doubt' models.

This presentation illustrates the developments in this field with real-world applications where the use of Composite Indicators has been gaining traction, including the Health Sector, Energy Sector, Education Systems, Construction Industry, and Environmental Performance.