

Stochastic Multiattribute Acceptability Analysis: an application to the ranking of Italian regions

Salvatore Greco^{1,2}, Alessio Ishizaka², Benedetto Matarazzo¹, Gianpiero Torrisi²

¹Department of Economics and Business, University of Catania

²University of Portsmouth, Portsmouth Business School

We consider the issue of ranking regions with respect to a range of economic and social variables. Departing from the current practice of aggregating different dimensions via a composite index, usually based on an arithmetic mean, we instead use Stochastic Multiattribute Acceptability Analysis (SMAA). SMAA considers the “whole space” of weights for the considered dimensions. Thus, rather than considering an average person giving equal or fixed weights to all dimensions, SMAA explores how potential differences in individual preferences regarding the weighting system affect the outcome. In this sense, in contrast to the purported objectivity of the many rankings supplied by economic institutions and mass media, this proposal enhances, simplifies and renders transparent the ranking exercise. The methodology is applied to the ranking of Italian regions, showing that the disadvantage of the South regions with respect to the North regions (so called “Mezzogiorno problem”) is maintained for the entire spectrum of possible preferences with respect to considered dimensions as represented by vectors of weights. Thus, our research shows that the well-known North-South divide is maintained for classes of individuals with different preferences and it is not related only to the representative individual represented by a single vector of weights - very often assigning the same importance to all the dimensions. Moreover, to consider possible measurement errors, we also tested the stability of the results in front of perturbations of the values attained by the regions on the considered dimensions. The analysis we conducted unveils patterns of similarity and dissimilarity even within regional economy. Many of these findings are neglected within the extant literature addressing the “Mezzogiorno” problem. Finally, we propose a class of original multidimensional Gini indices and a class of multidimensional polarization indices that measure the concentration and polarization of the probability to achieve a given ranking position or better, or a given ranking position or worse. These indices confirm the gap between the North and South of Italy with more nuance than Gini and polarization indices related to single indicators.

Keywords: Stochastic Multiattribute Acceptability Analysis, Regional Development, Multiple Criteria Ranking, Composite Index, Multidimensional Gini Indices, Multidimensional Polarization Indices.