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EVALUATING GREEN GROWTH PERFORMANCES OF OECD COUNTRIES

Abstract:

In this study, it is aimed to divide the OECD countries into groups by using fuzzy clustering analysis in terms of their green growth performances. This will provide a broad perspective on countries' green growth performances, which will enable them to understand where they are located and which countries are similar or different. Thus, it will provide a guiding, helpful information to policy makers.

The OECD reports provide detailed information on the countries' green growth performance or the status of each country in terms of each green growth indicator. However, they do not evaluate countries in general in terms of the similarities and differences of green growth performances. Furthermore, ranking countries according to their overall results is not useful in determining which countries display similar characteristics on which indicators.

In clustering countries according to their green growth performance, classical clustering analysis cannot work efficiently due to extreme values and does not give flexibility in interpreting the results. Demonstrating how much the countries belong to the clusters is more understandable information to policy-makers. For these reasons, in this study, fuzzy clustering analysis, which has been applied in many fields in the literature, has been considered appropriate method. Fuzzy clustering analysis has many algorithms. The FANNY algorithm, which uses the method developed by Kaufmann and Rousseeuw is found suitable for the study. Because compared to other fuzzy clustering methods, the FANNY algorithm has features such as accepting the dissimilarity matrix and being more resistant to clustering global objects. Also, this algorithm is more suitable for the data set used in the study. Because, using Euclidean distance in the classification of the units that contain data with small differences, generally in the same range, as the countries' green growth performances is more appropriate. Fuzzy clustering analysis for different years provides more efficient interpretations. Because, the degree to which countries belong to the cluster is able to provide information about the position of the countries that they will have in the next period in terms of their green growth performance.

The study consists of three sets of data prepared for 2005, 2010 and 2015. The data set for each year includes six headline indicators variables from 36 OECD countries, which can be accessed from the OECD database. These indicators are; carbon productivity, non-energy material productivity, environmentally-adjusted whole economy productivity, natural resource index, land cover and use, and population exposure to air pollution.

When the green growth performances of 36 OECD countries are evaluated, it is seen that there are 4 clusters in 2005, 3 in 2010 and 2 clusters in 2015. It is understood that the differences in the green growth performance of the countries are decreasing every 5 years. It is possible to interpret this situation as an awareness of green growth and general improvement on green growth performance of countries.

Keywords:

green groeth, OECD, fuzzy clustering

JEL Classification: C10, C38, O13