Tourism Efficiency: Bootstrap-Data Envelopment and Tobit Panel Data Analysis

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Article History

Received: 08.06.2023
Accepted: 23.09.2023

Keywords

Bootstrap
Data envelopment analysis
Efficiency
Tobit panel data analysis
Tourism

Abstract

Tourism is an important sector for countries, not only for cultural but also for economic activities. The tourism sector, which operates effectively, contributes to the development of the country's economy. Therefore, the study aims at calculating tourism efficiency and identifying factors that influence it. The study discussed 18 European countries that are among the world's major destination centers. Firstly, tourism efficiency scores were calculated with the data covering the period 2002-2019. Inputs are the number of tourists and tourism expenditures, and output is tourism revenues. Tourism sector efficiency was calculated with the standard Data Envelopment Analysis (DEA) model. Because of the possible statistical limitations of the DEA method, analysis was repeated with the Bootstrap-DEA method. The resulting efficiency scores were used as dependent variables in the Tobit model. The variables including per capita income, digitalization, energy consumption, financial development, political stability, and life expectancy at birth were handled as new trends of tourism efficiency in the Tobit panel data analysis. Bootstrap DEA results, which yield more accurate results, gave efficiency results for a smaller number of countries than the efficiency analysis performed with standard DEA. Tobit panel data analysis results showed that income per capita, digitalization, political stability, and life expectancy at birth enhanced tourism efficiency. In the study, unlike the literature, tourism efficiency was not considered at the level of companies, but at the level of countries. In addition to the standard DEA analysis, the Bootstrap DEA method was used, which yielded superior results. Additionally, not only the efficiency values were calculated in the study, but also the factors affecting the tourism efficiency were determined.

Article Type

Research Article

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DOI: 10.21325/jotags.2023.1287