

The Relationship between Renewable Energy, Real Income, Tourism and Air Pollution

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Abstract : One criticism of the energy-growth-environment literature, to the best of our knowledge, is that only a few studies analyze the influence of tourism on CO₂ emissions even though tourism sector is closely related to the environment. The other criticism is the selection of methodology. Panel estimation techniques that fail to consider both heterogeneity and cross-sectional dependence across countries can cause forecasting errors. To fulfill the mentioned gaps in the literature, this study analyzes the impacts of real GDP, renewable energy and tourism on the levels of carbon dioxide (CO₂) emissions for the top 10 most-visited countries around the world. This study focuses on the top 10 touristic (most-visited) countries because they receive about the half of the worldwide tourist arrivals in late years and are among the top ones in 'Renewables Energy Country Attractiveness Index (RECAI)'. By looking at Pesaran's CD test and average growth rates of variables for each country, we detect the presence of cross-sectional dependence and heterogeneity. Hence, this study uses second generation econometric techniques (cross-sectionally augmented Dickey-Fuller (CADF), and cross-sectionally augmented IPS (CIPS) unit root test, the LM bootstrap cointegration test, and the DOLS and the FMOLS estimators) which are robust to the mentioned issues. Therefore, the reported results become accurate and reliable. It is found that renewable energy mitigates the pollution whereas real GDP and tourism contribute to carbon emissions. Thus, regulatory policies are necessary to increase the awareness of sustainable tourism. In addition, the use of renewable energy and the adoption of clean technologies in tourism sector as well as in producing goods and services play significant roles in reducing the levels of emissions.

Keywords : air pollution, tourism, renewable energy, income, panel data

Conference Title : ICEBE 2017 : International Conference on Economics and Business Economics

Conference Location : Zurich, Switzerland

Conference Dates : September 15-16, 2017