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Does tourism degrade environmental quality? A comparative study of Eastern and Western European Union

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ABSTRACT

The purpose of this paper is to investigate the effect of tourism on economic growth and carbon dioxide emissions in Eastern and Western European Union (EU) countries by incorporating FDI and trade in the production and CO_2 emission functions. We apply panel econometric techniques which account for cross-sectional dependence and heterogeneity. The results of Westerlund panel cointegration test confirm a long-run equilibrium relationship among the variables. Results from long-run elasticities suggest that tourism stimulates economic growth in Eastern and Western EU countries. However, tourism increases CO_2 emissions in Eastern EU but decreases in Western EU. This indicates that tourism has an adverse effect on the environment in Eastern EU. Finally, short-run heterogeneous panel causality test results suggest that tourism causes CO_2 emissions in Eastern EU while economic growth and CO_2 emissions cause tourism in Western EU. Overall, our findings suggest that tourism plays an important role in accelerating economic growth; however, its role on CO_2 emissions largely depends on the adaptation of sustainable tourism policies and efficient management.

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1. Introduction

Europe has been the first choice for international tourists during the last few decades. According to the European Commission (EC), five countries of Europe such as France, Spain, Italy, Germany and the UK rank among the top ten holiday destinations in the world. The region receives 430 million tourists (39.5% of total world tourist arrivals) in 2014 and this is expected to increase rapidly in the next few decades. The rapid increase of tourists in Europe helps to create new jobs, accumulate foreign currency earnings and improves the balance of payments which in turn stimulates economic growth. The tourism sector contributes €286.2 billion which is 8.4% of the total GDP of the European countries in 2012. Moreover, tourism generates 8 million direct employments (3.6% of total employment) and 12 million indirect jobs (5.4% of total employment) in the same region. Furthermore, the industry receives 4.8% of total investment in 2013 (European Council, 2015). Hence, tourism industry is considered as one of the significant industries for socio-economic development in the case of Europe.

While tourism has such a tremendous positive impact on economic development, it is also often blamed for environmental degradation through emitting carbon dioxide emissions into the environment. The tourism industry causes 5% of global CO_2 emissions, particularly from transportation, accommodation and other tourism-associated activities as these activities

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involve energy consumption mainly from fossil fuels (UNWTO, 2014). However, according to the United Nations Environment Programme (UNEP), tourism may reduce CO_2 emissions if it is managed sustainably and ecologically through promoting the usage of environment-friendly technology and transportation. Therefore, the impact of tourism on CO_2 emissions largely depends on how the industry is managed and governed (UNEP, 2005).

There are numerous studies which theoretically argue that tourism has a significant impact on CO_2 emissions. However, to our best knowledge, Lee and Brahmasrene (2013) is the only study that investigates the impact of tourism on CO_2 emissions in the EU by employing a panel framework. However, the study has some limitations which may raise questions regarding the robustness and validity of the findings. First, Lee and Brahmasrene (2013) have conducted their analysis by grouping all of the countries of the region together and suggest that it would be an interesting if future research conducts a comparative analysis for Western and Eastern European Union (EU). A comparative analysis between Western and Eastern EU would be useful as most of the Western EU countries are considered as developed economies while the majority of the Eastern EU countries are in the status of developing economies. The amount of tourism receipts, nature of CO_2 emissions, number of tourist arrivals, pace of economic growth, quality of institutions and usage of technology are significantly different from developed to developing countries. Hence, we expect to find different results between these two groups of countries. As such, we need to conduct separate analysis to derive important policy implications for both groups of economies. Second, Lee and Brahmasrene (2013) have not accounted for cross-sectional dependence and heterogeneity in their analysis. These two issues need to be addressed; otherwise, findings may mislead the explanation. Therefore, in this study, we aim to address these two issues by employing robust panel econometric techniques.

Particularly, a cross-sectional dependence (CD) test will be applied to investigate whether the given data series is cross-sectional dependence or independence. This is an important issue to be addressed before the application of unit root tests. Most of the conventional unit root tests assume the cross-sectional independence. These conventional unit root tests have lower power if applied to the series which has a cross-sectional dependence. Based on the CD test results, we have applied the Pesaran (2007) cross-sectionally augmented (CIPS) panel unit root test which assumes cross-sectional dependence. Further, to investigate the long-run equilibrium relationship among these variables, we have employed Westerlund (2007) panel cointegration test which is based on the assumption of cross-sectional dependence. Further, to explore the long-elasticities, we have applied the fully modified ordinary least square (FMOLS) method and finally the direction of causality among the variables has been investigated using the heterogeneous panel non-causality test which is based on the approach developed by Dumitrescu and Hurlin (2012).

Finally, Lee and Brahmasrene (2013) examined the role of FDI on tourism development along with economic growth. However, the authors failed to consider the trade variable in their analysis as trade can have a significant influence on the development of the tourism industry. In the literature, it is argued that international trade can have positive impact on tourism as it allows cross-border inter- and intra-firm trade activities which increase business travel (Keintz, 1968; Turner and Witt, 2001). Furthermore, liberalisation of trade through various bilateral and multilateral trade agreements may influence the growth and development of the tourism industry as it increases competition and creates a perfect market. The increased competition and perfect market leads to lower domestic prices, offers a variety of goods and services and increases the quality of services which also attract tourists (Kozak and Rimmington, 1998; Dwyer et al., 2000).

Considering the above-mentioned limitations, this research aims to address these gaps by modelling the effect of tourism development on economic growth and CO_2 emissions in the context of Eastern and Western EU. The novelty of this study is three folds. First, this is probably the first study that presents a comparative analysis on the tourism-CO_2 emissions nexus in the case of Eastern and Western EU. Second, the findings of this study would provide more reliable empirical evidence as we are accounting for cross-sectional dependence and heterogeneity in the analysis by using recent econometric models. Finally, the findings of this study are expected to enrich the knowledge of tourism management, sustainable tourism policies and environmental quality, particularly in the context of Eastern and Western EU countries.

The remainder of this paper is organized as follows. The next section presents a critical review of the literature focusing on methods and findings. Section 3 presents the nature of data, measurement of the variables, empirical methodology and preliminary statistics. Section 4 provides the empirical results and their discussion. Finally, Section 5 presents the conclusion and direction for the future research.

2. Literature review

2.1. Relationship between tourism and economic growth

There appears to be basically four strands of research in prevailing literature on the relationship between tourism and economic growth. The first strand focuses on tourism-led growth which suggests unidirectional causality from tourism to economic growth. A vast amount of literature, such as; Balaguer and Cantavella-Jorda (2002) for Spain, Durbarry (2002) for Mauritius, Dritsakis (2004) for Greece, Eugenio-Martin et al. (2004) for 21 Latin American countries, Gunduz and Hatemi-J (2005) for Turkey, Narayan et al. (2010) for 4 Pacific Island countries, Dritsakis (2012) for Italy and Cárdenas-García et al. (2013) for 144 nations has found that tourism has a direct positive effect on economic growth. These studies argue that tourism induces economic growth through various channels including foreign currency earnings, infrastructural development, employment generation and improving the balance of payments. In terms of econometric techniques, most of

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