



Examining the relationship between tourism and CO₂ emissions: evidence from APEC region

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ABSTRACT

The paper investigates the relationship between tourism, energy consumption, trade openness, economic growth, and CO₂ emissions for 20 economies of the APEC region from 1995 to 2017. This paper employs cross-sectional dependence with heterogeneous panel estimation techniques. The data confirms cross-sectional dependence, and the CIPS panel unit root test shows that the variables are stationary at their first differences. The Westerlund panel cointegration test affirms a long-run relationship among the variables. Tourism and trade openness have significant positive effects on CO₂ emissions while economic growth and energy consumption adversely affect CO₂ emissions in the long-run. The panel non-causality test reveals that there is a one-way causality running from tourism to CO₂ emissions and economic growth to CO₂ emissions.

ARTICLE HISTORY

Received 14 March 2021
Accepted 18 December 2021

KEYWORDS

Energy consumption;
economic growth; trade
openness; CO₂ emissions;
APEC region

Introduction

Tourism¹ is a steadily growing and economically important industry globally and regionally. The APEC region is no exception. The importance of tourism for APEC economies in terms of tourism income generation, job creation and attraction of foreign investment and trade opportunities is obvious. Throughout the last 25 years the APEC economies have witnessed a rapid increase in tourist arrivals, as well as in tourism receipts. The APEC economies have achieved globally, one of the highest growth rates in tourism arrivals 434.3 million arrivals in 2017 equivalent to 31.9% of global tourist arrivals (World Bank, 2020). Of the 434.3 million, 295.2 million arrived in APEC developing economies while 139.1 million arrived in developed economies. The tourism receipts into APEC (excluding Taiwan) economies have increased from US\$186 billion in 1995 to US\$633 billion in 2017.

Although the tourism industry performs a progressively significant role in the APEC economies, the adverse effect caused by tourism should not be ignored. While an expansion in the tourism industry leads to growth in energy consumption, trade openness and economic growth, the industry also increases the level of CO₂ emissions in the APEC economies. As stated by Hart et al. (2004) and Long et al. (2019), tourism is an energy-intensive industry and a significant emitter of greenhouse gases. As reported by the World Tourism Organization (2014), around 5% of global CO₂ emissions and nearly 4.6% of global warming are liable by tourism.

As a result of the impacts of tourism on CO₂ emission, the relationship between tourism and CO₂ emissions has demanded greater academic consideration. In view of this, many countries have set up national strategies that support sustainable development of their tourism industries. Given

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