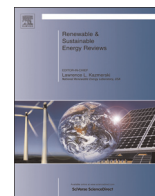




ELSEVIER

Contents lists available at ScienceDirect

Renewable and Sustainable Energy Reviews

journal homepage: www.elsevier.com/locate/rser

Exploring the effects of international tourism on China's economic growth, energy consumption and environmental pollution: Evidence from a regional panel analysis

Lei Zhang^{a,*}, Jing Gao^b^a Center for Economic Research, Shandong University, Jinan 250100, PR China^b International School of Economics and Management, Capital University of Economics and Business, Beijing 100070, PR China

ARTICLE INFO

Article history:

Received 6 June 2014

Received in revised form

22 May 2015

Accepted 2 August 2015

Keywords:

Tourism

Energy consumption

Economic growth

CO₂ emissions

ABSTRACT

This study explores the effects of international tourism on China's economic growth, energy consumption, and environmental pollution as proxied by CO₂ emissions in a multivariate framework using regional panel data over the period 1995–2011. Our findings suggest that the tourism-induced EKC hypothesis does not exist in central China and is merely weakly supported in eastern and western China. However, results show that tourism has a negative impact on CO₂ emissions in the eastern region, which contradicts with our perception to some extent. Panel causality tests show that the directions of causality in both short and long runs are mixed among regions. Nevertheless, our findings reveal that tourism causally affects economic growth and CO₂ emissions in the long run, thus tourism led growth hypothesis is verified under all three scenarios. Our findings also suggest that in all three regions there is bidirectional causality between economic growth and CO₂ emissions. Overall these results imply that low-carbon tourism in China should be continuously supported which provides significant insights to policy makers at various government levels.

© 2015 Elsevier Ltd. All rights reserved.

Contents

1. Introduction	225
2. Literature review	226
2.1. Tourism and economic growth	227
2.2. Tourism and energy consumption	227
2.3. Tourism and CO ₂ emissions	227
3. Data and methodology	227
3.1. Panel unit root tests	228
3.2. Panel cointegration tests	230
3.3. Panel Granger causality	230
4. Results and discussions	230
5. Conclusion	232
Acknowledgments	233
References	233

1. Introduction

The tourism sector in China has undergone substantial changes over the past three decades. Since the reform and opening policy launched in 1978, China has become the third most visited country around the world. Admittedly, inbound tourism is considered as an

* Corresponding author. Tel.: +86 15165169855.
E-mail address: zhang.lei@sdu.edu.cn (L. Zhang).

important impetus to economic development all over the world. According to the latest statistics released by National Bureau of Statistics of China, there were 55.98 million overseas visitors and 1.61 billion domestic tourist visits in 2010 and these numbers are expected to rise in the following decade. Foreign exchange income reached 45 billion US dollars and ranked the fourth largest in the world in 2009. In the meantime, income from domestic tourists totaled at 777.1 billion Yuan. Given the spillover effects of the tourism industry, it may stimulate the economic growth by generating positive externalities in non-tourism sectors such as manufacturing industry, transportation industry and service industry.

Tourism development brings about a number of benefits such as revenue income, job chances and improvement of image. According to the report of Travel Tourism Economic Impact 2013 [1], the sector's direct contribution to China's GDP was 1361.9 billion Yuan or 2.6% of total GDP in 2012, whilst its total contribution to GDP was 4783 billion Yuan or 9.3% of total GDP. The report also predicted that the direct and total contribution of the tourism sector to GDP is expected to rise by 8.7% and 8.9% annually to 3384.8 billion Yuan and 12,062.2 billion Yuan respectively in 2023 (in constant 2012 prices). Additionally, the tourism sector contributed roughly 22.7 million jobs directly and 41 million jobs indirectly. Furthermore, travel and tourism investment in 2012 was 655.2 billion Yuan, or 2.8% of total investment. It is estimated that the travel and tourism investment would increase at a rate of 9.3% till 2023. The tourism sector in China will overtake that of the US by 2023 and become the largest in the world [1]. Apart from the aforementioned benefits, previous literature also identified other benefits brought about by inbound tourism including development of rural areas [2], enforcement of infrastructure development [3], enhanced efficiency through competition [4], and exploitation of scale of economies at a local level [5].

However, though the tourism sector's importance is gradually recognized, its impact on economic development is still unclear, that is, whether the tourism-led growth hypothesis exists in China. Furthermore, as recognition of impacts of tourism on the environment increases, tourism's contribution to energy consumption and CO₂ emissions has aroused increasing academic attention. Although the tourism sector in China plays an increasingly important role in economic development, the negative impact caused by tourism boom cannot be neglected. It is clear that tourism boom causes a number of environmental pressures, including increasing noise, increasing biodiversity loss, and the ensuing increase in greenhouse gas (GHG) emissions [6,7]. In addition, increase in energy consumption accompanying the tourism boom deserves particular attention since increased tourism activities require more energy consumption at various stages such as transportation, catering and accommodation. Further, existing studies have also documented that transportation contributes greatly in terms of CO₂ emissions in the tourism sector [8–11].

There are a bunch of studies that addressed the relationship between tourism and economic growth and arrived at different conclusions. Also, the causal relationship among economic growth, energy consumption, and CO₂ emissions has been widely documented in the literature. Yet, the findings are mixed as well. Moreover, a small strand of research has also explored the relation between tourism and energy consumption [8,12,13]. Despite the tourism's increasing importance to the Chinese economy, it attracted relatively little attention on its effects on economic growth and environment. To the best of our knowledge, the relationship among tourism, economic growth, CO₂ emissions, and energy consumption has not been studied in a multivariate framework for China. Consequently, this motivates us to fill this gap in the literature.

The major purpose of this study is to empirically investigate the causal relationship between tourism, economic growth, energy consumption, and CO₂ emissions under a multivariate framework. A secondary goal of this study is to investigate whether the tourism-induced EKC hypothesis and tourism led growth (TLG) hypothesis hold for China on a regional scale, respectively. The present study contributes to the literature at least in three ways. First, this is the first study which analyzes the dynamics among these variables under a multivariate framework. Second, although the TLG hypothesis and the recently proposed tourism-induced EKC hypothesis have been examined in a number of developed and developing countries, a literature search demonstrates that most tourism contribution studies have been conducted on the national level and none of them investigated this issue for China. Unlike those studies, this paper is the first attempt to fill this gap in the literature by providing regional evidence. Besides, further research regarding the existence of the tourism-induced EKC hypothesis is needed as pointed out by Katircioglu [14]. Third, the tourism-growth literature has often been criticized due to weakness of including variables other than the tourism indicators, growth and the exchange rate. We address this issue by introducing extra variables. Doing so, not only can we make up the deficiency in the literature, but also enables us to investigate the entangled relationship under a multivariate framework.

Given China's vast territory, its tourism economy and energy consumption patterns as well as the amount of CO₂ emissions are not internally homogenous, with large variation across regions. For example, the coastal provinces in the eastern region accounted for approximately 50% of the total inbound arrivals in China and more than 70% of the total receipts in 2007. Also, regional CO₂ emissions declined from north to south and from east to west¹[15]. Moreover, the magnitude of the tourism impact may differ depending on the regions so that regional governments want to know how and to what extent tourism affects regional economic growth, climate change and energy use in those regions. It is therefore necessary for us to conduct a case-by-case analysis on a regional scale due to specific characteristics presented by the regions. Considering the increase in tourism activities and its potential link with energy consumption, further studies on the impact of tourism on the environment and economic growth can provide significant insights and thus studies in this domain are undoubtedly necessary. Understanding this relationship is particularly important to China considering the increasingly important role tourism plays and its great potential economic contribution in the foreseeable future.

The rest of the paper is organized as follows. Section 2 presents an overview of relevant literature. Section 3 provides a description of data and methodology. Empirical results and discussions are presented in Section 4. And the final section summarizes and concludes the paper.

2. Literature review

To the best of our knowledge, the econometric interaction between tourism, energy consumption and CO₂ emissions have only been explored by [16–19]. All these studies verified the long-run association between tourism, energy consumption, and CO₂ emissions. Katircioglu et al. [16] and Katircioglu [17] suggested that tourism positively affect climate change whilst Tiwari et al. [18] found that the effect is only marginally positive. In contrast, Lee and Brahmasurene [19] found the opposite, that is, tourism has a negative impact on climate change. As discussed earlier,

¹ CO₂ emissions in provinces such as Jiangsu and Shandong in east China are much higher than those of western provinces, for example, Qinghai and Ningxia.

Download English Version:

<https://daneshyari.com/en/article/8115568>

Download Persian Version:

<https://daneshyari.com/article/8115568>

[Daneshyari.com](https://daneshyari.com)