MEHMET AKİF ERSOY ÜNİVERSİTESİ
İKTİSADİ VE İDARİ BİLİMLER FAKÜLTESİ DERGİSİ
Mehmet Akif Ersoy University
Journal of Economics and Administrative Sciences Faculty

ISSN: 2149-1658
Cilt: 8 Sayı: 1 s.399-419
Volume: 8 Issue: 1 p.399-419
Mart 2021 March

THE IMPACT OF TOURISM ON THE ECONOMIC GROWTH IN THE MEDITERRANEAN COUNTRIES: EVIDENCES FROM HIDDEN PANEL COINTEGRATION TEST

AKDENİZ ÜLKELERİNDE TURİZMİN EKONOMİK BÜYÜMEYE ETKİSİ: SAKLI PANEL EŞBÜTÜNLEŞME TESTİNDEN KANITLAR

Murat BELKE[1], Süleyman BOLAT[2], Abdulnasser Hatemi-J[3]

1. Dr. Öğr. Üyesi, Burdur Mehmet Akif Ersoy Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, İktisat Bölümü, muratbelke@gmail.com, https://orcid.org/0000-0002-3299-7162
2. Doç. Dr., Aksaray Üniversitesi, İktisadi ve İdari Bilimler Fakültesi, Maliye Bölümü, bolatsuleyman80@gmail.com, https://orcid.org/0000-0001-5635-7322
3. Prof. Dr., Birleşik Arap Emirlikleri Üniversitesi, Muhasebe ve Finans Bölümü, ahatemi@uaeu.ac.ae, https://orcid.org/0000-0002-6212-1292

Makale Türü	Article Type
Araştırma Makalesi	Research Article

Başvuru Tarihi	Application Date
05.11.2020	11.05.2020

Yayına Kabul Tarihi	Admission Date
02.01.2021	01.02.2021

DOI
https://doi.org/10.30798/makuiibf.822194

Abstract

Our main objective is to test for the potential asymmetric interaction between economic growth and tourism sector for a panel consisting of fourteen Mediterranean countries that covers the sample period 1995-2017 using hidden panel cointegration and asymmetric panel causality tests as developed by Hatemi-J (2020a; 2020b). The hidden panel cointegration test results show that there is a significant long-term relationship between the development of tourism sector and economic growth in terms of both negative and positive components. Elasticity findings indicate that economic growth is more sensitive to the increase in tourism revenues (positive shocks) than to the decrease in tourism revenues (negative shocks). In addition, the panel asymmetric causality test results show that there is no causal relationship between the negative components, and uni-directional causal relationship from the tourism sector to economic growth between the positive components. Causality test results support the tourism-led growth hypothesis. Tax advantages, subsidies and other advantageous policies contributing to the development of the tourism sector can increase the contribution of the tourism to economic growth. The findings emphasize that asymmetric effects should be taken into account in the relationship between the tourism sector and economic growth, and the tourism sector policies in these countries should be reconsidered in terms of regional disparity.

Keywords: Tourism, Economic Growth, Mediterranean Countries, Hidden Panel Cointegration, Asymmetric Panel Causality.

Öz

Çalışmanın temel amacı, Hatemi-J (2020a; 2020b) tarafından geliştirilen saklı panel eşbütünleşme ve asimetrik panel nedensellik testlerini kullanarak 1995-2017 örneklem dönemini kapsayan on dört Akdeniz ülkesinden oluşan bir panel için ekonomik büyüme ve turizm sektörü arasındaki potansiyel asimetrik etkileşimi test etmektir. Saklı panel eşbütünleşme testi sonuçlarına göre, turizm sektöründeki gelişme ile ekonomik büyüme arasında hem negatif hem de pozitif bileşenler açısından anlamlı uzun dönem ilişkisi bulunmaktadır. Esneklik bulguları, ekonomik büyümenin, turizm gelirlerindeki artışa (pozitif şoklar), turizm gelirlerindeki azalıştan (negatif şoklar) daha duyarlı olduğunu belirtmektedir. Ayrıca panel asimetrik nedensellik testi sonuçları, negatif bileşenler arasında nedensel bir ilişki bulunmadığını, pozitif bileşenler arasında ise turizm sektöründen ekonomik büyümeye doğru tek yönlü nedensel bir ilişki bulunduğunu göstermektedir. Nedensellik testi sonuçları, turizme dayalı büyüme hipotezini desteklemektedir. Turizm sektörünün gelişimine katkı sağlayan vergi avantajları, sübvansiyonlar ve diğer avantajlı politikalar turizmin ekonomik büyümeye katkısını artırabilir. Bulgular, turizm sektörü ile ekonomik büyüme arasındaki ilişkide asimetrik etkilerin dikkate alınması gerektiğini, incelenen ülkelerdeki turizm sektörü politikalarının bölgesel eşitsizlik açısından yeniden ele alınması gerektiğini vurgulamaktadır.

Anahtar Kelimeler: Turizm, Ekonomik Büyüme, Akdeniz Ülkeleri, Saklı Panel Eşbütünleşme, Asimetrik Panel Nedensellik.

GENİŞLETİLMİŞ ÖZET

Çalışmanın Amacı

Çalışma, Akdeniz Ülkeleri'nde (Arnavutluk, Cezayir, Hırvatistan, Kıbrıs, Mısır, Fransa, Yunanistan, İtalya, Malta, Fas, Slovenya, İspanya, Tunus ve Türkiye) turizm sektöründeki gelişim ile ekonomik büyüme arasındaki ilişkiyi saklı panel eşbütünleşme ve asimetrik panel nedensellik testleri ile 1995-2017 dönemi için analiz etmektedir. Seçilmiş ülkelerde turizmin ekonomik alanın ayrılmaz bir parçası olduğu bilinmektedir. Bölgenin içinde bulunduğu turizm alanına yönelik uzun vadeli etkileşimi ve ilişkinin asimetrik boyutlarını ele alan ilk çalışmadır.

Araştırma Soruları

Akdeniz ülkelerinde turizm sektöründeki gelişme ile ekonomik büyüme arasındaki uzun dönem ilişkisinde asimetrik bir etki var mıdır? Turizm sektörü-büyüme ilişkisinde potansiyel asimetrik etkiler iki değişken arasındaki nedensellik ilişkisini etkileyebilir mi? Turizm gelirlerindeki artışın ve azalışın ekonomik büyüme üzerindeki etkisi farklı mıdır?

Literatür Araştırması

Ekonomilerin lokomotifi olarak kabul edilen alanlardan birisi olan turizm sektörü, hizmetler sektörü ve ihracat bakımından önemli bir role sahiptir. Ekonomistler de uzun vadeli büyümenin belirleyicilerinden birisi olarak turizmin büyüme üzerindeki etkilerini farklı analiz yöntemleri kullanarak değerlendirmektedirler. Turizm ve ekonomik büyüme ilişkisi üzerine yapılan çalışmalar, dört ana hipoteze odaklanmaktadır: (i) büyüme hipotezi, (ii) koruma hipotezi, (iii) çift yönlü nedensellik yaklaşımı ve (iv) tarafsızlık hipotezi. Büyüme hipotezi, turizm sektöründeki gelişmenin (turizme dayalı büyüme hipotezi) ekonomik büyümeyi desteklediğini öne sürmektedir. Koruma hipotezi (büyümeye dayalı turizm hipotezi), büyüme hipotezinin aksine, ekonomik performansın turizm endüstrisinin gelişiminde önemli bir rol oynadığını iddia etmektedir. Büyüme hipotezi ile koruma hipotezinin birleşimi olan çift yönlü nedensellik yaklaşımına göre, turizm sektöründeki gelişme ve ekonomik büyüme arasında geri besleme ilişkisi bulunmaktadır. Son olarak tarafsızlık hipotezi, ekonomik büyüme ile turizm sektörü arasında bir ilişki olmadığını öne sürmektedir. Bununla birlikte, bu dört temel hipotezin tümü, turizm sektörünün gelişimi ile ekonomik büyüme arasındaki ilişkinin simetrik olduğunu varsaymaktadır. Bölgesel şoklar, ülkelere özgü nitelik ve politika uygulamalarındaki farklılıklar, turizm yoğunluğu ve benzeri faktörler de turizm-büyüme ilişkisinde asimetrik etkilerin olasılığını güçlendirmektedir. Literatürdeki ampirik çalışmalar, çoğunlukla turizm ve ekonomik büyüme arasındaki ilişkiyi simetrik olarak ele almakta, asimetrik etkilere odaklanmamaktadır. Bu nedenle çalışma, asimetrik ilişkileri göz önünde bulundurarak literatürdeki boşluğu doldurmayı amaçlamaktadır.

Yöntem

Akdeniz ülkeleri için turizm ve ekonomik büyüme ilişkisini ele alan bu çalışmada Hatemi-J (2020a; 2020b) tarafından geliştirilen saklı panel eşbütünleşme ve asimetrik panel nedensellik testleri kullanılmaktadır. Bu testler, konuyla ilgili daha önce yapılan çalışmaların aksine hem uzun dönem

ilişkisini hem de değişkenler arasındaki potansiyel asimetrik etkileşimi ele almaktadır. Çalışma, Akdeniz ülkeleri için asimetrik etkiler bağlamında turizm-büyüme bağını inceleyen ilk girişimdir.

Sonuç ve Değerlendirme

Analiz sonuçları, 14 Akdeniz ülkesinde turizm ile ekonomik büyüme arasındaki ilişkide asimetrik etkilerin varlığını ortaya koymaktadır. Saklı panel eşbütünleşme testi sonuçlarına göre hem pozitif hem de negatif bileşenler arasında uzun dönemli ilişki bulunmaktadır. Esneklik bulguları, ekonomik büyümenin, turizm gelirlerindeki artışa (pozitif şoklar), turizm gelirlerindeki azalıştan (negatif şoklar) daha duyarlı olduğunu belirtmektedir. Ayrıca panel asimetrik nedensellik testi sonuçları, negatif bileşenler arasında bir nedensellik ilişkisi bulunmadığını, pozitif bileşenler arasında ise turizm sektöründen ekonomik büyümeye doğru tek yönlü bir nedensellik ilişkisinin olduğunu göstermektedir. Nedensellik testi sonuçları, turizme dayalı büyüme hipotezini desteklemektedir. Turizm sektörünün gelişimine katkı sağlayan vergi avantajları, sübvansiyonlar ve diğer avantajlı politikalar turizmin ekonomik büyümeye katkısını artırabilir. Bulgular, turizm sektörü ile ekonomik büyüme arasındaki ilişkide asimetrik etkilerin dikkate alınması gerektiğini, incelenen ülkelerdeki turizm sektörü politikalarının bölgesel eşitsizlik açısından yeniden ele alınması gerektiğini vurgulamaktadır.

1. INTRODUCTION

Today, the tourism sector is increasingly becoming an enormous part of the service sector on a global scale. The tourism field is a paramount component of the export classification for the Mediterranean countries. These governments recognize that supporting tourism would clearly present an upward impact on all local communities (Lionetti and Gonzalez, 2012; Tang and Abosedra, 2014; Yazdi et al., 2017). The report by the World Travel and Tourism Council (WTTC) discusses the sector of tourism that supplied 10.4% to global GDP or approximately $8.8 trillion to the global economy in 2018. Moreover, the tourism sector created jobs for 319 million people, which accounted for about 10% of the global employment in 2018. The total participation in travel and tourism to GDP is expected to increase by 11.5% of GDP by 2029 and 13.1 trillion dollars (WTTC, 2019). Therefore, the sector plays a paramount role in helping to overcome the macroeconomic problems associated with low economic growth, low income, high unemployment, and financial or monetary instabilities. This field also affects other economic areas, it aids in diminishing the budget and trade deficits. It makes an enormous contribution to tax earnings and government revenues, increases exchange reserves and foreign exchange earnings (Cortes-Jimenez and Pulina, 2010; Yap and Saha, 2013).

Tourism is a foreign currency earning sector that facilitates the import of goods and services used in production across many countries (Balaguer and Cantavella-Jordá, 2002; Brida and Risso, 2010; Kirca and Ozer, 2021). Additionally, it encourages both public and private fields to invest in new infrastructure, thus competing with sustainable tourism industries in other countries. Moreover, it has a stimulating role in construction, transportation, accommodation, and other service areas (Sokhanvar et al., 2018; Tugcu, 2014). Furthermore, this field can also lead to new developments in business areas, which in turn will aggregate per capita income through the multiplier effect (Lee and Chang, 2008). Finally, tourism makes it easier for national industries to benefit from the presence of scale economies by disseminating technical knowledge, supporting research and improving human capital (Brida et al., 2008; Dritsakis, 2012; Shahzad et al., 2017).

Studies on tourism-growth nexus focus on four main hypotheses: (i) growth hypothesis, (ii) conservation hypothesis, (iii) bidirectional causality approach, and (iv) neutrality hypothesis. The growth hypothesis asserts that the policies contributing to the development in the tourism sector promote the economic growth. Contrary to the growth hypothesis, conservation hypothesis claims that economic performance plays a vital role in the development of the tourism industry. According to the bidirectional causality approach, which is the combination of growth hypothesis and conservation hypothesis, development in the tourism sector and economic growth reinforce each other. Finally, the neutrality hypothesis proposes that economic growth and the development of tourism sector do not support each other directly, suggesting that there is no relation between the them. However, all of these four basic hypotheses assume that the relationship between tourism sector development and economic growth is

symmetric. On the other hand, factors such as the presence of regional shocks, the differences in the country characteristics, policy practices and tourism intensity strengthen the possibility of an asymmetrical relationship in the tourism-growth nexus.

The main purpose of this study is to examine whether there is an asymmetric relationship between the development in the tourism sector and economic growth. To the best of our knowledge, this is the first attempt examining the tourism-growth nexus in the context of asymmetric effects within these countries. For this purpose, this study has analyzed the relationship between the development in the tourism sector and economic growth in 14 Mediterranean countries (Albania, Algeria, Croatia, Cyprus, Egypt, France, Greece, Italy, Malta, Morocco, Slovenia, Spain, Tunisia, and Turkey) by employing the hidden panel cointegration and asymmetric panel causality tests developed by Hatemi-J (2020a; 2020b) during the period 1995-2017.

The study is organized as follows. Section 2 overviews the development of tourism sector in the Mediterranean countries. Section 3 demonstrates empirical studies examining the tourism-growth link are presented in detail. Section 4 introduces the dataset and method, the section 5 includes empirical results. Finally, the study ends with results and policy recommendations.

2. THE DEVELOPMENT OF TOURISM SECTOR IN MEDITERRANEAN COUNTRIES

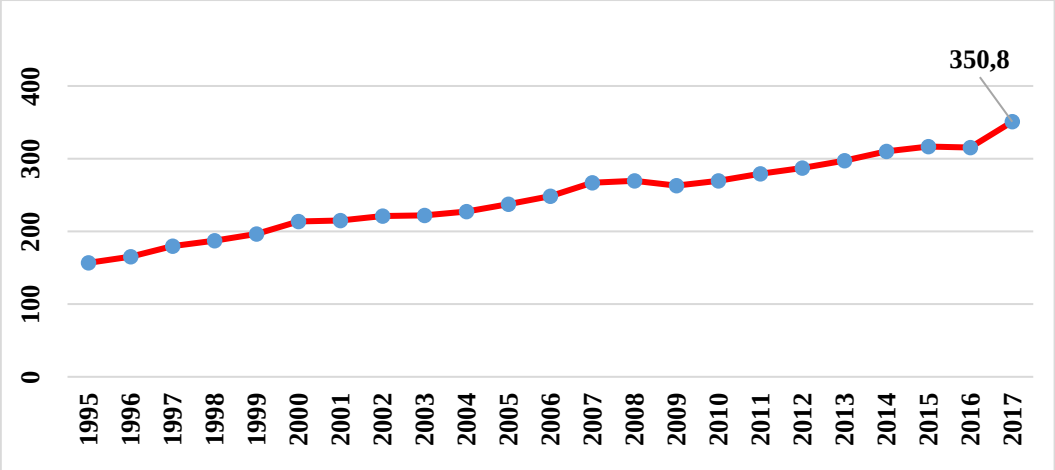
Our analysis covers the sample period 1995-2017 for the following Mediterranean countries namely, Albania, Algeria, Croatia, Cyprus, Egypt, France, Greece, Italy, Malta, Morocco, Slovenia, Spain, Tunisia, and Turkey. The Mediterranean area, considered as a single basin, has a rich history, natural land, long tradition of travelling, trade, culture and heritage for thousands of years. This area has one of the best destinations for tourists all over the world. Thousands of years ago, in Mesopotamia, Ancient Egypt, the State of Carthage, Persia, Anatolia and Phoenicia witnessed the power of control by the Ottoman Empires, Byzantine Empires and the Muslim Caliphates. More than 350 million international tourists came to the Mediterranean area, delivering almost one third of all international tourist arrivals in the world (1.360 million) in 2017.

There are 14 Mediterranean countries that are the leaders in tourism. With regard tourism in Albania, levels decreased from 1997 to 2013. The Albanian government supports this trend by fiscal and administrative incentives to attract tourists and investors. Additionally, the Algerian government had a strong policy to expand the tourism sector, called Public Private Partnership (PPP). Along with Albania, the Morocco government developed a similar program that provided support for accommodation. Additionally, the Morocco government included financial incentives along with audits. However, the Croatia government tries to search for new investments in tourism by 2020. These investments can stimulate sales, employment, the growth, and finally the local economy. Additionally,

the government has provided financial support as the economy to help strengthen the small and local businesses, and private entrepreneurs.

In the figure 1, the tourist arrivals have increased 124% during the period 1995-2017 for fourteen Mediterranean countries this is by far the world's largest tourism area. During 1995 to 2017 international arrivals increased by 1.5. Additionally, tourism in Mediterranean countries increased by 1.25. Fig 2 depicts these 14 Mediterranean countries earned US$ 282 billion (bn) in international tourism receipts, 18% of the world total. Spain was the top Mediterranean earner country of tourism receipts, with US$ 76 billion, followed by France with US$ 68 bn, Italy with US$ 47 billion, Turkey (US$ 32 bn) and Greece (US$ 19 bn) in 2017. These countries received 35 million more international arrivals when we compared from 2016 to 2017. However, this figure is 90 million worldwide.

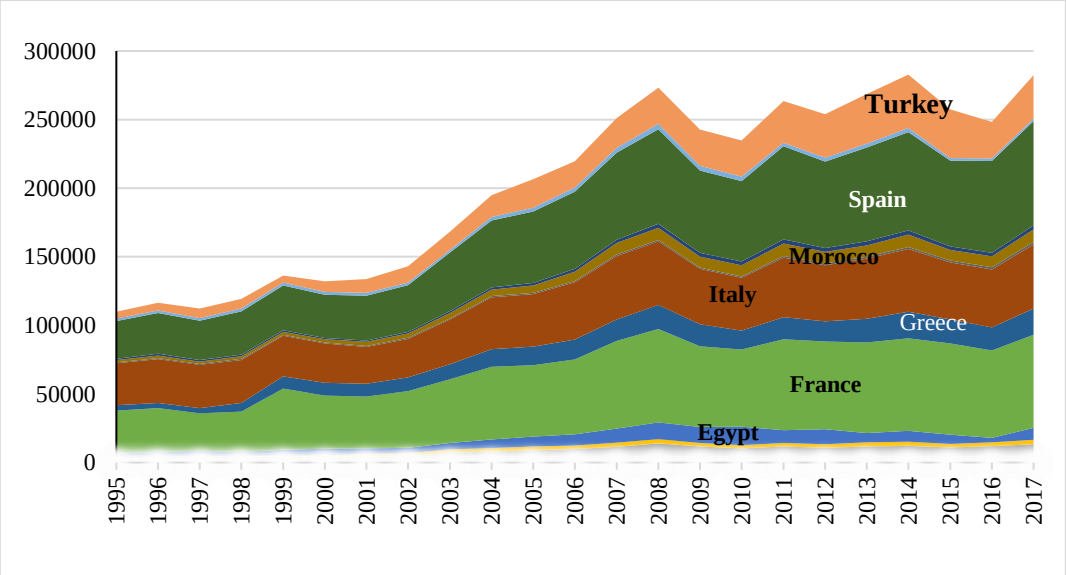
Figure 1. International Tourist Arrivals (million) for 14 Mediterranean Countries (1995-2017)



In Cyprus, tourism is a key factor that increases investment and employment and has had a positive effect over the past decade. In Egypt, it's no secret that the tourism is the key to living a high quality of life and to sustain the economic growth. They have specific policies on marketing and promotion, improving service quality, enhancing sustainability, safety and security for tourism industry. Despite France is a popular destination for international tourists, the France government focused on the service quality, digitalization and information, global competitiveness, tourism investment, promoting access to holiday, training and employment. On the other hand, Greece government plans to implement projects to provide the new thematic tourism products, innovative product development and to protect the character of the region. Additionally, the government has created a special interest tourism area, namely cultural tourism, pilgrimage tourism, cruises, and yachting et al. They tend to attract a lot of new dynamic source-markets such as Middle East, Far East for visiting. Tourism in Italy has been a key driver of economic activity. It needs to be based on the type of technological and organizational innovation, skills development, environmental-cultural heritage, historic fabric of this community and quality services. This can contribute to creating a strong economy and sustainable development a local region. Accordingly, tourism activity in Malta is an important field and is a diverse role in tourism

receipts. They have cultural tourism such as language tourism or language travel activity to learn a different language and to get experience local culture. This type of tourism can be profitable related to low priced language schools. Similarly, Morocco has applied for basic strategies to enhance tourism. These are regional planning policy, new governance structure and sustainable development approach. They make a point of green development, domestic tourism, entertainment, sports-leisure, welfare and health tourism. Just as other countries have same policies on tourism, the Tunisia government has designed to promote the investments and to enhance procedures about tourism industry. Furthermore, Turkey has a large tourism industry and has always put more of an emphasis on the demand and supply of the tourism. The main idea is to provide the conservation in the cultural heritage areas and to focus the sustainable tourism markets (OECD, 2016; OECD, 2018).

Figure 2. International Tourism Receipts (million) for 14 Mediterranean Countries (1995 – 2017)



3. LITERATURE

Although tourism is the economic engine in the world, export service sector has a major role for many countries. Much of tourism literature presents a comprehensive list of some tools signed a measure the economic impact on tourism in each study (Papatheodorou, 1999). Firstly, export-led growth has been heart of development and growth policies for decades. Tourism industry has led to net increases in employment in the economic growth, as well as in other sub-sectors of the economy, just as in the export-led growth. Tourism is a big part of culture and economy and contributes to increasing income. Every town with tourism has a destination for a variety of different routes, new markets. This is one of the steps that expands new routes for long run economic growth. Tourism industry that has a positive effect is to provide an opportunity for new factors such as productivity growth, investment area, savings and employment market (Balaguer and Cantavella-Jordá, 2002; Parrilla et al. 2007).

There is a huge variety of literature on tourism. Tugcu (2014) and Sokhanvar et al. (2018) refer to the link between them suggesting four hypotheses. The first hypothesis is the growth hypothesis. According to growth hypothesis, the policies will subsidize tourism and positively affect economic performance. In the empirical research, recent academic studies dealing with the relationship about them display a strong relationship. The pioneering analysis conducted by Balaguer and Cantavella-Jordá (2002), Durbarry (2004), Gunduz and Hatemi-J (2005), Ivanov and Webster (2007), Nowak et al. (2007), Proença and Soukiazis (2008), Lee and Chang (2008), Fayissa et al. (2008), Srinivasan et al. (2012), Surugiu and Surugiu (2013), Trang et al. (2014), Pérez-Rodríguez et al. (2015), Banday and Ismail (2017), Roudi et al. (2019), and Liu and Wu (2019) supported the research for the growth hypothesis.

Second hypothesis is called the conservation hypothesis. The conservation hypothesis states that the economic performance has a vital role in the expansion of the tourism industry. According to this hypothesis, it is foreseen that governmental transfers of resources from the tourism fields to other areas will not adversely influence economic growth. There are several studies in the literature confirming the conservation hypothesis such as Narayan (2004), Oh (2005), Payne and Mervar (2010), Odhiambo (2011), Antonakakis et al. (2015a), Kyophilavong et al. (2018), Can and Gozgor (2018), and finally, Aratuo and Etienne (2019).

Third hypothesis implies a there is a bi-directional causality between tourism and economic growth. According to this hypothesis, tourism incentive policies can increase economic growth and there are also some empirical findings that suggested two-way causality between them. We give some examples such as Ongan and Demiroz (2005), Khalil et al. (2007), Nissan et al. (2011), Apergis and Payne (2012), Hatemi-J (2016), Mohapatra (2018), Dogru and Bulut (2018), Can and Gozgor (2018).

Finally, the neutrality hypothesis proposes that growth and tourism do not support each other directly, suggesting that there is no relation of causality between the two. In conclusion, it is possible to reach the relationship that has no significant link between the two variables. There is an additional published work on this important relationship, for example Katircioglu (2009a) who performed tests for Turkey, Katircioglu (2009b), Jackman and Lorde (2010), Jin (2011), Çağlayan et al. (2012, and finally Georgantopoulos (2013). Additionally, we added a Table in Appendix that display previous empirical studies. This table can be useful to see all papers together.

All these studies we mentioned in literature review mostly deals with symmetric relationship between tourism and economic growth and none of them focus on the possibility of asymmetric relationship between two. Thus, our paper aims to fill this gap in the literature examining the possibility of an asymmetric relationships.

4. DATA AND METHODOLOGY

The dataset in this study consists of the real GDP per capita in constant 2010 US dollars for economic growth. This is denoted by y, and international tourism receipts as a share of GDP as a proxy for the volume of international tourism, denoted by x. Furthermore, all variables are transformed into natural logarithm form. The dataset employed in the study were obtained from the World Bank's World Development Indicators database. Descriptive statistics and pairwise correlations for variables employed in the study are given in Table 1 and 2, respectively.

Table 1. Descriptive Statistics

Variables	Mean	Median	Std. Dev.	min	max	N
recgdp	7.21	5.331	5.403	.058	23.634	322
rgdppc	16947.891	15128.14	12850.384	1658.323	43001.591	322

When we look at the Table 1, the mean of tourism receipt 7.21 %. Moreover, the larger difference between the maximum and minimum value for the tourism receipt indicates that the effects of tourism development on economic performance may differ. As seen in the correlation matrix, there is a statistically significant and positive correlation between economic performance and tourism development. This finding shows that the economic performance increases as the tourism develops.

Table 2. Correlations Matrix

Variables	(1)	(2)
(1) lnrgdppc	1.000	
(2) lnrecgdp	0.112**	1.000

Note: *** p<0.01, ** p<0.05, * p<0.1

Since each variable is integrated of the first order, the two variables can be expressed as the following according to Hatemi-J (2020a):

$$y_{i,t} = y_{i,t-1} + u_{i1,t} = y_{i,0} + \sum_{j=1}^{t} u_{i1,j}$$

$$x_{i,t} = x_{i,t-1} + u_{i2,t} = x_{i,0} + \sum_{j=1}^{t} u_{i2,j}$$

For *i*=1, …, *14*. Where *14* is the cross-sectional dimension in our case and *u* is the disturbance term. The following definition are utilized in order to find positive and negative components in the underlying panel $u_{i1,t}^{+} = Max(u_{i1,t}, 0)$, $u_{i2,t}^{+} = Max(u_{i2,t}, 0)$, $u_{i1,t}^{-} = Min(u_{i1,t}, 0)$ and $u_{i2,t}^{-} = Min(u_{i2,t}, 0)$. These definitions are used in order to express the following:

$$y_{i,t}^{+} = y_{i,0}^{+} + u_{i1,t}^{+} = y_{i,0} + \sum_{j=1}^{t} u_{i1,j}^{+}$$

$$x_{i,t}^{+} = x_{i,0}^{+} + u_{i2,t}^{+} = x_{i,0} + \sum_{j=1}^{t} u_{i2,j}^{+}$$

$$y_{i,t}^{-} = y_{i,0}^{-} + u_{i1,t}^{-} = y_{i,0} + \sum_{j=1}^{t} u_{i1,j}^{-}$$

$$x_{i,t}^{-} = x_{i,0}^{-} + u_{i2,t}^{-} = x_{i,0} + \sum_{j=1}^{t} u_{i2,j}^{-}$$

At that point, the following two panel cointegration equations are estimated in order to account for the potential asymmetric effects:

$$y_{i,t}^{+} = a_i^{+} + b_i^{+} x_{i,t}^{+} + e_{i,t}^{+} \quad (1)$$

$$y_{i,t}^{-} = a_i^{-} + b_i^{-} x_{i,t}^{-} + e_{i,t}^{-} \quad (2)$$

The positive cumulative components are cointegrated in the panel, if and only if, $e_{i,t}^{+}$ is a stationary process. Similarly, the negative cumulative components are cointegrated in the panel if and only if $e_{i,t}^{-}$ is a stationary process. The ADF test equation is estimated for testing for the panel cointegration between positive components as expressed by the equation (1):

$$e_{i,t}^{+} = \rho^{+} e_{i,t-1}^{+} + \sum_{l=1}^{k} \gamma_i^{+} \Delta e_{i1,t-l}^{+} + w_{i,t}^{+} \quad (3)$$

An information criterion can determine the optimal lag order *l*. Note that the null hypothesis of no cointegration between the positive parts is $\rho^{+} = 1$. Hatemi-J (2020a) recommends the following ADF test statistic is below by the equation (4)

$$ADF^{+} = \frac{t_{\rho^{+}} + \sqrt{6m} \times \frac{\sigma_v}{2\sigma_{0v}}}{\sqrt{\frac{\sigma_{0v}^2}{2\sigma_v^2} + \frac{3\sigma_v^2}{10\sigma_{0v}^2}}} \quad (4)$$

Here $t_{\rho^{+}}$ is the estimated *t*-statistic for parameter ρ^{+} as presented in regression (3). The variance can be estimated as $\sigma_v^2 = \sigma_{e_1^{+}}^2 - \frac{\sigma_{e_1^{+},e_2^{+}}^2}{\sigma_{e_2^{+}}^2}$, and the long-run variance is obtained via $\sigma_{0v}^2 = \sigma_{0e_1^{+}}^2 - \frac{\sigma_{0e_1^{+},e_2^{+}}^2}{\sigma_{0e_2^{+}}^2}$.

By defining $\mu_{it} = \begin{pmatrix} e_{i1,t}^{+} \\ e_{i2,t}^{+} \end{pmatrix}$, we can estimate the variance-covariance for μ_{it} is estimated as

$$\Sigma = \begin{bmatrix} \sigma_{e_1^{+}}^2 & \sigma_{e_1^{+},e_2^{+}} \\ \sigma_{e_1^{+},e_2^{+}} & \sigma_{e_2^{+}}^2 \end{bmatrix} = \frac{1}{mT} \sum_{i=1}^{m} \sum_{t=1}^{T} \mu_{it} \mu_{it}'$$

Note that m=14 and T=22 in our case. The long-run variance-covariance matrix of the underlying model is estimated via the following kernel estimation approach:

$$\Omega = \begin{bmatrix} \sigma^2_{0e_1^+} & \sigma_{0e_1^+,e_2^+} \\ \sigma_{0e_1^+,e_2^+} & \sigma^2_{0e_2^+} \end{bmatrix}$$

$$= \frac{1}{m}\sum_{i=1}^{m}\left[\frac{1}{T}\sum_{t=1}^{T}\mu_{it}\mu_{it}' + \frac{1}{T}\sum_{t=1}^{T}\kappa(\tau/d)\sum_{t=\tau+1}^{T}(\mu_{it}\mu_{it-\tau}' + \mu_{it-\tau}\mu_{it}')\right]$$

The denotation κ signifies the kernel function that needs to be used and d is the underlying bandwidth of this function. This ADF$^+$ test statistic, as defined by equation (4) based on the asymptotic contributions of Kao (1999). The testing a linear combination between negative components can be tested via a similar ADF test statistic. The code is accessible upon request from the authors.

5. EMPIRICAL RESULTS

Prior to testing for panel cointegration we implemented tests for panel unit roots. The results presented in Table 3 shows that the null hypothesis of one-unit root for each panel variable cannot be rejected at the conventional significance levels.

Table 3. The Results of Panel Unit Root Tests

Variables	H_0: I(1), H_1: I(0)
y	0.0874
x	0.1264
y^+	0.9999
x^+	0.9816
y^-	0.6315
x^-	0.9986

Note: The denotation y represents GDP per capita and x signifies the tourism income as a share of national income. The panel unit root tests developed by Im et al. (2003) is utilized for implementing the test of one panel unit root. The values in the second column are the p-values.

The tests result for both standard panel cointegration and hidden panel cointegration are presented in Table 4. The null hypothesis of no panel cointegration is rejected in the symmetric method at the 1% significance level. The null hypothesis of no panel cointegration between the positive components is also rejected at the 1% significance level. Finally, the null hypothesis of no panel cointegration between negative components is rejected at the 5% significance level. It should be mentioned, that prior to tests for panel cointegration tests, for panel unit roots were conducted for each variable.

Table 4. The Results of Panel Cointegration Tests

Variables in the model	H_0: I(1), H_1: I(0)
(y, x)	-6.072948**
(y^+, x^+)	-5.753427**
(y^-, x^-)	-2.037954*

Note: The null hypothesis of no panel cointegration is rejected at the 5% significance level if the estimated test value is lower than -1.64. Note that * means significant at the 5% significance level ** implies significant at the 1% significance level.

The results, not presented but available on request, shows that each variable in the panel has one panel unit. The estimated pooled elasticities are presented in Table 5. The elasticity of growth with regard to tourism is 0.16487. Thus, if the tourism recipients increase by 1% the GDP grows by around 0.165% on average, assuming the *ceteris paribus* condition. However, the value of the elasticity changes significantly when asymmetric impacts are accounted for. Based on the estimated values, if the tourism receipts increase by 1% the economy grows by 0.554% on average in these fourteen Mediterranean countries, *ceteris paribus*. The corresponding value for 1% decrease in tourism receipts is a decrease of 0.085 in the economic growth. These empirical findings reveal that the economic growth in a pool of these countries is more sensitive to an increase in the tourism receipts than to a corresponding decrease under the *ceteris paribus* assumption.

Table 5. The Estimated Pooled Elasticities

Variables in the model	The Estimated Parameter
The elasticity of y with regard to x	0.16487**
The elasticity of y^+ with regard to x^+	0.55424**
The elasticity of y^- with regard to x^-	0.08490**

Note: Note that ** means significant at the 1% significance level.

The empirical investigation is complemented with the Granger causality tests of the underlying pooled data. The results of these causality tests are presented in Table 6. The data indicates that the conventional null hypothesis of tourism led growth hypothesis is rejected at the 5 % significance level. However, the asymmetric panel causality tests clearly show that there is a causal impact running from tourism to growth for positive shock not by negative shocks.

Table 6. The Causality Test Results

H_0 of no Granger causality in the pooled data	**The P-Value**
x does not cause y	0.0186
x^+ does not cause y^+	0.0312
x^- does not cause y^-	0.4245

6. CONCLUSION AND POLICY REMARKS

Tourism is a dynamic sector that is subject to political, social, environmental and technological trends. These trends design tourists' preferences, structure of the tourism market and the vast majority of tourism jobs. Currently, the tourism sector has a clear answer for 10 percent of world GDP. It is an essential source of employment and foreign exchange. Governments around the globe should support policies and procedures to stimulate economic growth. Member countries need to priority to the tourist sector in their national policies in order to promote growth. Thus, they can foster competitiveness and innovative business plans. Therefore, tourism development is salient for modern economic structures as well as the needs of consumers and the high expectations for tourists. It is crucial for the member countries to capture global tourism market in long term. Additionally, it is paramount to construct sound tourism policies in order to develop competitiveness in the international markets.

The empirical tests demonstrate that the economic growth in a pool of these countries is highly sensitive to an increase in tourism receipts compared to a corresponding decrease in the underlying variable. It is also found that the elasticity of growth with regard to the positive changes in the tourism income is much higher than the elasticity for negative changes. In addition, it is established that null hypothesis of no causality is rejected for positive components but not for negative ones. Tourism has been a bright spot in contributing to economy for various countries, specifically, the Mediterranean countries. From our research, we can substantiate that tourism can aid these countries to facilitate sustainable tourism management and stability to the overall economy. Finally, this paper provides a contribution to tourism-growth research regarding our suggestions to policymakers and stakeholders in the Mediterranean countries. Finally, they need to plan carefully for both short and long run successful advancement in order to obtain support for the tourism sector.

The effect of tourism on economic growth is capturing the attention of researchers and policy makers worldwide. Many countries, both developed and developing ones, are systematically putting forward crucial strategies in order to promote their tourism industry with the main goal of achieving enhanced economic growth. Tourism is reflected in different ways to economic growth spent by foreign and national tourists, thus producing new area on the employment area. Governments should take measures to understand the impacts of tourism activity and continue to the sustainability and efficiency policies in tourism. On the other hand, policy makers discuss a better plan for tourism agenda and

develop the scale of tourism development. They ought to make it easier to visit eligible destinations for development of tourism and must provide that efforts to develop tourism activity in local area. Policy makers must discuss a plan for tourism integration with the region. In addition, policy makers must be open to new ways such as regional-national economic strategies and support the service sector, industry, tourist destinations, civil society. Policymakers should know how to mean of regional-national tourism development and they have strong position about the creating employment, generating growth and economic efficiency. After creating more jobs and employment, they also create strong employment policies that increase a better work life, strong economic growth. New jobs employment has the potential to cause new social benefits, low unemployment, strong economic growth, huge profits for some industries. It should not be remembered that tourism policy can affect people both socially and economical, and a number of policies can cause an increase in the production as a regional and national. In the future, new papers might extend the relationship for tourism-growth in terms of the regional and sectoral analysis.

REFERENCES

Altıner, A. (2019). Turizm ve ekonomik büyüme ilişkisi: türkiye örneği (1969-2018). *Anadolu İktisat ve İşletme Dergisi, 3(*2), 114-133.

Antonakakis, N., Dragouni, M. and Filis, G. (2015a). Tourism and growth: the times they are a-changing. *Annals of Tourism Research, 50*, 165–169.

Antonakakis, N., Dragouni, M. and Filis, G. (2015b). How strong is the linkage between tourism and economic growth in europe?. *Economic Modelling, 44*, 142–155.

Apergis, N. and Payne, J. E. (2012). Tourism and growth in the Caribbean-evidence from a panel error correction model. *Tourism Economics, 18*(2), 449–456.

Aratuo, D. N. and Etienne, X. L. (2019). Industry level analysis of tourism-economic growth in the united states. *Tourism Management, 70*, 333–340.

Arslanturk, Y., Balcilar, M. and Ozdemir, Z. A. (2011). Time-varying linkages between tourism receipts and economic growth in a small open economy. *Economic Modelling, 28*(1), 664–671.

Aslan, A. (2014). Tourism development and economic growth in the mediterranean countries: evidence from panel granger causality tests. *Current Issues in Tourism, 17*(4), 363–372.

Balaguer, J. and Cantavella-Jordá, M. (2002). Tourism as a long-run economic growth factor: the spanish case. *Applied Economics, 34*(7), 877–884.

Balsalobre-Lorente, D., Driha, O. M., Bekun, F. V. and Adedoyin, F. F. (2020). The asymmetric impact of air transport on economic growth in spain: fresh evidence from the tourism-

led growth hypothesis. *Current Issues in Tourism, 24*(4), 503-519. DOI:10.1080/13683500.2020.1720624

Banday, U. J. and Ismail, S. (2017). Does tourism development lead positive or negative impact on economic growth and environment in brics countries? A panel data analysis. *Economics Bulletin, 37*(1), 553–567.,

Brau, R., Lanza, A. and Pigliaru, F. (2007). How fast are small tourism countries growing? evidence from the data for 1980–2003. *Tourism Economics, 13*(4), 603–613.

Brida, J. G., Carrera, E. J. S. and Risso, W. A. (2008). Tourism's impact on long-run Mexican economic growth. *Economics Bulletin, 3*(21), 1–8.

Brida, J. G. and Risso, W. A. (2010). Tourism as a determinant of long-run economic growth. *Journal of Policy Research in Tourism, Leisure and Events, 2*(1), 14–28.

Brida, J. G., Lanzilotta, B., Lionetti, S. and Risso, W. A. (2010). The tourism-led growth hypothesis for uruguay. *Tourism Economics, 16*(3), 765–771.

Çağlayan, E., Şak, N. and Karymshakov, K. (2012). Relationship between tourism and economic growth: a panel granger causality approach. *Asian Economic and Financial Review, 2*(5), 591–602.

Can, M. and Gozgor, G. (2018). Revisiting the tourism-growth nexus: evidence from a new index for the market diversification of tourist arrivals. *Current Issues in Tourism, 21*(10), 1157–1170.

Cortes-Jimenez, I. and Pulina, M. (2010). Inbound tourism and long-run economic growth. *Current Issues in Tourism, 13*(1), 61–74.

Dogru, T. and Bulut, U. (2018). Is tourism an engine for economic recovery? theory and empirical evidence. *Tourism Management, 67*, 425–434.

Dritsakis, N. (2004). Tourism as a long-run economic growth factor: an empirical investigation for greece using causality analysis. *Tourism economics, 10*(3), 305–316.

Dritsakis, N. (2012). Tourism development and economic growth in seven Mediterranean countries: a panel data approach. *Tourism Economics, 18*(4), 801–816.

Durbarry, R. (2004). Tourism and economic growth: the case of mauritius. *Tourism Economics, 10*(4), 389–401.

Eugenio-Martin, J. L., Morales, N. M. and Scarpa, R. (2004). Tourism and economic growth in Latin American countries: a panel data approach. FEEM Working Paper, No. 26, 1–28.

Fayissa, B., Nsiah, C. and Tadasse, B. (2008). Impact of tourism on economic growth and development in africa. *Tourism Economics, 14*(4), 807–818.

Georgantopoulos, A. G. (2013). Tourism expansion and economic development: var/vecm analysis and forecasts for the case of india. *Asian Economic and Financial Review, 3*(4), 464–482.

Ghali, M. A. (1976). Tourism and economic growth: an empirical study. *Economic Development and Cultural Change, 24*(3), 527–538.

Gunduz, L. and Hatemi-J, A. (2005). Is the tourism-led growth hypothesis valid for turkey?. *Applied Economics Letters, 12*(8), 499–504.

Hatemi-J, A. (2016). On the tourism-led growth hypothesis in the uae: a bootstrap approach with leveraged adjustments. *Applied Economics Letters, 23*(6), 424–427.

Hatemi-J, A. (2020a). Hidden panel cointegration. *Journal of King Saud University-Science, 32(*1), 507–510.

Hatemi-J, A. (2020b). Asymmetric panel causality tests with an application to the impact of fiscal policy on economic performance in scandinavia. *International Economics, 73*(3), 389 – 404.

Im, K. S., Pesaran, M. H. and Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics, 115*(1), 53–74.

Ivanov, S. and Webster, C. (2007). Measuring the impact of tourism on economic growth. *Tourism Economics, 13*(3), 379–388.

Jackman, M. and Lorde, T. (2010). On the relationship between tourist flows and household expenditure in Barbados: a dynamic ols approach. *Economics Bulletin, 30*(1), 472–481.

Jin, J. C. (2011). The effects of tourism on economic growth in hong kong. *Cornell Hospitality Quarterly, 52*(3), 333–340.

Kao, C. (1999). Spurious regression and residual-based tests for cointegration in panel data. *Journal of Econometrics, 90*(1), 1–44.

Katircioglu, S. T. (2009a). Revisiting the tourism-led-growth hypothesis for turkey using the bounds test and johansen approach for cointegration. *Tourism Management, 30*(1), 17–20.

Katircioglu, S. T. (2009b). Testing the tourism-led growth hypothesis: The case of malta. *Acta Oeconomica, 59*(3), 331–343.

Khalil, S., Kakar, M. K. and Waliullah, A. M. (2007). Role of tourism in economic growth: empirical evidence from pakistan economy. *The Pakistan Development Review, 46*(4), 985–995.

Kim, H. J., Chen, M. H. and Jang, S. C. (2006). Tourism expansion and economic development: the case of taiwan. *Tourism Management, 27*(5), 925–933.

Kirca, M., Ozer, M. (2021). The effects of tourism demand on regional sectoral employment in turkey, *Regional Statistics, 11*(1), 1–32.

Kyophilavong, P., Gallup, J. L., Charoenrat, T. and Nozaki, K. (2018). Testing tourism-led growth hypothesis in laos?. *Tourism Review, 73*(2), 242–251.

Lanza, A., Temple, P. and Urga, G. (2003). The implications of tourism specialisation in the long run: an econometric analysis for 13 oecd economies. *Tourism Management, 24*(3), 315–321.

Lean, H. H. and Tang, C. F. (2010). Is the tourism-led growth hypothesis stable for malaysia? a note. *International Journal of Tourism Research, 12*(4), 375–378.

Lee, C-C. and Chang, C-P. (2008). Tourism development and economic growth: a closer look at panels. *Tourism Management, 29*(1), 180–192.

Lee, C. C. and Chien, M. S. (2008). Structural breaks, tourism development, and economic growth: evidence from taiwan. *Mathematics and Computers in Simulation, 77*(4), 358–368.

Lionetti, S. and Gonzalez, O. (2012). On the relationship between tourism and growth in latin america. *Tourism and Hospitality Research, 12*(1), 15–24.

Liu, A. and Wu, D. C. (2019). Tourism productivity and economic growth. *Annals of Tourism Research, 76*, 253–265.

Mohapatra, S. (2018). Investigating the tourism and economic growth linkage: a panel causality analysis for the saarc countries. *Asia Pacific Journal of Tourism Research, 23*(6), 573–583.

Narayan, P. K. (2004). Economic impact of tourism on Fiji's economy: empirical evidence from the computable general equilibrium model. *Tourism Economics, 10*(4), 419–433.

Narayan, P. K., Narayan, S., Prasad, A. and Prasad, B. C. (2010). Tourism and economic growth: a panel data analysis for pacific Island countries. *Tourism economics, 16*(1), 169–183.

Nissan, E., Galindo, M. A. and Mendez, M. T. (2011). Relationship between tourism and economic growth. *The Service Industries Journal, 31*(10), 1567–1572.

Nowak, J-J., Sahli, M. and Cortés-Jiménez, I. (2007). Tourism, capital good imports and economic growth: theory and evidence for spain. *Tourism Economics, 13*(4), 515–536.

Odhiambo, N. M. (2011). Tourism development and economic growth in tanzania: empirical evidence from the ardl-bounds testing approach. *Economic Computation and Economic Cybernetics Studies and Research, 45*(3), 71–84.

OECD (2016). *OECD Tourism Trends and Policies 2016*, OECD Publishing, Paris, https://doi.org/10.1787/tour-2016-en.

OECD (2018). *OECD Tourism Trends and Policies 2018*, OECD Publishing, Paris, https://doi.org/10.1787/tour-2018-en.

Oh, C-O. (2005). The contribution of tourism development to economic growth in the korean economy, *Tourism Management, 26*(1), 39–44.

Ongan, S. and Demiroz, D. M. (2005). The contribution of tourism to the long-run turkish economic growth. *Journal of Economics, 53*(9), 880–894.

Papatheodorou, A. (1999). The demand for international tourism in the mediterranean region. *Applied Economics, 31*(5), 619–630.

Parrilla, J. C., Font, A. R. and Nadal, J. R. (2007). Tourism and long-term growth a spanish perspective. *Annals of Tourism Research, 34*(3), 709–726.

Payne, J. E. and Mervar, A. (2010). The tourism-growth nexus in Croatia. *Tourism Economics, 16*(4), 1089–1094.

Pérez-Rodríguez, J. V., Ledesma-Rodríguez, F. and Santana-Gallego, M. (2015). Testing dependence between gdp and tourism's growth rates. *Tourism Management, 48*, 268–282.

Po, W. C. and Huang, B. N. (2008). Tourism development and economic growth–a nonlinear approach. *Physica A: Statistical Mechanics and its Applications, 387*(22), 5535–5542.

Proença, S. and Soukiazis, E. (2008). Tourism as an economic growth factor: a case study for southern european countries. *Tourism Economics, 14*(4), 791–806.

Roudi, S, Arasli, H. and Akadiri, S. S. (2019). New insights into an old issue – examining the influence of tourism on economic growth: evidence from selected small island developing states. *Current Issues in Tourism, 22*(11), 1280–1300.

Shahzad, S. J. H., Shahbaz, M., Ferrer, R. and Kumar, R. R. (2017). Tourism-led growth hypothesis in the top ten tourist destinations: new evidence using the quantile-on-quantile approach. *Tourism Management, 60*, 223–232.

Sokhanvar, A., Çiftçioğlu, S. and Javid, E. (2018). Another look at tourism- economic development nexus. *Tourism Management Perspectives*, *26*(1), 97–106.

Srinivasan, P., Kumar, P. K. S. and Ganesh, L. (2012). Tourism and economic growth in sri lanka: an ardl bounds testing approach. *Environment and Urbanization ASIA*, *3*(2), 397–405.

Surugiu, C. and Surugiu, M. R. (2013). Is the tourism sector supportive of economic growth? empirical evidence on romanian tourism. *Tourism Economics*, *19*(1), 115–132.

Tang, C. F. and Tan, E. C. (2013). How stable is the tourism-led growth hypothesis in malaysia? evidence from disaggregated tourism markets. *Tourism Management*, *37*, 52–57.

Tang, C. F. and Abosedra, S. (2014). Small sample evidence on the tourism-led growth hypothesis in lebanon. *Current Issues in Tourism*, *17*(3), 234–246.

Trang, N. H. M., Duc, N. H. C. and Dung, N. T. (2014). Empirical assessment of the tourism-led growth hypothesis—the case of vietnam. *Tourism Economics*, *20*(4), 885–892.

Tugcu, C. T. (2014). Tourism and economic growth nexus revisited: a panel causality analysis for the case of the mediterranean region. *Tourism Management*, *42*, 207–212.

World Travel and Tourism Council (WTTC). (2019). Travel and tourism economic impact 2019 world. March, 1–20.

Yap, G. and Saha, S. (2013). Do political instability, terrorism, and corruption have deterring effects on tourism development even in the presence of unesco heritage? a cross-country panel estimate. *Tourism Analysis*, *18*(5), 587–599.

Yazdi, S. K., Salehi, K. H. and Soheilzad, M. (2017). The relationship between tourism, foreign direct investment and economic growth: evidence from Iran. *Current Issues in Tourism*, *20*(1), 15–26.

APPENDIX

Table 7. Previous Studies on Tourism-Economic Growth Nexus

Author(s)	Countries & Period	Methodology	Findings
Ghali (1976)	Hawaii (1953-1970)	OLS	The development in the tourism sector provide both growth and instability of the growth
Balaguer and Cantavella-Jordá (2002)	Spain (1975Q1-1997Q1)	JC, GC	Both cointegration and causality test results support the tourism-led growth hypothesis.
Lanza et al. (2003)	13 OECD countries (1977-1992)	JC	Tourism demand is a very elastic with respect to income.
Durbarry (2004)	Mauritius (1952-1999)	JC, ECM	The development in the tourism sector positively affects economic performance.
Dritsakis (2004)	Greece (1960Q1-2000Q4)	JC, ECM, GC	There is a two-way causality in the tourism-growth nexus.
Narayan (2004)	Fiji (1990-2000)	CGE	Findings suggest that 10 % increase in tourism expenditures raise GDP by about 0.5%.
Eugenio-Martin et al. (2004)	21 Latin America countries (1985-1998; 1980-1997)	GMM, GLS	Tourism sector development affects economic performance positively in low- and middle-income countries. But it cannot contribute to growth in high-income countries.
Oh (2005)	Korea (1975Q1-2001Q1)	EG, GC	Empirical findings indicate uni-directional causality from economic performance to tourism sector only in short-run.
Gunduz and Hatemi-J (2005)	Turkey (1963-2002)	HH	Tourism contributes to economic performance in Turkey.
Kim et al. (2006)	Taiwan (1971Q1-2003Q2; 1956-2002)	JC, GC	There is a long-run relationship and bi-directional causality in the tourism-economic performance nexus.
Parrilla et al. (2007)	Spain (1965-2000)	GAM	Specialization in the tourism sector is the key factor of development. However, this effect has decreased over time.
Ivanov and Webster (2007)	Cyprus, Greece, Spain (1997-2004)	CGE	The hospitality sector affects the economic performance in Greece more than any other country.
Nowak et al. (2007)	Spain (1960-2003)	JC, ECM, GC	Tourism sector development promotes economic performance indirectly.
Brau et al. (2007)	143 countries (1980-2003)	OLS	Small states grow faster with specialization in tourism sector.
Proença and Soukiazis (2008)	Greece, Italy, Portugal, Spain (1990-2004)	POLS, FE (LSDV), RE (GLS),	Tourism sector positively affect economic performance in these countries.
Fayissa et al. (2008)	42 SSA countries (1995-2004)	FE, RE, GMM	The tourism sector contributes significantly to economic performance.
Lee and Chang (2008)	23 OECD, 32 non-OECD (1990-2002)	PPC, PFMOLS, PGC	The impact is stronger in non-OECD and SSA region countries.
Lee and Chien (2008)	Taiwan (1959-2003)	GH, GC	The results show that tourism and economic performance reinforce each other. However, this relationship is unstable.
Po and Huang (2008)	88 countries (1995-2005)	NLS	There is a three regime with a two-threshold level (about 4.05% and 4.73%). There exists a positive relationship in regime 1 (below the threshold level 4.05%) and regime 3 (above the threshold level 4.73%). However, there is no evidence of significant relationship in regime 2 (between 4.05%-4.73%).
Katircioglu (2009a)	Turkey (1960-2006)	ARDL, JC	There is no long-term relationship.
Narayan et al. (2010)	4 Pacific island countries (1988-2004)	PPC, PFMOLS, PGC	In the long-run, tourism sector development affects economic performance positively.
Payne and Mervar (2010)	Croatia (2001Q1-2008Q3)	TY	Unidirectional causality from economic performance to the tourism industry.
Lean and Tang (2010)	Malaysia (1989M1-2009M2)	TY, DL	Two-way causal relationship has been stable over time, except 1998-1999.
Brida et al. (2010)	Uruguay (1987Q1-2006Q4)	JC, GC	The increase in tourism spending in Argentina contributes to the economic performance of Uruguay.
Cortes-Jimenes and Pulina (2010)	Italy (1954-2000), Spain (1964-2000)	JC, ECM, GC	Tourism-led growth hypotheses is valid for both the Italian and Spanish economies.
Arslanturk et al. (2011)	Turkey (1963-2006)	ECM, GC	Tourism receipts have a positive effect on growth after the year 1983.
Nissan et al. (2011)	11 Developed countries (2000-2005)	LSDV	Bidirectional causality results show that tourism and economic performance reinforce each other.

Apergis and Payne (2012)	9 Caribbean countries (1995-2007)	PPC, PFMOLS, PGC	Tourism development and economic performance positively affect each other.
Lionetti and Gonzales (2012)	6 Latin America and Caribbean countries (2001Q1-2008Q4)	JC, GC	Tourism sector contributes positively to growth through the trade channel in four (Nicaragua, Chile, Venezuela, Dominican R.) of the six countries. It damages growth with an increasing import channel in Argentina and Mexico.
Srinivasan et al. (2012)	Sri Lanka (1969-2009)	ARDL	Tourism development positively affects economic performance.
Tang and Tan (2013)	Malaysia (1995M1-2009M2)	BH, GC	Only 8 of 12 sub-sectors of tourism market contribute to economic performance.
Tugcu (2014)	21 Mediterranean countries (1998-2011)	DH	There is no causal relationship In African countries. Also, there have mixed results for other countries in different regions.
Aslan (2014)	12 Mediterranean countries (1995-2010)	DH	The causality relationship varies across countries. Growth-led tourism hypothesis is valid for 7 countries out of 12 countries.
Antonakakis et al. (2015a)	6 European countries (1995M1-2012M12)	VAR-SIA	Tourism sector positively affect economic performance in Italy, Germany, Portugal and Spain.
Pérez-Rodríguez et al. (2015)	UK (1980Q1-2012Q2), Spain (1995Q1-2013Q1), Croatia (1997Q1-2013Q4)	CGARCH	The relationship is asymmetric and is not stable over time only in Croatia.
Antonakakis et al. (2015b)	10 European countries (1995M1-2012M12)	VAR-SIA	Tourism-led growth (Netherlands, Italy. Growth-led tourism (Greece, Cyprus, Germany). Feedback (Spain, Australia, Portugal). No causality (UK, Sweden). The tourism-growth relationship is time-dependent.
Hatemi-J (2016)	UAE (1995-2014)	BTY	The development of the tourism sector causes economic performance.
Banday and Ismail (2017)	BRICS countries (1995-2013)	PARDL, PGC	The tourism sector affects economic performance positively in all countries.
Roudi et al. (2019)	10 Small island developing countries (1995-2014)	FC, PARDL, DH	There is a long-run and bidirectional causality.
Sokhanvar et al. (2018)	16 Emerging market economies (1995-2014)	IRF, GC	Tourism-led growth (Brazil, Mexico, Philippines). Growth-led tourism (China, India, Indonesia, Malaysia, Peru). Feedback (Chile). No causality (Colombia, Hungary, Poland, Russia, S. Africa, Thailand, Turkey).
Can and Gozgor (2018)	8 Mediterranean countries (1995-2014)	PGC, DH	Tourism-led growth (Greece, Egypt). Growth-led tourism (Morocco, France, Turkey). Feedback (Italy, Spain, Tunisia).
Mohapatra (2018)	6 SAARC countries (1995-2014)	PPC, PFMOLS, PGC, DH	Tourism expenditures and revenues support economic growth. Economic growth only supports tourism expenditures in short-run.
Dogru and Bulut (2018)	7 Mediterranean countries (1996-2014)	DH	Feedback effect
Altıner (2019)	Turkey (1969-2018)	ARDL	The tourism sector affects economic performance positively.
Aratuo and Etienne (2019)	USA (1998Q1-2017Q3)	ARDL, TY	In long-run, the development of only in 2 out of the 6 tourism-related sub-sectors affects economic performance positively.
Liu and Wu (2019)	Spain (1995Q1-2016Q4)	BDSGE	The increase in the productivity of the tourism sector supports the growth by causing an increase the value of both tourism and non-tourism sectors.
Balsalobre-Lorente et al. (2020)	Spain (1971-2015)	NARDL, DP	Tourism sector and economic growth reinforce each other.

Note: Abbreviations are as follows alphabetically. ARDL (Autoregressive distributed lag model cointegration test), BDSGE (bayesian dynamic stochastic general equilibrium model), BH (Bayer-Hanck cointegration test), BRICS (Brazil, Russia, India, China, South Africa), BTY (bootstrapped Toda-Yamamoto causality test), CGARCH (copula-based generalized autoregressive conditional heteroskedasticity), CGE (computable general equilibrium models), DD (Dolado-Lütkepohl Granger causality test), DH (Dumitrescu-Hurlin panel Granger causality test), DP (Diks-Panchenko non-parametric causality test), ECM (error correction model), EG (Engle-Granger cointegration test), FC (Fisher-type Johansen panel cointegration test), FE (fixed effects model), GAM (growth accounting model), GC (Granger causality test), GLS (generalized least squares), GMM (generalized methods of moments), HH (Hacker-Hatemi-J bootstrapped Granger causality test), IRF (impulse response function), NARDL (non-linear autoregressive distributed lag model cointegration test), JC (Johansen cointegration test), LSDV (least squares dummy variable), NLS (non-linear least squares), OECD (organization for economic cooperation and development), OLS (ordinary least squares), PARDL (panel autoregressive distributed lag model cointegration test), PFMOLS (panel fully modified ordinary least squares), PGC (panel Granger causality test), POLS (pooled ordinary least squares), PPC (Pedroni panel cointegration test), RE (random effects model), SAARC (South Asian association for regional cooperation), SSA (Sub-Saharan African countries), TY (Toda-Yamamoto Granger causality test), UAE (United Arab Emirates), UK (United Kingdom), USA (United States of America), VAR-SIA (Vector Autoregression model-based spillover index approach).