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THE RELATIONSHIP BETWEEN INTERNATIONAL TOURISM RECEIPTS AND ECONOMIC GROWTH IN ASIA PACIFIC COUNTRIES: A PANEL DATA ANALYSIS

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Abstract

In this research, the short-term and the long-term relationships between tourism receipts and economic growth was investigated. The dataset includes 483 observations for the period from 1995 to 2017 of selected 21 Asia Pacific Economies. According to “Dumitrescu & Hurlin VAR Panel Causality Test”, which is employed to analyse the short-term causality, it is revealed that (a) tourism receipts is the granger cause of economic growth, and (b) “economic growth is the granger cause of tourism receipts. Hence, it is concluded a bi-directional causality between tourism receipts and economic growth in the short-term. Westerlund ECM Panel Co-Integration Test and Pesaran & Smith Mean Group Estimator, which are performed to test the long-term relationship, indicated that (a) economic growth affects tourism revenues; a 1% increase in economic growth raises tourism revenues by 1.9% in long-term and vice versa, (b) tourism revenues affects economic growth; a 1% increase in tourism revenues raises the economic growth by 0.49 % in long-term, and vice versa. These results support the feedback hypothesis that claims a bi-directional relationship between international tourism receipts and economic growth.

Keywords: Economic Growth, Tourism Receipts, Panel Data Analysis.

ASYA PASİFİK ÜLKELERİNDE ULUSLARARASI TURİZM GELİRLERİ İLE EKONOMİK BÜYÜME ARASINDAKİ İLİŞKİ: BİR PANELVERİ ANALİZİ

Öz

Bu araştırmada turizm gelirleri ile iktisadi büyüme arasındaki kısa ve uzun dönemli ilişkiler analiz edilmiştir. Analiz, seçilmiş 21 Asya Pasifik Ülkesi için 1995 ile 2017 arasındaki 23 yıllık dönemi kapsamaktadır. Seriler arasında kısa dönemli nedensellik Dumitrescu & Hurlin VAR Panel Nedensellik Analizi ile incelenmiştir. Kısa dönem analiz sonucuna göre; (a) turizm gelirleri ekonomik büyümenin Granger nedenidir ve (b) ekonomik büyüme turizm gelirlerinin Granger nedenidir sonucuna varılmıştır. Buna göre kısa dönemde ekonomik büyüme ile turizm gelirleri arasında iki yönlü pozitif bir ilişki vardır. Değişkenler arasındaki uzun dönemli ilişkinin varlığı Westerlund ECM Panel Co-Integration Test ve Pesaran Smith Ortalama Grup Tahmincisi ile incelenmiştir. Uzun dönem analiz sonuçlarına göre; (a) ekonomik büyüme turizm gelirlerini etkilemektedir: ekonomik büyümedeki %1'lik bir artış/azalış, turizm gelirlerini % 1,9 arttırmakta/azaltmaktadır, (b) turizm gelirleri ekonomik büyümeyi etkilemektedir: turizm gelirlerindeki % 1'lik bir artış/azalış, ekonomik büyümeyi % 0,49 arttırmakta/azaltmaktadır. Bu sonuçlar, uluslararası turizm gelirleri ile iktisadi büyüme arasında çift yönlü ilişki olduğunu öne süren “geri bildirim hipotezini” desteklemektedir.

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Anahtar Kelimeler: *İktisadi Büyüme, Ekonomik Büyüme, Turizm Gelirleri, Panel Veri Analizi*

Introduction

The increasing globalization that accelerated in the post-1990 period has resulted in the removal of trade obstacles and the accompanying technological developments between countries has led to a rapid and easy movement of goods and services between countries. These same changes have also been reflected in the tourism sector and made it possible for individuals to travel more comfortably, inexpensively and faster than in the past.

A key role of governments is to find and subsidize productive sectors in order to solve growth, unemployment, financial and monetary imbalances. Tourism is seen by policymakers as one of the most important industry sectors in supporting macroeconomic performance. Foreign exchange income provided by tourism is used to finance domestic and foreign debt. It creates employment opportunities for the sector and revitalizes many other sectors such as construction, logistics, hospitality, and the food and beverage sectors. Additionally, this sector generates tax revenues, encourages infrastructure, improves human resources and technology investments, creates a competitive environment, increases the efficiency of domestic companies, facilitates the utilization of economies of scale and affects economic activities through many different channels. This sector also provides revenue convergence between developed and developing economies. The tourism sector is thus considered as an important policy tool to prevent regional income inequalities.

Tourism is a rapidly growing sector on a global scale which represents 5% of the world's GDP and about 30% of world service exports. According to the Tourism Report of the United Nations World Trade Organization (UNWTO), which was published in 2018, the highest increase since 2010 in international tourist arrivals was in 2017. International Tourist Arrivals increased by 7% over one million people by 2017, and tourism receipts increased by 5% to \$1.340 billion. The international passenger transport services provided to non-residents also generated \$240 billion in revenue. International tourism receipts reached a total of \$1.6 trillion (\$4 billion a day) and brought tourism to third place in the worldwide export category (UNWTO, 2018: 2-6). As reported by the World Travel and Tourism Council (WTTC), the share of travel and tourism sector in global GDP was 10.4% in 2017, and the share of the sector in global employment was 9.9% with the employment in the sector provided to 313 million people. The rise in international tourism over the last 10 years is a clear sign that the tourism sector is progressing in a strong and healthy manner worldwide (WTTC, 2018: 1). According to UNWTO's forecast, the total number of international tourists will have reached to 1.8 billion people by 2030 with an average increase by 3.3% each year (UNWTO, 2011: 30).

The Asia Pacific region is the largest market for global tourism with a 24% share in tourist arrivals and a 29% share of tourism receipts (UNWTO, 2018: 5). The rapidly increasing tourism sector is an important driver of economic prosperity for the region, not only for the revenue it provides but also for its contribution to employment and entrepreneurship. The main reasons for this growth are the increase in consumer purchasing power, advances in air connections, affordable travel options and the easing of visa procedures (UNWTO, 2018: 10).

In recent years, the causality between tourism receipts and economic growth has been a critical topic for scholars both in economics and tourism all over the world. Understanding the causality between these two variables is crucial in determining the right tourism policies to promote economic growth. Although existing studies show that there is a correlation between tourism and economic vitality, there is no consensus on the direction of the causality. Additionally, the extant literature shows that there are no studies on the correlation between tourism receipts and economic for the Asia Pacific region.

In the following section, a theoretical framework for the relationship between tourism and economic growth will be presented. Following this framework, there will be a review of the literature about the relationship between tourism and economic growth.

1. THEORETICAL FRAMEWORK

In the economic literature, the relationship between tourism receipts and economic growth is generally analyzed with two different approaches. The first is obtained from the multiplier effect explained by Keynesian theory. As it may trigger the economic growth with a positive multiplier effect on employment and revenues, international tourism can be regarded as an exogenous element of aggregate demand in Keynesian theory (Suresh and Senthilnathan, 2014: 2). The second approach “Endogenous Growth Theory,” is widely accepted in the literature. Thus, four different hypotheses were developed:

- tourism-led growth hypothesis (TLGH),
- growth-led tourism hypothesis (GLTH),
- the neutrality (No causal relationships) hypothesis (NCH),
- the feedback (bidirectional relationships) hypothesis (Kum et al., 2015: 1076).

The TLGH assumes that tourism is one of the fundamental components of long-term economic growth. According to this hypothesis, foreign exchange revenues created by tourism can be utilized for the importation of resources, which are necessary for the manufacturing of products and services that will generate economic expansion in the host country (Kum et al., 2015: 1077). On the contrary, the GLTH assumes that tourism is driven by economic growth. According to this hypothesis, a strategy for a country's economic growth and development should include well-designed economic policies and practices, which favor endowments in tangible and human capital. This socio-economic competency will have more efficient use of economic resources which eventually will have a positive impact on tourism activities (Antonakakis et al., 2013: 4-5). The NCH assumes no causality between economic growth and tourism receipts. In other words, growth and development policies will not contribute to tourism receipts (Oh, 2005: 40). According to the feedback hypothesis, the relationship between tourism and economic growth is bidirectional. Because of this reciprocal causality, a change in either economic activity or tourism will have an impact on the other variable (Kum et al., 2015: 1077).

2. LITERATURE REVIEW

Studies that empirically examined the causality between tourism and economic growth vary according to the various econometric methods using cross-sectional/panel data or time series. In this study, the existing literature is classified based on the results

of the aforementioned hypotheses. The extant literature indicates the prior research that has primarily targeted testing these hypotheses yielded contradictory results. Comparisons between previous studies are difficult because of different periods used and the share of tourism in total economy varies in selected countries.

Even though the studies on the link between economic growth and tourism started with Ghali (1976), the first published studies on the field belong to Lanza and Pigliaru (2000) and Balaguer and Cantavella-Jordá (2002). The research of Balague and Cantavella-Jordá (2002) which mentioned the GLTH for the first time in the literature has been accepted as one of the most important studies in this area. In their research, using data from Spain for the period of 1975-1997, they found a relationship between tourism and economic growth, and used a Granger causality analysis, which led to the conclusion that the tourism industry triggered economic growth. Their work was supported by Brida et al. (2008), who suggested that tourist spending in Argentina had a positive effect on per capita income, and Eugenio-Martin et al. (2004) put forward the same relationship for other Latin American countries. Seetanah (2010) found that tourism development was the main factor in explaining economic performance using a study which analyzed the relationship between tourism and economic growth in island countries by applying the Generalized Method of Moments (GMM) technique in dynamic panel data for the period of 1990-2007.

The study conducted by Gökovalı and Bahar (2006) using the panel data from the Mediterranean countries for the period between 1987-2002 revealed that tourism contributes positively to economic growth by increasing the share of investment and labour force in GDP. The results of the fixed and random effect models confirmed the TLGH, showing that a 1% increase in tourism receipts raises the GDP growth rate by 8% in this region. Tang and Abosedra (2014) also found results confirming the TLGH. In order to explain the effect of tourism, energy consumption and political stability on economic growth in Middle Eastern and North African (MENA) countries, they used both static and dynamic GMM panel data estimation methods. According to the results of their study, a 10% increase in per capita tourism receipts in MENA countries causes a 0.7% increase in the economic growth in these countries. Gunduz and Hatemi (2005) conducted a study for Turkey covering the period 1963-2002. By using the leveraged bootstrap causality test, they found a unidirectional causality from international tourism to economic growth. Thus, they confirmed the TLGH for Turkey. Kum et al. (2015), analyzed the relationship between tourism activity and economic growth for the Future 11 countries using the data from 1995-2013 and a panel cointegration technique. They found a positive relationship between tourist arrivals and GDP. According to the results, a 1% increase in tourist arrivals increases GDP by 0.06% in the Future 11 countries. Cárdenas-García et al. (2015) conducted research for 144 countries to test whether tourism causes economic development through economic growth. By using structural equation modelling, the study revealed that tourism led to economic development, but the results were found to vary across countries. Yıldırım and Öcal (2004) studied the relationship between tourism receipts and economic growth for Turkey using the data of 1962-2002 period. By applying the VAR method, they found that tourism receipts contributes to economic growth in the long-term, but not in the short term. Therefore, they concluded that in the long-term the TLGH and in the short-term the NCH is valid in Turkey.

Akinboade and Braimoh (2010) conducted a research to investigate this causality for African countries covering data 1980-2005, and their findings confirmed a

unidirectional relationship from tourism receipts to real GDP. Schubert et al. (2011) used 1970-2008 period data to examine the casual relationship between economic growth and tourism development with VECM cointegration and Granger causality tests for Antigua and Barbuda. They found a unidirectional causal relationship between tourism and economic growth. Therefore, the TLGH was accepted for these countries. Oh (2005), who used the Granger causality test, also found a unidirectional causality between tourism growth and economic expansion, using data from Korea. Using annual data, Kreishan (2010) investigated the causal relationship between tourism receipts and economic growth in Jordan for 1970-2009. The results of the Granger causality test confirmed a unidirectional causality from tourism receipts to economic growth. Fayissa et al. (2008) analyzed the causality between tourism income and economic growth rates between 1995-2004 for 42 African countries. The results of GMM and fixed random effects model suggested that tourism receipts contribute positively to the current output level and economic growth in Sub-Saharan African countries.

Belloumi (2010), questioned the relationship between tourism and economic growth in Tunisia in 1970-2007 by using cointegration and causality tests. Granger causality relationship could not be found in the short term but, it was observed that tourism led to long-term real GDP growth. Therefore, the existence of NCH in the short term and the TLGH was accepted in the long term.

By analyzing the relationship between tourism expenditures and economic growth with panel cointegration and panel Granger causality tests with the data from 49 countries, Seghir et al. (2015) confirmed a bidirectional relationship between these two variables in the long-term. Dritsakis (2004) using data from Greece and Durbarry (2004) from Mauritius applying the error correction model, also found a bidirectional relationship between tourism and economic growth. Durbarry (2004) concluded that tourism could be a source of economic growth when the revenue in exports for the Mauritius economy is decreasing. Kim et al. (2006), using the cointegration model and a Granger causality test, also found a bidirectional relationship between economic growth and tourism expansion, using Taiwanese data.

In his study conducted for Cyprus, Katircioglu (2009) concluded that the increase in real income in the country encourages international tourist arrivals. Thus he rejected the TLGH. Similarly, Payne and Mervar (2010) using quarterly data and Toda-Yamamoto causality tests could not find a causal relationship between tourism development that leads to economic growth for Croatia. However, they found a unidirectional relationship from real GDP to tourism receipts. According to the authors, the implementation of policies promoting corporate transparency and positive investment environment will ensure the growth of the tourism sector. These policy implementations, which show the existence of a stable environment in the country, will play an increasing role in the number of tourists coming to the country and thus tourism receipts.

Fawaz and Rahnama (2014) analyzed the causal relationship between international tourism and economic growth in 144 countries by classifying them into 6 regions and 4 different income groups. They considered the period 1975-2010 by using the panel analytical estimation method based on fixed and GMM. The results of the study revealed that economic growth significantly contributes to tourism receipts per capita. Therefore, they accepted the GLTH in their study. In order to test the causality between tourism receipts and economic growth, Kızılgöl and Erbaykal (2008) applied

Toda-Yamamoto approach. They found a unidirectional causality from economic growth to tourism receipts. Hence, confirmed the GLTH for Turkey. Suresh and Senthilnathan (2014) studied the causality between tourism receipts and economic growth empirically by using Granger causality test and error correction model for the period 1977-2012 in Sri Lanka and found a causality from economic growth to tourism receipts. Thus, the GLTH was accepted for Sri Lanka.

One of the pioneering studies in this field was conducted by Antonakakis et al. (2015) to investigate the nature of the relationship between economic growth and tourism by examining 10 European Union countries using a spillover index approach. In their analysis, the authors included both the countries that were severely affected by the 2008 global crisis and the ones less affected by the crisis. The results of the study revealed that the direction between the two variables changes over time. Some countries shifted from tourism-led growth to growth-led tourism during the crisis. The results showed that different economic events could change the causality direction between these two variables. Impact of the economic crisis found to be stronger particularly for Greece, Cyprus, Spain and Portugal.

Albaladejo et al. (2014) analysed the relationship between tourism and economic growth with Spain's annual data considering the period 1970-2010 using Johansen cointegration error correction model and dynamic Granger causality test. According to the findings of the analysis, an increase in economic growth creates an increase in the arrival of tourists in the short run. In the long-term, tourist arrivals, the quality of tourism accommodation facilities and global GDP are positively influential on real GDP in Spain. Their findings confirmed the feedback hypothesis. Samimi et al. (2011) analyzed the 1995-2009 period for developing countries by using the panel VAR approach. According to the results of the analysis, there is bidirectional causality and a positive long-term relationship between economic growth and tourism development.

Antonakakis et al. (2013) tested the relationship between tourism and economic growth for the selected 10 European countries using a vector autoregressive model (VAR). According to the results of the study, the TLGH for Italy and the Netherlands; the GLTH hypothesis for Cyprus, Germany and Greece; the BC hypothesis for Austria, Portugal and Spain; and the NCH for Sweden and England all were confirmed.

In the study conducted by Tugcu (2014) for European, Asian and African countries using panel data analysis with the annual data of 1998-2011 period, it is concluded that the causality between tourism and economic growth vary between countries and depends on the selected tourism indicators.

Arslanturk et al. (2011) analyzed the Granger causality between tourism receipts and GDP in Turkey for 1963-2006 period using the rolling window and time-varying coefficients estimation methods. The Vector Error Correction Model (VECM) revealed no Granger causality between the series. However, it was observed that tourism receipts had a strong power to explain the GDP in the early years of the 1980s. Therefore, the NCH was accepted by Turkey.

Dritsakis and Athanasiadis (2000) conducted a study for Greece applying the Ordinary Least Squares (OLS) model taking into account 1960:Q1-2000: Q4 period. They found a long-term cointegration relationship between tourism and economic growth.

Pavlic et al. (2014) used Johansen Maximum Likelihood cointegration and VECM techniques to study the causal relationship between tourism and economic growth in

Croatia for the period 1996-2013. Based on the study results, there is a causal relationship between the openness of the economy and GDP; the real effective exchange rate and the GDP in the short term, but there is no causal relationship between the tourist arrivals and the GDP in the short term. Therefore, the NCH was accepted.

Ozturk and Acaravci (2009) investigated the long-term relationship between real GDP and international tourism in Turkey taking into account the period from 1987 to 2007. In the study where the TLGH was tested using VEC and autoregressive distributed delay (ARDL) models, neither Johansen's cointegration test nor the ARDL boundary test revealed any long-term relationship between real GDP and international tourism. Therefore, the TLGH was rejected since no cointegration between variables was found. Shahzad et al. (2017) conducted research on the top 10 tourist destinations to test the GLTH, by using the Quantile-to-Quantile (QQ) approach and a tourism index for the period 1990-2015. Although the results of the study revealed a positive relationship between these two variables, the relationship observed for China and Germany was weak. The authors attributed this result to the relatively lower share of tourism in these economies.

Chou (2013) studied the impact of tourism expenditures on economic growth for 10 transition countries between the period 1988-2011. The results of the panel data analysis revealed no causal relationship between these variables for Bulgaria, Romania, and Slovenia. A causal relationship, from tourism expenditures to economic growth, was found for Cyprus, Latvia, and Slovenia. In the Czech Republic and Poland, they found an inverse causal relationship, between economic growth and tourism expenditures.

3. ECONOMETRIC ANALYSIS

3.1. Data Set, Variables, Methodology

The data set used in the analysis covers 483 observations for the economic growth and the tourism receipts for the period from 1995 to 2017 of the selected 21 Asia Pacific Economies¹. Economic growth, which represents with GDP (current, US\$)², was defined as the predictor variable of the model, while tourism receipts, which represents with TR (current, US\$), as the predicated variable. The dataset was obtained from the World Bank database.

In the following subjects, firstly, functional and statistical models will be established. In order to select the appropriate test methods to produce accurate results in the panel data analysis, (i) the cross-section dependence between the units, (ii) the stationary of the series, (iii) the appropriate "lag-lengths" and (iv) homogeneity of the parameters will be tested before performing panel causality analysis. Accordingly, the appropriate panel causality method will be defined to analyse the short-term relationship and similarly suitable panel cointegration method will be determined to test the long-term relationship between the variables.

¹ Australia, Bangladesh, Bhutan, Burundi, Cambodia, China, India, Indonesia, Japan, Korea Rep., Malaysia, Maldives, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam.

² In this study, GDP, which is the economic growth variable, is taken as in current US\$, since the real GDP data of the countries are incomplete and insufficient.

3.2. Model

The model where tourism receipts (TR) is the predicated variable and economic growth (EG) is the predictor variable can be expressed functionally as in Equation (1) below.

$$\text{Tourism Receipts} = f(\text{Economic Growth}) \quad (1)$$

$$TR = f(EG)$$

TR : Tourism receipts (current US\$),

EG : Gross Domestic Product (current-US\$)

The functional expression of the model given in Equation (1) can be expressed statistically as given in Equation (2).

$$TR_{it} = a + \beta_1 EG_{it} + u_{it} \quad (2)$$

In equation (2), a denotes the constant term; β is the coefficient that determines the relationship between the predicated variable and the predictor variable; i ($i = 1 \dots N$) refers to countries, and u_{it} is the error term.

Because of Equation (2) is “a static model”, by taking the delayed values of the series (i) into the system, the dynamic equations can be described in the VAR system as follows.

$$dTR_t = a_1 + \sum_{l=1}^n \beta_{1l} dTR_{t-l} + \sum_{l=1}^n \beta_{2l} dEG_{t-l} + u_{1t} \quad (3)$$

$$dEG_t = a_2 + \sum_{l=1}^n \beta_{3l} dEG_{t-l} + \sum_{l=1}^n \beta_{4l} dTR_{t-l} + u_{2t} \quad (4)$$

In the VAR system seen in Eq.3 and Eq.4, d displays the first difference, u_1 and u_2 show the error terms, n is the number of lag-lengths. VAR Model is a system of equations in which each variable is linear function that covers lagged values of both predicated variable itself and other variables in the system. Accordingly, tourism receipts, which is the predicated variable, is defined by the delayed values of itself and economic growth as predictor variables in Equation (3). Similarly, economic growth, which is the predicated variable in the equation, is defined by the delayed values of itself and tourism receipts as predictor variables in Equation (4).

3.3. Application and Findings

Since the causality analysis is performed with station series, for this purpose, primarily, the existence of the unit root will be investigated. On the other hand, the existence of a correlation between the units is critical to define the proper unit root test. If there is a correlation between the units, first-generation panel unit root test, if not, the second-generation panel unit root test should be selected. Pesaran (2004) CD Test is employed to determine the correlation between the units.

3.3.1. Cross-Section Dependence Test

Pesaran (2004) CD Test uses the residuals obtained from the estimation of the ADF regression in testing correlation between units. Accordingly, the correlation of each unit, except itself, with all other units is calculated. Therefore, while N is the unit, number of the correlation calculated will be $(N \times N - 1)$. Hypotheses are “ $H_0: \rho_{ij} = 0$ and $H_1: \rho_{ij} \neq 0$ ”. In the hypotheses, ρ shows the correlation coefficient between the residues of the i . and j . units. The results are summarized in Table 1.

Table 1: Pesaran (2004) CD Test Results

Variables	CD-test	p-value	corr	Abs(corr)
<i>LnEG</i>	64.86	0.000*	0.981	0.981
<i>LnTR</i>	46.54	0.000*	0.704	0.727

Note: “*shows the cross-sectional dependence at the 1% significant level.”

Table 1 shows the results of CD-test statistics, p-value, correlation coefficients, and absolute value of correlations. The null hypothesis which is “ H_0 : no correlation between the series” was tested against the alternative hypothesis which is “ H_A : there is a correlation between the series”. The p-value of *LnGDP* and *LnTR* variables are less than 0.05. Therefore, “ H_0 is rejected” and determined that there is a correlation between the series.

3.3.2. Stationarity of the Series

When there is a correlation between the units, it is necessary to choose the second-generation panel unit root tests. Therefore, Pesaran (2007) CIPS the unit root test, which takes into account the existence of correlation between the units, was performed and the results are summarized in Table 2.

Table 2: Pesaran CADF Unit Root Test

Variables	t-bar	CV10	CV5	CV1	Z[t-bar]	P-value
<i>LnEG-I(0)</i>	-1.831	-2.110	-2.200	-2.380	- 0.374	0.354
<i>LnTR-I(0)</i>	-1.860	-2.110	-2.200	-2.380	- 0.509	0.306
<i>dLnEG-I(1)</i>	-2.783	-2.110	-2.200	-2.380	-4.764	0.000 *
<i>dLnTR-I(1)</i>	-3.046	-2.110	-2.200	-2.380	-5.976	0.000*

“Note: * denotes stationary at the 1% significance level.”

Pesaran (2007) added the cross-sectional averages of the lagged levels and first order differences of the series as a factor to the DF or ADF regression in order to eliminate correlation between the units (Tatoglu, 2017:84). Table 2 shows the Pesaran CADF unit root test results that reveals the stationarity of the series at the level $I(0)$ and at the first order differences $I(1)$. The test results of the p-value of the series at the level are higher than 0.05. Therefore, the series belong to *LnEG* and *LnTR* are non-stationary at the level”. When the first-order differences of the series are taken, the test results of the p-value of the series have become lower than 0,05. It means both series are stationary at the first order difference level, or in other words, the integration order of the series are $I(1)$.

Once the integration order of the series defined as $I(1)$, the panel causality analysis can be implemented. However, before conducting causality analysis, a proper lag-length value should be identified. For this purpose, “Hansen J Test” was employed, and the results were presented in Table 3 below.

Table 3: Hansen J Lag-Length Test

lag	CD	J	p-value	MBIC	MAIC	MQIC
1	.9999973	7.997432	.9489428	-80.97347*	-24.00257	-46.90563*
2	.9999803	1.213897	.9999965	-76.63565	-26.7861 *	-46.82628

3	.9999786	.6749051	.9999724	-54.93191	-19.32509	-33.63951
4	.9999748	.4535422	.999908	-44.03191	-15.54646	-26.99799

According to the results seen in Table 3, the lag-length that makes the MBIC and MQIC model selection criteria minimum is 1. Therefore, the appropriate lag-length is selected as 1.

3.3.3. Homogeneity Test

In order to determine whether homogeneous or heterogeneous Panel VAR model should be used in VAR causality analysis, Swamy S the homogeneity test was performed. The results are presented in Table 4.

Table 4: Swamy S Test

Reg.	χ^2 (57)	Prob > χ^2
$LnTR_t = a_1 + \beta_{1i}LnTR_{t-1} + \beta_{2i}LnEG_{t-1} + u_1$	187.05	0.0000*
$LnEG_t = a_2 + \beta_{3i}LnEG_{t-1} + \beta_{4i}LnTR_{t-1} + u_2$	650.55	0.0000*

“Note: * denotes stationary at the 1% significance level.”

In Table 4, primarily, the variables ($LnEG_{it-1}$ and $LnTR_{it-1}$) to be used in the analysis are derived, and then a delayed panel VAR model is estimated with the random coefficients model of the variables. According to the Swamy S test results, the χ^2 probability values are less than 0.05 for both regression, thus the parameters are heterogeneous.

3.3.4. VAR Panel Causality Analysis

Since the parameters are heterogeneous revealed by Swamy S-Homogeneity Test, it was decided to use the heterogeneous VAR model in the panel causality analysis. Therefore, Dumitrescu & Hurlin (2012) Granger Panel Causality Test, which takes into account the heterogeneity, was employed and the results are presented in Table 5.

Table 5: Panel Causality Test Results

H ₀ Hypothesis:	W-bar Stat.	Z-bar Stat. (p-value)	Z-bar tilde (p-value)
TR does not Granger-cause EG	3.2470	7.2810 (0.000)*	5.6356 (0.000)*
EG does not Granger-cause TR	4.8619	12.5141 (0.000)*	9.9099 (0.000)*

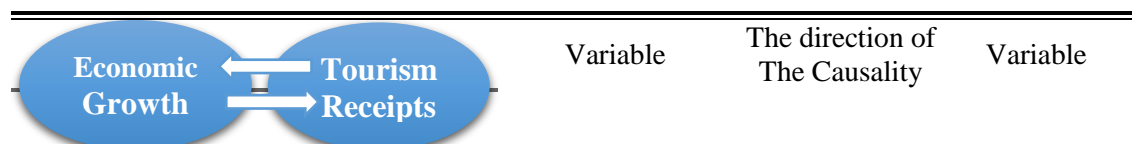
Note: * indicates casualty at the 1% significance level. (Lag order: 1)

According to the results of the Dumitrescu & Hurlin (2012) Granger Panel Causality Test, which is seen in Table 5, it is, concluded that

- (a) International tourism receipts is the granger cause of economic growth.
- (b) Economic growth is the granger cause of international tourism receipts

As a result, there is bi-directional causality between economic growth and international tourism receipts as it is seen in Table 6.

Table 6: Short-term Relationships between the Variables



	EG	↔	TR
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3.3.5. Co-Integration Analysis

To reveal the existence of a long-term relationships, primarily Westerlund ECM Panel Cointegration Test was conducted. Accordingly, H_0 : no cointegration hypothesis was tested against H_A the alternative hypothesis and the results were summarized as in Table 7.

Table 7: Westerlund ECM Panel Co-integration Test

TR GDP, lags(0 1) Leads (0 1) bootstrap(100) ^(a) (Results for H_0 : no cointegration with 21 series and 1 covariate)				
Statistics	Value	Z-value	P-value	Robust p-value
G_t	-5.118	-17.138	0.000	0.000*
G_a	-14.726	-6.363	0.000	0.010*
P_t	-23.033	-16.067	0.000	0.000*
P_a	-16.715	-12.343	0.000	0.000*

Notes: * indicates cointegration at 1% the significance level.

(a) The number of Bootstraps can be taken smaller than 800, where 100 was found to be sufficient. 21 series and 1 covariate.

Average AIC selected lag length: .57. Average AIC selected lead length: 0.

Table 7 covers G_t , G_a , P_t and P_a the test statistics, Z statistics, probability values (P-value) and robust p-values. The lag-length is determined as 0.57 according to average Akaike information criterion. When the results are examined, robust p-values which are considered for heterogeneous panel cointegration, are less than 0.05. Therefore, H_0 hypothesis is rejected and It was concluded that there is co-integration between tourism receipts and economic growth.

As it is concluded a long-term relationship between the series by Westerlund ECM Panel Co-Integration Test, to get further detail in long-term relationships, The Mean Group Estimation (MG Test) method, which is proposed by Pesaran and Smith (1995), was employed for the estimation of the cointegration model and the averages of the parameters for each unit. Table 8 and Table 9 show the results of MG Test.

Table 8. Pesaran & Smith Mean Group Estimator

Obs per group	= 21				
min/avg/ max	= 23/23/23			Wald χ^2	= 18.91
Number of obs	= 483			Prob > χ^2	= 0.0000
TR	Coef.	Std.Err.	t	P> t	[95% Conf. Interval]
EG	1.949034	.4482014	4.35	0.000*	1.070575 2.827492
_cons	-8.91102	13.15877	-2.20	0.028*	-54.70174 -3.120312

Note : Root Mean Squared Error (sigma): 0.3403

Table 9. Pesaran & Smith Mean Group Estimator

Obs per group	= 21					
min/avg/ max	= 23/23/23			Wald χ^2	= 76.15	
Number of obs	= 483			Prob > χ^2	= 0.0000	
EG	Coef.	Std.Err.	t	P> t	[95% Conf. Interval]	
TR	.4921293	.0563966	8.73	0.000*	.3815939	.6026647
_cons	10.37816	1.346251	10.68	0.000*	11.73956	17.01677

Note: Root Mean Squared Error (sigma): 0.1970.

The estimation of the long-term parameter, which is seen in Table 8 is approximately 1.95 and is significant because of the probability values of $|t|$ and χ^2 are below the 0.05 the significant level. Therefore, a 1% raise in economic growth increases tourism receipts by 1.95% in the long-term.

Similarly, when Table 9 is examined, the estimation of the long-term parameter is approximately 0.49 and is significant due to the probability values of $|t|$ and χ^2 are below the 0.05 the significant level. Thus, a 1% raise in tourism receipts increases economic growth by 0.49 %.

Conclusion

This research examined the long-term and the short-term relationships between tourism receipts and economic growth for selected 21 Asian Pacific Countries. The data set covers 483 observations for 23 years period from 1995 to 2017. The indicator of economic growth is the Gross Domestic Product and the indicator of tourism revenue is International Tourism Receipts.

Primarily, the functional and statistical models were defined. Then, to choose the appropriate test method in panel data analysis, the following test methods were employed: (i) correlation between the series by Pesaran CD Test Method, (ii) homogeneity of the parameters and model by Swamy S Test Method, (iii) stationarity of the series by “Levin-Lin-Chu Unit Root Test Method; (iv) proper lag-length by Hansen J Test Method. Then, Dumitrescu & Hurlin (2012) Panel Causality Test Method, which considers the heterogeneity, was conducted to determine the short-term causality between the series. To define the long-term relationship between the series, primarily Westerlund ECM Panel Co-Integration Test was implemented. To get further detail in long-term relationships between the series, Pesaran & Smith (1995) Mean Group (MG) Estimator Method conducted.

The Dumitrescu & Hurlin Panel Causality Test revealed a bi-directional causal relationship between economic growth and international tourism receipts in the short-term. Westerlund ECM Panel Co-Integration Test revealed a long-term relationships. Pesaran & Smith Mean Group Estimator Results indicated a bi-directional relationship between economic growth and tourism receipts in the long-term as (i) a 1% raise in economic growth increases tourism receipts by 1.95% and (ii) a 1% raise in tourism receipts increases economic growth by 0.49 % in the long-term.

A review of the extant literature reveals that prior research reports conflicting results regarding the relationship between tourism and economic growth. These conflicting results are primarily due to the differences in countries selected, period and the methods used. The literature identifies four main hypotheses that describe the relationship between tourism and economic growth: the tourism-led growth hypothesis;

the growth-led tourism hypothesis; the neutrality hypothesis and the feedback hypothesis. The results of this research, using both short and long-term analysis, support the feedback hypothesis which claims a bi-directional causal relationship exists between international tourism and economic growth. With this respect, this article supports research conducted by Seghir et al. (2015), Albaladejo et al. (2014), Dritsakis (2004), Durbarry (2004), Samimi et al. (2011) and Kim et al. (2006).

A primary contribution of this paper is to examine the nature of the relationship between tourism receipts and economic growth and extend the research domain to the Asia Pacific region. Critically important to the global economy the Asia Pacific region has the largest share of tourist arrivals (29%) and tourism revenues (24%) worldwide. While a bi-directional causal relationship was found, this study finds the magnitude of the relationship of economic growth on tourism receipts is substantially higher than its reciprocal. This result can be explained in part by the high level of infrastructure spending, transportation investment and the technological advances in the region. This region's rapidly growing economy is a key driver of tourism and increased tourism in turn drive economic growth in a synergistic manner. These results should be useful for other developing countries regarding determining economic policies and allocation of resources.

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