Montenegrin Journal of Economics

Vol. 14, No. 3 (2018), 055-071

The Effects of International Tourism Receipts on Economic Growth: Evidence from the First 20 Highest Income Earning Countries from Tourism in the World (1996-2016)

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ARTICLE INFO

Received July 05, 2018
Revised from July 20, 2018
Accepted August 12, 2018
Available online September 15, 2018

JEL classification:

C33; E13; F14; O11.

DOI: 10.14254/1800-5845/2018.14-3.4

Keywords:

Economic Growth,

Sustainability of Economic Growth,
International Tourism Receipts,
Second Generation Panel Data Analysis.

ABSTRACT

In this study, the effects of tourism receipts on economic growth will be investigated econometrically for the top 20 countries earning most from international tourism (WTR-20) in the world for the period 1996-2016. From this aspect, this study aimed to empirically evaluate whether international tourism receipts have an effect on economic growth performances of the developed and developing countries in the WTR-20 group as proposed by theoretical literature under the tourism-led growth hypothesis. To determine the effects of international tourism receipts on economic growth for WTR-20 group countries, a model is an extended form of Cobb-Douglas type of production function, will be estimated under the second-generation panel data analysis considering cross-sectional dependence. As a result of the study, it is determined that international tourism revenues have a positive and statistically significant effect on economic growth in the WTR-20 group countries. Also, it is found that there was unilateral causality running from international tourism receipts to economic growth in the WTR-20 group countries. These findings, which are in keeping with the theoretical literature under the tourism-led growth hypothesis, indicate that international tourism receipts have a significant effect on providing economic growth and gaining sustainability in WTR-20 group countries with their current structures.

1. INTRODUCTION

In its most general form, tourism, defined as a whole of the economic and socio-cultural activities to generate income by the help of attracting tourists, is touristic travel to a country with the purpose of visiting, resting, having fun, and getting to know the country, and it states in the international services of the current account on the balance of payments (İTO, 2007, p. 13). When viewed

from this aspect, tourism, as an invisible export, provides the inflow of foreign currency to finance fixed capital investments and plays a significant role in enhancing economic growth and development through stimulating sub-sectors of an economy with direct and indirect effects (Balaguer and Cantavella-Jordá, 2002, pp. 877-878).

The effects of tourism on economic growth and development are recognized due to running multiplier mechanism created by existed income-spending flow in the sector as a result of international tourism movements (Bahar and Kozak, 2013, p. 6). As a matter of fact, since tourism is a consumption activity, investment expenditures for satisfying the incremental demand of tourism in consequence of consumption expenditures made by tourists constitute incomes of productive factor owners in both the tourism sector and other sectors which promote tourism. In addition to direct income effects created by touristic consumption expenditures, expenditures for consumption and production of economic units, which acquire those touristic consumption expenditures as an income, run the multiplier mechanism by recirculation in an economy and lead to creating new incomes indirectly. In this context, tourism expenditures made by tourists in economies firstly create income effect as their magnitude, and then some part of this existing income influences creating new incomes indirectly through its transferral to various forms such as investments, savings, consumption, taxes, etc. (İTO, 2007, p. 102). Thereby, consumption-income flow exists in the tourism sector as a result of the tourism movements, which constitute more extensive income effects regarding the initial expenditures on tourism and facilitate providing economic growth and rising development levels in economies because of the multiplier effect (Çeken, 2016, p. 130-131).

In addition, the tourism sector, whose role in the economic growth and development process was ignored until the 1950s, is seen as one of the most important factors of economic growth and the development of policies performed by developed and developing countries thanks to its recognized worldwide economic importance after the Second World War (Bahar and Kozak, 2010, p. 53). From this date, the ever-growing tourism sector and its economic importance came into prominence, and the sector has been located at the center of sustainable economic growth and development strategies in developed and, particularly, developing countries since the 1990s, when the globalization process and foreign expansion policies accelerated.

From this point of view, in this study, the effects of tourism receipts on economic growth are investigated empirically within the concept of second-generation panel data analyses for the top 20 countries earning the most from international tourism (WTR-20) in the world over the period of 1996-2016. From this aspect, this study is aimed at evaluating whether international tourism receipts have an effect on economic growth performances of WTR-20 countries, which is consistent of developed and developing countries as proposed by theoretical literature under the tourism-led growth hypothesis. Findings of the study conducted concerning WTR-20 countries are thought to promote the development of empirical literature on this subject by covered countries and employed second-generation econometric methodologies.

In the second part of the study, the empirical literature, which is investigating the effects of international tourism receipts on economic growth, is summarized with its main lines and the position of this study in the literature is explained. In the third part of the study, the scope of the study is explained, and the data set is established. In the fourth part of the study, the effects of tourism receipts on economic growth in WTR-20 countries are investigated econometrically through employing extended Cobb-Douglas type of production function. Finally, by presenting general assessments and policy implications, the study is concluded.

2. LITERATURE REVIEW

When the related literature is viewed, it is seen that the empirical studies researching for the effects of international tourism receipts on economic growth have been progressing from the 1990s and intensifying from 2000s with tourism sector gained worldwide importance in terms of

economics. In addition to this, it is seen that the empirical studies, researching for the effects of international tourism receipts on economic growth were not theory based until the 2000s while they have been addressed Tourism-Led Growth Hypothesis after studies of Balaguer and Cantavella-Jorda (2002). Tourism-Led Growth Hypothesis is explained within the scope of Export-Led Growth Hypothesis assuming that economic growth not only can be provided by physical and human capital accumulation but can also be provided by expansion of export capacity (Brida et al., 2015: 646-647). In the Export-Led Growth Hypothesis based on Keynesian demand-side and Neoclassical supply-side economic growth theories, export revenues are indicated as one of the basic determinants of long-run economic growth whereas the tourism receipts are accepted as one of the main determinants of long-run economic growth in the Tourism-Led Growth Hypothesis (Balaguer and Cantavella-Jorda, 2002, pp. 877-884). In literature, it is seen that the effects of international tourism on economic growth within the concept of the Tourism-Led Growth Hypothesis are investigated in long-run relations and causality aspects with different grade estimators in empirical studies which analyze the effects (or the sign and magnitude of these effects) of international tourism receipts on economic growth for countries/country groups with different development levels by employing time series or panel data analysis.

In this context, in empirical analyses, which are conducted by using a different type of estimators under the time series/panel data analysis, it is found that the effects of international tourism receipts on growth are generally positive and statistically significant (Modeste, 1995; Balaguer and Cantavella-Jorda, 2002 – Spain;, Narayan, 2004-Fiji; Durbarry, 2004-Mauritius; Martin et al., 2004; Gökovalı and Bahar, 2006; Brida et al., 2008-Mexico; Jimenez, 2008-Spain and Italy; Lee and Chang, 2008; Proença and Soukiazis, 2008; Fayissa et al., 2009; Chen and Chiou-Wei, 2009-Taiwan and Korea; Bahar and Bozkurt, 2010; Srinivasan et al., 2012- Sri Lanka; Fawaz and Rahnama, 2014; Shahbaz et al., 2015-Malaysia; Cárdenas-García et al., 2015; Chiu and Yeh, 2016). Additionally, a few studies in the same content concluded that international tourism receipts have not statistically significant, but positive long-run effects on economic growth or they have not any influence on it (Figini and Vici, 2007; Öztürk and Acaravcı, 2009-Turkey;Cárdenas-García et al., 2015).

On the other hand, in some of the above studies and in other studies within the same context examining the effects of tourism receipts on economic growth are examined with causality dimension and different grade causality tests; it is found that there is either a presence of bilateral or unilateral causality or any causality relations between the variables. It is determined that there is an existence of unilateral causality running from international tourism receipts to economic growth in most of the studies in this context (Balaguer and Cantavella-Jorda, 2002-Spain; Narayan, 2004-Fiji; Durbarry, 2004-Mauritius; Dritsakis, 2004-Greece; Gündüz and Hatemi-J, 2005-Turkey; Özdemir and Öksüzler, 2006-Turkey; Lee and Chang, 2008; Belloumi, 2010-Tunisian; Akinboade and Braimoh, 2010-South Africa; Kreishan, 2011-Jordan; Dritsakis, 2012; Ridderstaat and Croes 2012-Aruba; Jalil et al., 2013-Pakistan; Chou, 2013; Hatemi-J et al., 2014; Brida et al., 2015; Alhowaish, 2016) while it is determined there is an existence of unilateral causality running from economic growth to international tourism receipts in some studies (Oh, 2005-South Korea; Lee and Chang, 2008; Payne and Mervan, 2010-Croatia; Chou, 2013; Hatemi-J et al., 2014; Alhowaish, 2016). In addition, it is concluded there is a bilateral causality among international tourism receipts and economic growth in considerable part of the studies (Lanza et al., 2003; Ongan and Demiröz, 2005-Turkey; Kim et al., 2006-Taiwan; Lee and Chien, 2008-Taiwan; Samimi et al., 2011; Çağlayan et al., 2012; Chou, 2013; Shahbaz et al., 2015-Malaysia; Seghir et al., 2015; Alhowaish, 2016; Ahad, 2016-Pakistan) while there is no causal relationship between international tourism receipts and economic growth in some of the limited number of studies (Eugenio-Martins and Morales, 2004; Yavuz, 2006-Turkey; Öztürk and Acaravcı, 2009-Turkey; Hepaktan and Çınar, 2010-Turkey; Brida et al., 2011-Brazil; Kasimati, 2011-Greece; Çağlayan et al., 2012; Chou 2013), Alhowaish, 2016)[1].

When studies in the literature are evaluated as a whole, it is observed that a large part of the empirical studies, which mentions the relations among international tourism receipts and economic growth within the context of Tourism-led growth hypothesis, are conducted on developing countries and carried out by using mainly time series analysis. On the other hand, the studies within the concept of panel data analysis are limited and focused on various countries (developed, developing, Latin America, Asia, Europe, Mediterranean, etc.) and specific country groups (OECD, G-7, SSA, GCC, etc.). Also, based on the literature review, the differences in the current positions of the covered countries in terms of international tourism revenues were not considered in studies conducted on various developed and developing countries/country groups within the concept of panel data analysis. When all of these studies were evaluated regarding their results, it was observed that the empirical studies, which investigated the relations between international tourism receipts and economic growth within the dimension of long-term relations and causality, generally support the tourism-led growth hypothesis. However, a limited part of these empirical studies did not reach the results that support that hypothesis. This situation shows that the obtained results for the effects of international tourism receipts on economic growth tend to be labile according to the development levels of the economic and tourism sectors of covered countries, sample periods, and differences in the econometric methodologies of studies.

In this study, after the literature review, the effects of international tourism receipts on economic growth, in other words, the validity of the Tourism-Led Growth hypothesis will be analyzed within the concept of second generation panel data analysis considering cross-section dependence and within the dimension of long-term relations and causality. From this aspect, findings of this conducted study on the developed and developing countries in the WTR-20 group are considered to contribute to the empirical literature in terms of covered countries and second generation econometric methodologies used for this subject.

3. DATA AND SCOPE OF THE STUDY

In this study, the effects of international tourism receipts on economic growth in WTR-20 countries for the period 1996-2016 are analyzed within the concept of second generation panel data analysis[2]. From this aspect, this study is aimed to examine whether international tourism receipts on economic growth performances of developed and developing countries in the WTR-20 group as predicted in theoretical literature within the concept of Tourism-Led Growth Hypothesis or not. In this study, United Nations' World Tourism Organization's (UNWTO's) ranking formed by using nominal tourism receipts (USD) in 2016 is taken as a reference for determination of the top 20 countries earning the most from international tourism. These first 20 highest income-earning countries from tourism in the world, respectively sorted by the size of their nominal tourism receipts in 2016, are the United States, Spain, Thailand, China, France, Italy, the United Kingdom, Germany, Hong Kong (China), Australia, Japan, Macao (China), India, Mexico, Austria, Turkey, Singapore, Canada, Malaysia, and the Korean Republic. Since some of the data belonging to special administrative regions (Hong Kong [China] and Macao [China]) could not provide a sufficient length to the related databases and China was included in analyses as a country, these special administrative regions were removed from the analyses, and Switzerland (21st) and Greece (22nd) were included instead of those regions.

[1] In this section, highlighting the name of the country besides the year of the outlined study indicates that the related study conducted within the concept of time series analysis. In addition, studies, conducted on various countries within the concept of panel data analysis, do not include the name of the country. See related studies for detailed information about countries or country groups covered by these studies.

[2] Since the data of tourism receipts have became available from 1996 in the related database, investigation period of the study begins with that time.

In the study, table 1 shows the variables, used in models estimated for the purpose of examination of the effects of international tourism receipts on economic growth (Per Capita Real Gross Domestic Product-GDP), and their references.

Table 1. Variables Used in Models

Period: 1996-2016		
Abbreviations	Definition of the Variables	Data Sources of the Variables
RGDP	Per Capita Real GDP (2011-USD).	The World Bank (WB) (World Development Indicators).
RGFCI	Real Fixed Capital Investments (2010-USD).	
ITR	International Real Tourism Receipts (USD).	
EL	Employed Labor Force	The Conference Board-Total Economy Database (TED May-2017).
TFP	Total Factor Productivity (USD).	

Note: All variables described in the table are used in analyses with their annual growth rates in investigation period.

Here, the RGDP variable (constant 2011 USD) was obtained from the WB database for all of the WTR-20 countries in purchasing power parity (PPP) terms. The RGFCI variable (constant 2010 USD) was obtained from the WB database and used in per capita terms by dividing real fixed capital investments by the population taken from the same database. The EL variable was obtained for all of the WTR-20 countries by proportioning the employed labor force retrieved from the TED database to the total population in the middle of the year taken from the same database. The variable TR was taken for all of the WTR-20 countries by proportioning international tourism receipts obtained from the WB database to GDP deflators also retrieved from the same database. In this way, the TR variable was converted to a real term. TFP, which was calculated as the annual growth rate in the examination period, was taken from the TED database for all of the WTR-20 countries as a prepared variable.

4. ECONOMETRIC METHODOLOGY AND FINDINGS

In this study, the econometric model, which will be estimated to determine the effects of tourism receipts on economic growth in the WTR-20 countries, was obtained by extending the Cobb-Douglas type of Neo-classical total production function. The extended CD type of production function, which is including the effects of tourism receipts and technology development level on economic growth, can be written as in the following equation.

$$y_{it} - A_{it}K_{it}^{n}L_{it}^{\tau}T_{it}^{\gamma}e^{\varepsilon_{it}}, \qquad (1)$$

Here the term (ε_{it}) represents the error term, (i) represents the countries and (t) represents the time. The term (y_{it}) in production function indicates economic growth (per capita real GDP), the term (A_{it}) indicates the technological development level, the term (K_{it}) indicates physical capital accumulation (real fixed capital investments), the term (L_{it}) indicates human capital accumulation (employed labor force), and the term (T_{it}) indicates tourism receipts. It is admitted the level of technological development (A_{it}) in the production function consists of total factor productivity (TPP) by considering the evaluation of economic growth theories at the point of resolving the economic growth process and the level of technological development. Likewise, it is assumed that the TFP, which composes the unexplained part of the economic growth with the changes in physical

quantities of production factors in the form of physical and human capital accumulation, shows the increases in production provided only by technological development as Solow residual (Solow, 1956). Under these assumptions, in the CD type of production function, the level of technological development consisting of increases in TFP can be written as follows.

$$A_{it} = f(TFP)_{it}^{\partial} \quad (2)$$

In this context, the CD type of model defined in equation 1, which will be estimated econometrically, can be derived as an extended form as follows:

$$y_{it} - \beta_{it} + \alpha_{it} K_{it} + \tau_{it} L_{it} + \partial_{it} TFP_{it} + \gamma_{it} T_{it} + \varepsilon_{it} \quad (3)$$

By expanding CD type of production function, the definition of econometric models which are including the other potential determinants of economic growth is often used in the empirical econometric literature. (See some the studies in this context: Barro (1991), Levine and Renelt (1992), Sala-i-Martin (1997), Temple (2000), Rodrik (2012)). In this study, the model defined in the equation 3 to analyze the effects of tourism receipts on economic growth is investigated through panel data methodology because of time series of WTR-20 countries are used together. The econometric model, which will be estimated to establish the effects of tourism receipts on economic growth within the second generation panel data analysis methodology considering the cross-sectional dependence, is defined in the equation 4.[3]

$$\text{Model: } RGDP_{it} = \alpha_{it} + \beta_1 RGFCI_{it} + \beta_2 EL_{it} + \beta_3 TFP_{it} + \beta_4 ITR_{it} + \varepsilon_{it} \quad (4)$$

Here (α) shows the constant parameter, (β) shows the slope parameter, (ε) is the error term, (t) indicates the time dimension, and (i) indicates the cross-section units. To avoid spurious regression in panel data analysis and to obtain more consistent results, it is necessary to examine the stationary states of the series in the model (Tatoğlu, 2013:199). At the same time, the model, which will be used to determine the stability of the series in the panel data analysis, is divided into first and second generation according to whether or not the CSD exists in the panel units. In the first generation panel unit root tests, it is assumed that a shock arisen in one of the constituent sections of the series affects whole units at an equal rate while it is expected that a shock appeared in one of the sections affects each unit at different rates. In this context, in case of an existence of CSD among the constituent units of panel, first generation panel unit root tests do not provide the consistent results (Hadri, 2000; Levin et al., 2002; Im et al., 2003; etc.) whereas second generation panel unit root tests providing more consistent results (Taylor and Sarno, 1998; Breuer et al., 2002; Pesaran, 2007; Palm et al., 2011; Hadri and Kurozumi, 2012; Pesaran et al., 2013; etc.) can be used. For this reason, it is necessary to investigate the CSD in the series / cointegration equations of models and to determine required unit root tests and sequent tests before estimating models in the panel data analysis (Menyah et al., 2014, pp. 390-391).

Furthermore, it is necessary to observe time (T) and cross-section (N) of series when searching CSD. In case of T>N, using Breusch and Pagan (1980) CD-LM1 test is required while in case of T=N, employing Pesaran (2004) CD-LM2 is required. The CD-LM1 and CD-LM2 tests are based on an equation as follows:

$$\text{CD}-\text{LM} = \breve{\rho}_{ji} = \frac{\sum_{t=1}^{T} e_{it}\, e_{jt}}{\left(\sum_{t=1}^{T} e_{it}^2\right)^{1/2}\left(\sum_{t=1}^{T} e_{jt}^2\right)^{1/2}} \quad (5)$$

Here the term ($\breve{\rho}_{ji}$) indicates the correlation among the error series, the term (e_{it}) shows the error series obtained section units by using least squares methodology (for t number of observa-

[3] In this study, Stata 14.0, Gauss 10.0 and EViews 10.0 econometric software packages are used for estimation of the defined model.

tion i= 1,2,...,n). C-LM1 and CD-LM2 tests, which can give biased results in cases of group mean is zero and unit mean is different from zero, are developed with CD-LM_{adj} test as equation 6 through adding the average of cross-sections (μ_{Tij}) and variance of cross-sections (υ_{Tij}) to test statistics by Pesaran et al. (2008).

$$CD-\mathrm{LM}_{\mathrm{Adj}} = \mathrm{NLM}^{**} = \sqrt{\frac{2T}{N(N-1)}}\left(\sum_{i=j}^{n-1}\sum_{j=i+1}^{n}\frac{(\mathrm{T}-\mathrm{K})\breve{\rho}_{ij}^{2}-\mu_{Tij}}{\upsilon_{Tij}}\right) \qquad (6)$$

In this context, calculated CD-LM_{adj} test statistics can give more consistent results in contrast with CD-LM1 and CD-LM1 test statistics when group mean is zero and unit mean is different than zero. This test, which is also called as the adjusted CD-LM test, can be used in all alternative cases of time and section dimensions of constituent series of the panel (Pesaran et al., 2008, pp. 105-127). Also, in the CD-LM tests, the existence of CSD tested with the null hypothesis stating that there is no cross-sectional dependence in the series or model. In case of rejection of the null hypothesis, the existence of CSD in the series or model is accepted in the CD-LM test. The CD-LM test is assumed to have a standard normal distribution. In series in the model conducted for WTR-20 countries and in the co-integration equation, the existence of CSD was examined by CD-LM1 and CD-LM_{adj} tests in accordance with T and N conditions. The test results are shown in Table 2.

Table 2. CD-LM Test Results

Constant + Trend	*CD-LM Test Statistics*		
Variables	CD-LM1	CD-LM_{adj}	**L**
RGDP	875.82***[0.000]	150.37***[0.000]	2
RGFCI	631.30***[0.000]	96.54***[0.000]	3
EL	378.89***[0.000]	119.93***[0.000]	2
TFP	643.57***[0.000]	97.96***[0.000]	2
ITR	521.46***[0.000]	100.39***[0.000]	3
Model	**766.30***[0.000]**	**2.22**[0.013]**	**3**

Note The signs "***" and "**" indicates the existence of CSD in the series and model at 1% and 5% significance levels, respectively. Column "L" shows the determined optimal lag length with Schwarz information criterion for the variables. Values in the box brackets "[ ]" indicates probabilities of test statistics.

When the results in table 2 are examined, it is seen that the probability values of the CD-LM test statistics calculated in the Constant + Trend form are lower than 0.05 for all of the variables and cointegration equation in the defined model for WTR-20 countries. In this case, it is necessary to reject the null hypothesis created according to CD-LM tests for all of the variables and cointegration equation in WTR-20 countries. These results show that the cross-section units, which constitute the WTR-20 panel, are interdependent. Also, they refer that using second generation panel data test techniques which account for the existence of CSD in the later stages of analysis should be used (Baltagi, 2008, pp. 10-11).

In this context, the stationary condition of series in the defined model is examined by CADF (Cross-sectional Augmented Dickey-Fuller) second generation panel unit root test developed by Pesaran (2007) considers CSD. In this test, firstly the CADF test statistics are found for all cross-sectional units in the panel then CIPS ((Cross-Sectionally Augmented IPS) statics are calculated for panel-wide by calculating arithmetic mean of these test statistics. CADF test statistics which can

give consistent results by using in all of the alternative cases among T and N are calculated as equation 7:

$$t(N,T)=\frac{\Delta y_i^{'}\overline{M}_i y_{i-1}}{\overline{\sigma}^2\left(\Delta y_{i-1}^{'}\overline{M}_i y_{i-1}\right)^{1/2}} \tag{7}$$

CIPS statistics values calculated by using CADF test statistics in equation 2 are obtained as equation 8:

$$CIPS = N^{-1}\sum_{i=1}^{n} t(N,T) \tag{8}$$

The calculated CADF and CIPS test statistics are compared with critical table values constituted by Monte Carlo simulations and hypotheses are tested for stationary. In case of the computed CADF and CIPS test statistics is higher than the critical table in absolute value, the null hypothesis which claims "the series has unit root" is rejected (Pesaran, 2007, pp. 265-312). Stationarity of the variables in the defined model tested by using CADF Panel Unit Root test and the results are shown in table 3.

Table 3. CADF Panel Unit Root Test Results

Constant + Trend		*CIPS Test Statistics*		
Variables		*Level*	*First Difference*	**L**
RGDP		-2.53	-4.68***	2
RGFCI		-2.41	-3.90***	3
EL		-2.53	-2.98***	2
TFP		-1.89	-2.75**	2
ITR		-2.65	-3.27***	3
Critical Values	% 1	-2.92		
	% 5	**-2.73**		

Note "***" and "**" signs in the table states variables are stationary at 1% and 5% significance levels, respectively. CIPS test statistic critical table values are taken from the study of Pesaran (2007) according to T and N conditions. For information about column L, see the table 2.

When the results are examined in table 3, all of the variables in the described model on WTR-20 countries are not stationary at levels, but they are stationary at first differences at 5% significance level. Since the calculated CIPS statistics for the variables in the Constant-Trend form at first differences are higher than 0.05 significance level in absolute value, the null hypotheses are rejected.

After determining all of the variables in the model are stationary at first differences according to CADF panel unit root test, to avoid spurious unit root and to detect consistency of the results, stationary is also tested through Multifactor Panel Unit Root Test-MPURT developed by Peseran et al. (2013). MPURT test is based on the CIPS Panel Unit Root Test developed by Peseran (2007) and CSB (Simple Average of Cross-Sectional Augmented Sargan-Bhargava) test developed by SB test considering CSD. In the MPURT Panel Unit Root Test, the multifactor error structure of constituent sections of the panel includes the information of k observable factors depended on observable time series and m non-observable factors, and enables to resolve autocorrelation stemming from error structures of factors.

Therefore, a stationary analysis that can be effective in macroeconomic variables such as production, interest rate, unemployment rate, etc. and series such as technological shocks and

fiscal policies can be conducted by using created CIPSm and CSBm test statistics. Also, stationary analysis considering the effects of common factors that cause CSD can be performed by using CIPSm and CSBm test statistics. Using all cases between T and N, the CIPSm and CSBm test statistics can give consistent results. These test statistics are computed as equation 9 and 10.

$$CIPS^*_{NT} = N^{-1}\sum_{\bar{i}-1}^{N} t_i^*(N,T) \tag{9}$$

$$CSB_{NT} = N^{-1}\sum_{i-1}^{N} CSB_i(N,T) \tag{10}$$

Here the term ($t_i^*(N,T)$) shows the sample distribution of the panel. The calculated CIPSm and CSBm test statistics values as a result of the MPURT test are compared to critical table values which formed by Pesaran et al., (2013) through using stochastic simulation methodology and then hypotheses for stationarity are being tested. In case of calculated CIPSm and CSBm test statistics are higher than the table critical values, the null hypothesis referring that "there is no unit root in series for all of the constituent cross-sectional units of the panel" or "series is not cointegrated" is accepted (Pesaran et al., 2013, pp. 96-99).

Stationarity conditions of the variables in the defined model are tested by using CIPSm and CSBm test statistics. Here RGDP, ITR, and TFP series, which are thought to be effective on the formation of CSD in the series, are used as a multifactor. Tests results are shown in table 4.

Table 4. MPURT Panel Unit Root Test Results

Constant + Trend		*MPURT Test Statistics*					
Multi Factors	Variables	*Level*		*L*	*Firs Difference*		**L**
		CIPSm	CSBm		CIPSm	CSBm	
TFP-ITR	RGDP	0.000	0.067	2	-2.96***	0.052***	1
RGDP-ITR	RGFCI	0.000	0.060	2	-5.21***	0.067***	1
	EL	0.000	0.084	2	-5.92***	0.068***	1
	TFP	0.000	0.072	2	-3.94***	0.037***	1
RGDP-TFP	ITR	0.000	0.069	2	-3.27***	0.051***	1
Critical Values	% 1	-3.43	0.036	2	-2.92	0.084	1
	% 5	**-2.77**	**0.043**	**2**	**-2.73**	**0.069**	**1**

Note "***" and "**" signs in the table states that the variables are stationary at 1% and 5% significance levels, respectively**.** Critical table values for two-factor CIPSm and CSBm test statistics are obtained from the study of Peseran et al., (2013) in conformity with T and N conditions. For information about column "L", see the table 2.

When the results in the table 4 are examined, all of the variables in the defined model on WTR-20 countries are not stationary at level but stationary ate first difference at 5% significance level. Since the calculated CIPSm and CSBm statistics for the variables in the Constant-Trend form at first differences are higher than 0.05 significance level, the null hypotheses are rejected. These results indicate that stationarities of the variables at first difference in the described model are valid even when the RGDP, ITR and TFP series, which are thought to be effective in the formation of CSD in the variables, are used as multifactor.

According to CADF and MPURT Panel Unit Root Test results, taking first differences of the variables, which are not stationary at level but stationary at first difference, can remove the effects of the incidental shocks occurred in the previous period in the variables and possible cointegration relationships between series in the long run. Even if the variables are not stationary at level, it is possible that there may be a composition of these series in which the series are stationary, and cointegration tests can determine this condition (Tarı, 2010, p. 415).

When there is no existence of CSD in models, first-generation panel cointegration tests can be used (Johansen 1988, Pedroni 1999, Kao 1999, etc.). In case of cross-sectional dependency, long-run relations between the series are examined by the help of the second-generation panel cointegration tests (Westerlund ve Edgerton, 2007; Westerlund, 2008; Gengenbach et al., 2016; etc.). The Westerlund and Edgerton (2007) panel cointegration test used in this study is based on the Lagrange Multiplier (LM) test developed by McCoskey and Kao (1998) and uses the bootstrap feature to allow correlation between cross-sections. In this test, which allows autocorrelation and heteroscedasticity in the cointegration equation, long-run relations are examined through normally distributed LM test statistics as follows:

$$LM_N^+ = \frac{1}{NT^2}\sum_{i=1}^{N}\sum_{t=1}^{T}\widehat{w}_i^{-2}S_{it}^2 \qquad (11)$$

Here the term(S_{it}) shows the zero mean-variance and sub-totals (which are estimated by FMOLS (Fully Modified Ordinary Least Square)) of independently-identically distributed error term. The term ($\widehat{w}_i^2$) shows the estimated long-run variance. In case of calculated LM test statistics are higher than the table critical value (1.65), the null hypothesis referring that "there is no cointegration relation among cross-section units in the panel" is accepted at 5% significance level (Westerlund and Edgerton, 2007, pp. 185-190).

Further, homogeneity of the slope coefficients in the cointegration equation can be tested by using Slope Homogeneity Tests developed by Peseran and Yamagata (2008). In this test, whether or not the slope coefficients in the cointegration equation vary across cross-section units examined by ($\tilde{\Delta}_{adj}$) test statistics with the null hypothesis referring that "slope coefficients are homogeneous." In case of the calculated ($\tilde{\Delta}_{adj}$) test statistics probability value is higher than 0.05, the null hypothesis is accepted at 5% significance level, and it is decided that the cointegration coefficients are homogeneous in the constituent cross-section units of the panel (Pesaran and Yamagata, 2008: 50-93). Test results of the LM and ($\tilde{\Delta}_{adj}$) which examine the long-run relations among the variables and homogeneity of the coefficients in the defined model for WTR-20 countries are shown in table 5.

Table 5. Panel Cointegration and Panel AMG Test Results

Variables	*Coefficients*	*Standard Error*
RGFCI	0.1027***	0.0155 [0.000]
EL	0.4212***	0.0578 [0.000]
TFP	0.7282***	0.0583 [0.000]
ITR	0.0053**	0.0027 [0.046]
Constant Term (C)	1.8924***	0.2280 [0.000]
Test Statistics (Constant + Trend)	LM	23.80° [0.937]
	($\tilde{\Delta}_{adj}$)	**-0.065ª [0.526]**

Note "***" and "**" signs state that the t-statistics of the coefficients are significant at 1% and 5% significance levels, respectively. The sign "°" indicates that and existence of cointegration relation between the series in the model at 1% significance level. The sign "ª" states that slope coefficient of cointegration equa-

tion in the model is homogeneous at 1% significance level and the probability values are shown in the box brackets "[ ]."

When the LM test results are viewed in table 5, it is seen that the null hypothesis conducted according to the Constant+Trend form is accepted at %1 significance level since the calculated LM test statistics for the defined model are higher than the critical table value (2.33). That is, variables in the model are cointegrated in the long-run. Also, When the ($\tilde{\Delta}_{adj}$) test statistics are viewed in table 5, it is seen that the calculated probability values of the ($\tilde{\Delta}_{adj}$) test statistics for the defined model are higher than 0.05 and the null hypothesis is accepted. These results indicate that the constant term and slope coefficients are homogeneous in the cross-section units and the long-run cointegrating relations are valid for the panel-wide. After detecting that the variables are stationary at first difference and affecting each other, and slope coefficients are homogeneous, the long-run coefficients in the model should be estimated by appropriate methodologies. In this context, the effects of tourism receipts on economic growth in WTR-20 countries can be tested by Panel AMG (Augmented Mean Group) which consider all conditions explained above. In the Panel AMG methodology developed by Eberhart and Bond (2009), the long-run cointegration coefficients for panel-wide are calculated by weighting the arithmetic means of cointegration coefficients of cross-sections in the panel. In the Panel AMG methodology, estimation of long-run cointegration coefficients for panel-wide and cross-sections in the panel is based on following equations.

$$y_{it} - \beta_i' x_{it} + u_{it} \qquad u_{it} - \alpha_i + \lambda_i' f_t + \varepsilon_{it} \tag{12}$$

$$x_{mit} - \pi_{mi} + \delta_{mi}' g_{mt} + \rho_{1mi} f_{1mt+\cdots+} \rho_{nmi}' f_{nmt} + v_{mit} \tag{13}$$

$$f_t = \varphi' f_{t-1} \mid \epsilon_t \qquad g_t = \varrho' g_{t-1} \mid \omega_t \tag{14}$$

The term (x_{it}) shows the vector of observable covariates, the terms (f_t) and (g_t) indicate the unobserved common factors and the term (λ_t) shows the factor loadings related to sections in the panel. In that sense, the long-run cointegration coefficients are estimated by considering the common factors in series and dynamic effects in the Panel AMG methodology. Also, the Panel AMG estimator is used in case of an existence of endogeneity problem based on the error term, can produce effective results for unbalanced panel data sets (Eberhardt and Bond, 2009:1-4). The conducted model was estimated by Panel AMG methodology to detect the effects of tourism receipts on economic growth for WTR-20 countries in this study. The results are shown in table 5.

When the results in table 5 are viewed, the coefficients of the explanatory variables (RGFCI, EL, TFP, and ITR) in the defined model for WTR-20 countries are positive as expected and statistically significant at 1% and 5% significance levels. These results indicate that increases/developments in physical-human capital accumulation, technological development level and international tourism receipts in WTR-20 countries have a positive and statistically significant impact on economic growth in the research period. Furthermore, when the results of the model are examined with regards to coefficients of explanatory variables, it is seen that the positive and statistically significant effects of RGFCI, EL, TFP, and ITR on economic growth, respectively sorted according to their sizes, are TFP, EL, RGFCI, and ITR. These results show that the effects of the related variables on economic growth are positive and statistically significant. These results also indicate that the effect sizes of the variables are sorted from highest to lowest as technological development level, human capital accumulation, physical capital accumulation, and international tourism receipts, respectively. All of these results revealed that the economic growth performances of the WTR group countries are respectively affected by technological development level, human capital accumulation, physical capital accumulation, and tourism receipts (When the long-run determinations of economic growth are given).

After detecting the long-run effects of tourism receipts on economic growth in the defined model for WTR-20 countries, the direction of these effects can be examined by causality tests. In this study, the direction of the long-run causality relationships between tourism receipts and eco-

nomic growth variables are investigated with Panel Bootstrap Causality Tets (PBC) developed by Kónya (2006). The PBC test, which considers CSD, is based on SUR-Seemingly Unrelated Regressions model and it can give consistent results even when there is an existence of a simultaneous correlation between cross-section units in the panel. Also, the PBC test allows the use of extra information provided by panel data. Furthermore, since it is not necessary to determine the stationarity and cointegration conditions of the series in the PBC Test, the information losses that may occur in the series can also be avoided. In this test, the causality relationships between the two variables (y and x) are investigated through the following equations based on the SUR method:

$$y_{N,t} = \alpha_{1,N} + \sum_{i=1}^{ly_1} \beta_{1,N,i}\, y_{N,t-1} + \sum_{i=1}^{lx_1} \delta_{1,N,i}\, x_{N,t-1} + \varepsilon_{1,N,t} \quad (15)$$

$$x_{N,t} = \alpha_{2,N} + \sum_{i=1}^{ly_2} \beta_{2,N,i}\, y_{N,t-1} + \sum_{i=1}^{lx_2} \delta_{2,N,i}\, x_{N,t-1} + \varepsilon_{2,N,t} \quad (16)$$

Here the term (t) (where t=1,2,3,...., T) determines the time dimension in the panel. The term (N) (where N=i=(1,2,3,...., N) indicates the number of cross-sections in the panel and the term (l) indicates the lag lengths for the variables. Causality relations between the variables (x and y) are examined by Fisher Test statistics calculated by using bootstrap in the panel-wide (Kónya, 2006, pp. 979-981). In case of probability values of calculated Fisher Test statistics are lower than 0.05 the null hypothesis referring that "there is no causality relationship among all of the cross-sections in the panel" is rejected at 5% significance level and then it is decided that there is a causality relationship between the variables. The PBC Test results which examine the causality relationship between tourism receipts and economic growth variables are shown in table 6.

Table 6. PBC Test Results

Hypotheses	*Fisher Statistics*
RGDP does not cause TR.	33.30 [0.764]
ITR does not cause RGDP.	56.47** [0.044]

Note "**" indicates the rejection of the null hypothesis at 5% significance level, % 5. Reported probability values for Fisher Test statistics are obtained from (10.000) bootstrap distribution.

When PBC test results in table 6 are examined, it is seen that there is positive unilateral causality running from tourism receipt to economic growth in the WTR-20 countries since the probability values of the calculated Fisher statistics are lower than 0.05 for ITR and GRDP variables under the related conditions. These results show that the resultant increases in international tourism receipts of WTR-20 countries cause these countries' economic growth performances to increase. That is, these results are in keeping with the Tourism-Led growth hypothesis and they, however, indicate that the inverse implication is not valid.

CONCLUSION

In this study, the effects of tourism receipts on economic growth will be investigated econometrically for the top 20 countries earning the most from international tourism (WTR-20) in the world for the period 1996-2016. From this aspect, this study aimed to empirically evaluate whether international tourism receipts have an effect on economic growth performances of the developed and developing countries in the WTR-20 group as proposed by theoretical literature under the

tourism-led growth hypothesis. To determine the effects of international tourism receipts on economic growth for WTR-20 group countries, a model, is an extended form of Cobb-Douglas type of production function, will be estimated under the second-generation panel data analysis considering cross-sectional dependence. As a result of this study, the results of the defined model for WTR-20 group countries for the period 1996-2016 are in keeping with the Tourism-Led growth hypothesis, and they can be summarized as a whole as follows.

In this context, it is confirmed that all of the used representative variables for physical capital accumulation, human capital accumulation, technological development level, and international tourism receipts, without exception, have a positive and statistically significant effect on economic growth in WTR-20 countries for the research period. These results show that increases / developments existed in physical-human capital accumulation, technological development level and international tourism receipts have a positive and statistically significant effect on economic growth performances of WTR-20 countries in the research period.

Moreover, it is revealed that the positive and statistically significant effects of these variables on economic growth in the long-run are respectively sorted according to their sizes as technological development level, physical-human capital accumulation, and international tourism receipts. That is, these results indicate that the physical-human capital accumulation, technological development level, and international tourism receipts have a positive and statistically significant effect on economic growth in the WTR-20 countries, and they also state that economic growth performances of the WTR group countries (When the long-run determinations of economic growth are given) are mostly affected by technological development level, human capital accumulation, physical capital accumulation, and tourism receipts, respectively.

Also, the obtained results for the long-run effects of tourism receipts on economic growth are also confirmed by the direction of the causality relationship among the variables. In this context, it is detected that there is positive and unilateral causality running from international tourism receipts to economic growth in the WTR-20 group countries for the research period. These findings indicate that the resultant increases in international tourism receipts in the WTR-20 countries, as in keeping with tourism-led growth hypothesis, cause economic growth performances to increase. However, these results indicate that the inverse implication is not valid.

These results obtained from defined model indicate that international tourism receipts (When the long-run determinations of economic growth are given) have a significant effect on providing economic growth and gaining sustainability in WTR-20 group countries with their current structures. In this context, it is necessary to design and implement supply-demand side policies by policymakers in developed and developing countries in the WTR-20 group to protect and strengthen the current position of the determined links between international tourism receipts and economic growth for the research period.

In this direction, it is crucial to develop supply-side tourism policies aimed at diversifying existing tourism activities in the countries of the WTR-20 group and spreading them to country-wide and to all seasons. It is also crucial to develop demand-side policies aimed at increasing the quality and publicity of product-service in the tourism sector. In this way, it would be possible to get more benefit from current tourism potentials of developed and developing countries in the WTR-20 group and to be able to gain sustainability for their worldwide positions concerning international tourism receipts. Besides, sustainability of the effects of the tourism sector, which has achieved significant development trend since 1996, and international revenues from this industry on economic growth would be possible for WTR-20 group countries. Of course, all of these policy recommendations for the development of the tourism sector and increasing international tourism receipts have greater importance for developing countries in WTR-20 group as Thailand, China, India, Mexico, Turkey, and Malaysia, which have much more need of tourism-led growth strategy to finance economic growth.

Besides, in studies covering tourism sector will be conducted in the near future, it is thought that investigation of the determinants of international tourism revenues, which have a significant effect on the economic growth performance of the WTR-20 countries, and establishment of the most effective factors on tourism receipts and making policy implications in this direction would provide development of the literature.

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