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DOES TOURISM DEGRADE ENVIRONMENTAL QUALITY? A STUDY OF E-7 COUNTRIES

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Abstract

The main objective of this study is to examine the effect of foreign direct investment (FDI), tourism revenues and financial development on the quality of the environment on the E-7 countries for the period 1995-2016. In this study, sustainability and homogeneity test were performed to select the correct model. Sustainability and homogeneity have proven that sustainability and homogeneity analysis models can be used. The multifaceted relationship between variables is estimated by the westerlund cointegration test, cointegration coefficients CCE estimator and causality by causality analysis. According to the findings of the analysis, a long-lasting relationship between environmental quality, FDI, tourism and financial development has been determined and it has been found that FDI has reduced the quality of the environment, but tourism development and financial development have increased the quality of the environment. According to the findings of causality analysis, it is concluded that there are two-way causality between environmental quality and FDI, tourism and financial development.

Keywords: Sustainable tourism, Environmental quality, FDI, E-7 Country

Introduction

Tourism; it can be defined as activities carried out by socio-cultural purposes such as rest, entertainment, health, curiosity, sports without political and commercial purposes (Başol, 2012: 351). Though tourism activities have increased after 1950, if people move from this definition, it is possible that people have not been able to enjoy health and so on since the early ages. it is a well-known fact that he traveled to different geographical regions for reasons. However, factors such as the enrichment of societies in time, intense work tempos, increasing means of transportation and acceleration of transportation have created an alternative activity for people. In this context, we are

talking about people; tourism, leisure, recreation, health, curiosity, sports, and so on. Here, when people go to a different place from where they live, they spend some of their annual savings here. This situation is a sign that tourism is important. In this context, we can say that the countries for tourism are the chimney factories. Because tourism sector; it provides significant contributions to the economic development of countries by positively affecting the important economic impact areas such as improving the balance of payments, development of underdeveloped regions, infrastructure development and entrepreneurial activities by providing foreign exchange inflows to the country on the one hand and helping to increase the quality of the environment on the other hand.

Foreign direct investment helps the development of developing country economies. However, it has recently been discussed that the environmental degradation in these countries is also the basis. According to this opinion, called "pollution haven hypothesis", developing countries are seen among the countries, not only in terms of cheap labor and cheap raw material opportunities but also in terms of shallow environmental policies, for multinational companies operating in developed countries. Because intensive environmental regulation policies in developed countries reduce the commercial competitive advantage of companies. For this reason, industrialized countries, particularly those affecting the environment, increase the rate of environmental degradation in developing countries by transferring developed countries to developing countries.

Many studies on environmental pollution and direct investments in the literature (Baek, 2016, Kim and Adilov, 2012, Cole et al., 2009, Aliyu, 2015, Xing, 1998, Bao, 2011, Pao and Tsai, 2011, Suri and Chapman , 1998, Mani and Wheeler, 1998, Wagner, 2010, Silva and Zhu, 2009, Dean et al., 2009, Machado et al., 2001). On the relationship between environmental pollution and tourism, Lee and Brahmasrene (2013), Paramati et al. (2017). There is no study between environmental pollution and financial development.

In this context, the effective relationship between environmental quality, tourism, direct investments and financial development will be examined econometric by using annual data for E-7 countries covering 1995-2016 period.

Data

The data set in this study is the E-7 countries; Brazil, China, India, Indonesia, Mexico, Russia and Turkey started the 1995-2016 period is composed of the annual data. The amount of carbon dioxide (CO2) per capita as a measure of environmental quality in the study, the ratio of Foreign Direct Investment to GDP in countries as indicators of Foreign Direct Investment (FDI), the log of total tourism incomes as a representative of the Community Mental Health Center CMHC , and financial development (FD) as the proportion of loans to the finance sector. The data set used in the study is taken from the World Bank data set (www.data.worldbank.org/indicator).

Methodology and Findings

The lack of horizontal section dependence and homogeneity in the analyzes significantly influence the results. For this reason, in this study, firstly, the model should be examined whether it has CrosssectionalDependency and whether it is homogeneous. After Cross-sectionalDependency test and homogeneity test results; panel unit root test, cointegration test and causality tests are determined. The cross-sectional Dependenc side tests are secondary tests in the horizontal section position, and in the case of the horizontal section, the primary tests are selected.

In this context; LMadj and Peseran et al. (2008) LMadj tests have been developed. Breusch-Pagan (1980), Peseran (2004) CDLM, Peseran (2004) CDLM2 and Peseran et al. Peseran (2004), Peseran (2004) CDLM, and Peseran (2004) CDLM when the cross-sectional size is large, when the time dimension is larger than the cross-sectional dimension of Breusch-Pagan (1980) and Peseran et al. (2007) LMadj test is used. For this analysis, Peseran et al. (2008) Three other tests outside the LMadj test are eligible.

Cross-sectional Dependency test hypotheses are;
H_0: There is no cross-sectional dependency in the model.
H_1: There is a cross-sectional dependency in the model. If the probability value is less than 5%, it is the rejection of the basic hypothesis and expresses the Cross-sectional Dependency

In the Delta test (homogeneity test) hypotheses; H_0:
Model Homojure.
H1: Model is not homogenous. Here, if the probability value is less than 5%, it means that the basic hypothesis is rejected and it means heterogeneity.

Table 1. Results of Cross-sectional Dependence and Homogeneity (Delta) Test

CO_2=f(FDİ, TRSM, FD)	Test statistic	Possibility
LM (Breusch & Pagan 1980)	137.367***	0.000
CDlm (Pesaran 2004)	17.956***	0.000
CD (Pesaran 2004)	9.427***	0.000
LMadj	3.805***	0.000
Delta-Tilde	2.407***	0.008
Delta_tilde_adj	2.590***	0.005

Note: * indicates Cross section dependency and heterogeneity at 1% significance level**

According to the results of the analysis, it is shown that the model has Cross-sectional Dependence and the model is heterogeneous.

As a result of Cross-Section Analysis, it is determined that the model and individual variables have Cross-sectional Dependence. For this reason, the stability status of the variables was examined by using the CADF (Cross-sectionally Augmented Dickey Fuller) panel unit root test from the secondary panel unit root tests, which yield more efficient results in the case of cross-sectional Dependence. Each situation, developed by Pesaran (2006) and constituting this test panel, examines the stability state separately. Finally, CIPS (Cross-Sectionally Augmented IPS) is obtained by averaging the test statistics of all sections.

The hypothesis of the CADF panel unit root test is as follows;

H0: Variables contain unit root.
H1: Variables do not contain unit root.

In this context, if the test statistics obtained as the result of analysis are above the critical values, the basic hypothesis is rejected and it is predicted that the series are stable with unit root.

The baseline hypothesis for the entire variable according to the result of the CADF panel unit root test is not rejected. So all the variables are rooted in the level unit. When the primary states of the variables

are considered, the basic hypothesis for all series is rejected and the variables are found to be stable. When the variables are stationary levels I (1), the long-term relationship between the variables can be determined. Therefore, Westerlund and Edgerton (2008) used the Cointegration Test with Structural Breaks.

Table2. CADF Panel Unit Root

	CIPS statistic	CIPS statistic
	I(0)	I(1)
CO_2	-2.423	-2.831*
FDİ	-2.531	-2.981**
TRSM	-2.142	-2.813*
FD	-1.980	-4.072***

Note: Critical values in the panel statistic are -3.10 (1%), -2.86 (5%) and -2.73 (10%) (Pesaran 2007, table II (c), p: 281)

The reason for using Westerlund and Edgerton (2008) Cointegration Test with Structural Breaks in the study is that there are crises at the time of this study and also horizontal section dependency is taken into consideration in this analysis. Developed by Westerlund and Edgerton (2008), this test was developed by examining the unit root tests of Lagrange Multiplier (LM) (Schmidt and Phillips (1992), and Amsler and Lee (1995).) This test also examines the horizontal section dependence and structural fractures The westerlund and Edgerton (2008) cointegration test also provides breaks in fixed terms and in different periods for each country (trend), which suggests that there is no cointegration in the basic hypothesis of the test.

Table 3. Results of Westerlund and Edgerton Cointegration Test with Structural Breaks

CO_2=f(FDİ, TRSM, FD)	Z_ϕ(N) Statistic	Probability	Z_τ(N) Statistic	probability
Regimeshift (The slope)	-2.313	0.010***	-2.323	0.009***
Breaking Dates				
	Regimeshift			
China	2010			
Brazil	2012			
India	2010			
Indonesia	2010			
Russia	2002			
Mexican	2008			
Turkey	2000			

Note: *** denotes * 1% and 10% cointegration in order.

This test has two-part statistics. Zϕ (N) is used under the assumption of statistical cross-sectional dependency and heterogeneity, and Zτ (N) statistic is used based on the assumption of cross-sectional dependency and homogeneity.

According to the results of Westerlund and Edgerton (2008) cointegration tests; co-integration has been found. On the other hand, when the curvilinear breaks in the countries are examined, it can be seen that the effect of the crisis started in 2008 is correctly estimated.

With globalization, dependency between countries is increasing, so that a wave of shock in one country affects other countries as well. Pesaran (2006) developed the Common Correlated Effects (CCE) prediction operator, which refers to dependency between the horizontal sections forming the panel. This model ensures that the predicted regression coefficients for the horizontal cross-sectional units are obtained in each horizontal cross-section by various methods in panel data analysis. The predictive operators of this model are based on the regression equations developed by the time vector in each horizontal section unit (Pesaran, 2006: 967)

Table 4. CCE Estimator Results

CO_2=f(FDİ, TRSM, FD)	FDİ	TRSM	FD	C
China	0.357* [0.187]	-2.129*** [0.484]	-0.302*** [0.009]	29.087 [35.447]
Brazil	0.048** [0.024]	-0.305*** [0.105]	-0.008 [0.013]	-13.345 [9.360]
India	0.110*** [0.036]	-0.596*** [0.163]	-0.021** [0.009]	-6.314 [35.447]
Indonesia	-0.025 [0.048]	0.238 [0.318]	-0.007 [0.013]	-29.911 [21.981]
Mexican	-0.038 [0.052]	-0.408 [0.517]	-0.040*** [0.006]	-9.439 [19.616]
Russia	0.017 [0.081]	-0.587 [0.483]	0.001 [0.008]	3.399 [44.301]
Turkey	0.088 [0.072]	-1.372*** [0.283]	0.002 [0.006]	-46.372 [15.392]
Panel	**0.079*** **[0.0507]**	**-0.567*** **[0.351]**	**-0.015**** **[0.006]**	**-10.400** **[9.062]**
Observation	153			
Wald chi^2	8.30			
probability	0.043**			

Note: ***, **, * indicate significance at 1%, 5% and 10% respectively.

Firstly, when the panel data results are examined, it is determined that direct investments increase environmental pollution, but tourism and financial investments reduce environmental pollution. These findings are also valid for countries. However, for some countries these variables have been found to be statistically insignificant. All variables are statistically significant for China and India, Brazil variables for financial development does not cover significant only for Turkey tourism variables, only financial development variables were found to be significant for Mexico. For Russia, it has been found that all variables are meaningless.

In this study series, Toda-Yamamoto (1995), causality analysis and Emirmahmutlu and Köse (2011) were analyzed by panel causality analysis. In Emirmahmutlu and Köse (2011), in the analysis of causality, it does not matter whether variables such as Toda-Yamamoto (1995) causality analysis include unit root and whether the variables are cointegrated or not. For this reason, this method can be considered as a more advantageous method than other methods. Emirmahmutoğlu and Köse formulate this method as follows.

The two variant VAR models are set up as follows

$$x_{i,t} = \mu_i^x + \sum_{j=1}^{k_i+d\max_i} A_{11,ij} x_{i,t-j} + \sum_{j=1}^{k_i+d\max_i} A_{12,ij} y_{i,t-j} + u_{i,t}^x$$

$$y_{i,t} = \mu_i^y + \sum_{j=1}^{k_i+d\max_i} A_{21,ij} x_{i,t-j} + \sum_{j=1}^{k_i+d\max_i} A_{22,ij} y_{i,t-j} + u_{i,t}^y$$

$Dmax_i$ represents the maximum aggregate level for each i in the system.

Table 5**.** Emirmahmutoğlu and Köse Causality Analysis Results.

	FDİ → CO_2	CO_2 → FDİ	TRSM → CO_2	CO_2 → TRSM	FD → CO_2	CO_2 → FD
	wald	wald	wald	wald	wald	wald
China	9.615**	20.640***	1.784	5.856*	3.574	12.048**
Brazil	0.446	3.883**	0.556	2.615	25.336***	2.546
India	5.334	1.053	2.257	0.944	1.962	1.884
Indonesia	0.574	3.013*	2.042	5.373**	4.207	143.610***
Mexican	0.710	0.535	6.507**	0.474	13.025***	5.838
Russia	2.761	5.890	0.419	2.713	5.464	3.751
Turkey	5.364**	7.858***	12.516***	7.877***	7.856*	531.802***
Panel	25.034**	44.873***	29.911***	28.642***	48.591***	675.604***

Note: ***, **, * means 1%, 5% and 10%, respectively, of causality.

According to the results of the analysis of causality in the general framework of the panel; pollution and other variables. In Russia; one-sided causality from environmental pollution, other direct investments, tourism to environmental pollution and environmental pollution to financial investments. In Brazil, unilateral causality from financial investment to direct investments in environmental pollution and environmental pollution has been identified. In Indonesia; directly invest in direct pollution from environmental pollution, from environmental pollution, from environmental pollution, from financial investments to one direction. Mexican; unilateral causality from tourism to environmental pollution and from environmental pollution to financial pollution. In Turkey; Two-way causality between environmental pollution and other variables was determined. In Russia and India, no result relation was found.

Conclusion

The purpose of this study - the period 1995-2016 years to examine the impact of financial development of direct investment, especially tourism and the quality of the environment in the E-7 country. To establish the right model in this context; Horizontal section and homogeneity were applied and horizontal cross-sectional dependence and heterogeneity were determined. After the second order, the econometric tests were used in accordance with the results of horizontal and consequent homogeneity, and the model was evaluated.

As a result of analysis; Tourism, direct investment and financial investments have long been defined among the quality of the environment. After determining the existence of long-term relationships in the model, long-term coefficients were determined; When direct investments reduce the quality of the environment (increasing CO2 emissions), tourism and financial investments have increased the quality of the environment (reducing CO2 emissions). In this context, the "pollution protection hypothesis" has been applied in E-7 countries. As a result of the causality analysis, a two-way causality between environmental quality and tourism and financial investments has been established.

Emerging 7 (E-7) , that is composed of the fastest growing countries in the world market in Turkey, Russia, Mexico, India, Indonesia, Brazil and China means that arise in the development of the group. However, these countries are growing economically and financially as a whole, but they do not consider the environment. This causes pollution of the environment and therefore of the atmosphere. On the other hand, polluted environment and atmosphere harm the natural environment (eg the melting of glaciers) and others - harming people's health. To avoid these negative consequences, or at least to bring down the worst, the country should be called the " factory without chimney". Tourism has become increasingly important in recent years and its share in GDP is constantly increasing. In this context, encouraging countries for tourism and attracting foreign tourists to the country will not only increase the GDP of the country but also harm the neighbor. On the other hand, by introducing various criteria for foreign direct investment, new technologies should be provided that less pollute the environment instead of old technologies harmful to investors.

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