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THE DYNAMIC LINKS BETWEEN, FOREIGN DIRECT INVESTMENT, TOURISM AND ECONOMIC GROWTH IN THE EUROPEAN

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ABSTRACT

This document explores the cointegration and causality relationship between foreign direct investments, tourism revenues, trade openness and economic growth in 19 Central and Eastern European countries for the period of 1995 - 2017, using annual data. A cointegration relationship was found between the variables. Based on the results of the short-term causality analysis, a two-way causality between tourism revenues and economic growth, and between trade openness and economic growth were identified. Moreover, economic growth was the causality of foreign direct investments. According to the long-term causality analysis, there is a two-way causality between economic growth and foreign direct investments. Since the findings indicate that direct foreign investments, tourism revenues and trade openness affect economic growth positively, policy makers need to pay attention to this in their decisions. Policy makers need to encourage more foreign direct investments to come into the country to accelerate economic growth. Since it is assumed that investments will flow to countries with political and economic stability, policy makers should not ignore this issue. The objective should be to provide contributions to economic growth and minimize economic volatility by introducing policies to attract foreign investments to the country. The careful selection of the investments in tourism will directly affect the number of tourists to come. That is why policy makers should work with investors.

Keywords: Foreign Direct Investments, Tourism, Trade Openness, Economic Growth, European Countries.

Jel Codes: O11, Z32, F43

AVRUPA'DA DOĞRUDAN YABANCI YATIRIMLAR, TURİZM VE EKONOMİK BÜYÜME ARASINDAKİ DİNAMIK BAĞLANTILAR

ÖZ

Bu belge, 19 Orta ve Doğu Avrupa ülkesini yıllık veriler kullanılarak 1995 ile 2017 dönemi için doğrudan yabancı yatırımlar, turizm gelirleri, dışa açıklık ile ekonomik büyüme arasındaki eşbütünleşme ve nedensellik ilişkisi araştırmıştır. Değişkenler arasında eşbütünleşme ilişkisi tespit edilmiştir. Kısa dönem nedensellik analizi sonuçlarına göre; turizm gelirleri ile ekonomik büyüme arasında ve dışa açıklık ile ekonomik büyüme arasında çift yönlü nedensellik tespit edilmiştir. Ayrıca ekonomik büyüme doğrudan yabancı yatırımların nedenselidir. Uzun dönem nedensellik analiziz sonucuna göre ekonomik büyüme ile doğrudan yabancı yatırımlar arasında çift yönlü nedensellik vardır. elde edilen bulgulara göre, doğrudan yabancı yatırımlar, turizm gelirleri ve dışa açıklık ekonomik büyümeyi olumlu etkilediğinden, politika yapıcıların alacakları kararlarda bunlara dikkat etmesi gerekmektedir. Politika yapıcıların ekonomik büyümeyi hızlandırabilmesi için daha fazla doğrudan yabancı yatırımların ülkeye gelmesi için teşvikte bulunması gerekmektedir. Yatırımların, politik ve ekonomik istikrarı olan ülkelere kayacağı varsayıldığından, politika yapıcıların bu olguyu göz ardı etmemesi

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gerekmektedir. Yabancı yatırımları ülkeye çekme politikalarının devreye girerek, ekonomik büyümeye katkı sağlanması ve ekonomik değişkenliğin en aza indirgenmesi hedeflenmelidir. Turizme yapılacak yatırımların dikkatli seçilmesi, gelecek turist sayısını doğrudan etkileyecektir. Bu yüzden politika yapıcıların yatırımcılar ile birlikte çalışması gereklidir.

Anahtar Kelimeler: Doğrudan Yabanci Yatirimlar, Turizm, Dişa Açiklik, Ekonomik Büyüme, Avrupa Ülkeleri.

Jel Kodları: O11, Z32, F43

1. Introduction

The role of the trade policies and trade strategies in outward-oriented economies has recently been the focus of attention in the literature. In developing countries, trade openness is an important determinant of economic growth. However, while most of the panel studies found a positive correlation between economic growth and trade openness, some studies using time series found a negative correlation between these two variables. The main reason for the emergence of the negative correlation is the application of wrong decisions by countries in their opening-up policies. In other words, there is a threshold value for the opening-up of a country. The country's economy grows until that threshold. When trade openness exceeds a certain value, it becomes an argument that damages the country's economy.

In the last thirty years, there has been an acceleration in the entry of foreign direct investments into countries. Foreign direct investments have been an important source of funding for domestic investments, supporting the formation of capital in the host country. Foreign direct investments help the economy by providing opportunities for improving the level of service in the service sector, wholesale and retail trade, and commercial and legal services. There have been studies in the literature that have empirically and theoretically explored the relationship between foreign direct investments, and their determinants in developed and emerging markets. The current literature shows that the decisions for foreign direct investments depend on the current characteristics of the host country. These are; trade and investment costs, domestic investment, budget deficit, tax, human capital, internal and external debt, political stability or risk, trade openness, labor costs, inflation etc. (Bloningen, 2005; Omisakin et al., 2009; Liargovas and Skandalis, 2012).

Foreign direct investments which are one of the major factors for the development process of the developing countries, decreased on a global scale in 2017. According to the World Investment Report (2018), the global inflow of foreign direct investments fell by 23 percent to $1.43 trillion in 2017 compared to the previous year, unlike the rapid growth in GDP and trade. This regression was partly caused by cross-border mergers and acquisitions. In 2016, the factors that inflated foreign direct investments were large ad-hoc agreements and institutional restructuring programs. The inflow of foreign direct investments to developing economies remained at $671 billion after a 10 percent decline in 2016. The outward-oriented flow of foreign direct investments of developed economies decreased by 37 percent to $712 billion.

Studies investigating the impact of foreign direct investments and trade openness on economic growth have recently increased in the literature. The argument that foreign direct investments and trade openness have a positive effect on the

economy (Borensztein et al., 1998; Yanikkaya, 2003) attracts the attention of policy makers. These factors not only have a positive impact on economic growth, but also significantly increase life expectancy due to higher income, and better living and working conditions. With an indirect positive effect on food, nutrition, health conditions etc., these factors can also contribute to the improvement of society's welfare. In addition, trade openness and foreign direct investments contribute to a better level of education in society by increasing literacy levels (Alam et al., 2016).

The flow of production factors has become faster with the development of information technologies and communication in the world. As a result, capital, technology and labor has become freer, playing an important role in the development of countries. Thanks to information technologies, companies have a better chance of finding out which regions in the world have requirements, and which region they should invest to move their investments into these regions. International investments are made not only from developed countries to developing countries, but also from developing countries to developed countries (Agrawal, 2015).

The relationship between tourism and economic growth has attracted the attention of economists since the study of Copeland (1991) and Lanza and Pigliaru (1995). A common view that tourism expands economies is dominant in the literature. Although the role of tourism in national development varies from one country to another, it is usually one of the sensitive issues that policy makers focus upon. As an industry with high returns for a low amount of capital that furthers the development of a country, tourism is even more important for underdeveloped and developing countries. Such countries with insufficient capital also do not have many alternatives for economic growth. Therefore, in these countries, tourism is an industry that plays an active role in reducing unemployment, maintaining the current account balance of the country, and development and growth by nurturing sub-sectors.

The main objective of this study is to empirically analyze the relationship between foreign direct investments (FDI), tourism revenues (TR) and trade openness (OP), and economic growth (GDP) in Central and Eastern European countries. The difference of this study compared to other studies is the application of the chosen data sets and methods to Central and Eastern European countries. The remaining parts of the study are organized as follows: In the second section, the literature is reviewed and findings from previous similar studies are analyzed; In the third section, the data set used in the empirical study is introduced, information is provided on the methodology and the results of the empirical findings are discussed; In the fourth section, conclusions and political recommendations are provided.

2. Literature

The literature on the relationship between FDI, tourism revenues, trade openness and GDP is reviewed under three groups.

i) Studies on the relationship of FDI with GDP: Agrawal (2015) analyzed the BRICS economies through a panel data analysis for the period of 1989 - 2012. The findings of this study revealed that FDI were the causality of GDP in the long run. Solarin and Shahbaz (2015) analyzed Malaysia for the period of 1971 - 2012. The

analysis results indicated that FDI were the causality of GDP. Su and Liu (2016) analyzed Chinese cities through panel data methods for the period of 1991 - 2010. They concluded that FDI had a positive impact on GDP. In their study on Malaysia for the period of 1970 - 2008, Mohamed et al. (2017), could not identify a causality relationship between FDI and GDP. Hussain and Haque (2016) empirically analyzed Bangladesh for the period of 1973 - 2014. According to the findings, FDI have a positive impact on GDP. Seyoum et al. (2015) examined 23 African countries for the period of 1970 - 2011. Empirical results of the study indicated that there was a two-way causality between FDI and GDP. Sakyi et al. (2015) analyzed Ghana for the period of 1970 - 2011 through the ARDL method. The results indicated that FDI positively impact GDP. In their study on Kuwait for the period of 1980 - 2013, Salahuddin et al. (2018) used the ARDL bounds test and the VECM causality analysis. The findings did not demonstrate any causality relationship between FDI and GDP. Iamsiraroj (2016) reviewed 124 countries for the period of 1971 - 2010. The findings revealed a two-way causality between FDI and GDP. The results also indicated that FDI had a positive impact on GDP. Bermejo Carbonell and Werner (2018) analyzed Spain for the period between 1984 and 2010. The findings indicate that FDI have a positive impact on GDP.

ii) Studies on the relationship between trade openness and GDP: Hossain (2011) analyzed the newly industrialized countries for the period of 1971 - 2007. The findings of the study indicate that trade openness is the causality of GDP. Sebri and Ben-Salha (2014) analyzed the BIRCS economies for the period of 1971 - 2010. The findings of the study revealed that trade openness was the causality of GDP in Brazil. They also identified a two-way causality between trade openness and GDP in India and South Africa. Ohlan (2015) empirically analyzed India for the period of 1970 - 2013. Based on the results, they were not able to identify any causality between trade openness and GDP. Keho (2017) examined Cote d'Ivoire for the period of 1965 - 2014. As a result of the empirical analysis using the ARDL, it concluded that trade openness positively affected GDP. Sorge and Neumann (2017) examined 70 countries for the period of 1971 - 2013. The results showed that GDP was the causality of trade openness in middle-income and low-income countries. Ali and Abdullah (2015) analyzed Pakistan for the period of 1980 - 2010. The findings indicated that commercial liberalization had negative effects on the Pakistani economy. Tang et al. (2019) examined the Mauritian economy for the period of 1963 - 2013. The findings indicated that the increase in trade openness had a significant and positive effect on Mauritius's economy. Adeel-Farooq et al. (2017) analyzed Pakistan and India for the period of 1985 - 2014. Based on their findings, they concluded that trade openness had a positive impact on the Pakistani and Indian economies in the short term and long term. Hassen et al. (2018) empirically analyzed Tunisia for the period of 1975 - 2010. According to empirical results, trade openness had a positive and significant effect on GDP.

iii) Papers analyzing the relationship between tourism and GDP: Researching Hawaii for the period of 1953-1970, Ghali (1976) found that tourism had a positive impact on the economy. Balaguer and Cantavella-Jorda (2002) analyzed Spain for the period of 1975 - 1997. Findings revealed that tourism was the causality of GDP. Corrie

et al. (2013) examined Australia for the period of 2000 - 2010. They found a two-way causality relationship between tourism and GDP as a result of the VECM Granger causality analysis. The empirical findings of the study in which Bassil et al. (2015) analyzed Lebanon for the period of 1995 - 2013 revealed that tourism had a positive affect on GDP. Tang and Tan (2015) examined Malaysia for the period of 1975 - 2011. The findings indicated that there was a cointegration relationship between the variables. In addition, tourism positively affects the Malaysian economy and is the causality of GDP. Hatemi-J (2016) analyzed the United Arab Emirates for the period of 1995 - 2014. Findings showed that tourism was the causality of GDP. Mérida and Golpe (2016) analyzed Spain for the period of 1980 - 2013. Econometric findings revealed a two-way causality between tourism and GDP. Pavlic et al. (2015) examined Croatia for the period of 1996 - 2013. The findings did not reveal any causality relationship between tourism and GDP. The empirical results of the study in which Trang et al. (2014) examined Taiwan for the period of 1992 - 2011, indicated that tourism was the causality of GDP. Roudi et al. (2018) analyzed the Small Island developing states for the period of 1995 - 2014. Empirical findings showed tourism to be the causality of GDP. Shahbaz et al. (2018) investigated the top ten touristic regions in the world for the period of 1990 - 2015. The results revealed that the countries with the weakest causal link were Germany, France and China, whereas the countries with the strongest causal link were the United Kingdom, Italy and Mexico.

3. Data and Empirical Methodology

3.1. Data

In the study covering the period of 1995-2017, 19 Eastern and Central European countries were analyzed. The study used annual data which was taken entirely from the World Bank database. The data used in the study are; gross domestic product (GDP) data as a representative of economic growth, current US dollars; foreign direct investment net inflows (FDI), current US dollars; tourism revenues, current US dollars; and trade openness which is calculated by the following formula: trade openness=[(Import + Export) / (GDP)]. The export and import data used here are in current US dollars. The model used in the study:

$$GDP_{it} = \beta_{0i} + \beta_{1i}FDI_t + \beta_{2i}TR_t + \beta_{2i}OP_t + \varepsilon_{it} \quad (1)$$

The model employed in the study is presented in equation 1. The natural logarithm of all variables is taken and included in the model.

3.2. Empirical methodology

3.2.1. Testing for Cross-sectional Dependence

Cross-sectional dependency is a major problem in panels with more than 20 years of data. In case of a cross-sectional dependency, the shocks that may occur in any cross-section may affect other cross-sections. For this reason, the cross-sectional dependency of the variables and the panel needs to be tested first, in panel data studies. Since the studied panel has a small N and a wide T, the Breusch-Pagan (1980) CDLM_1 and Pesaran (2004) CDLM_2 tests were used.

$$CDLM_1 = \mathrm{T}\sum_{\mathrm{i}=1}^{\mathrm{N}-1}\sum_{j=i+1}^{\mathrm{N}}\hat{\rho}_{\mathrm{ij}}^2$$

(2)

where $\hat{\rho}_{ij}$: indicates the estimated cross-sectional correlations between residual sets. There is no cross-sectional dependency under the hypothesis H_0. Under the hypothesis H_0, N is fixed while $T\rightarrow\infty$. The statistics exhibit N(N-1)/2 degrees of freedom, and a Chi-squared asymptomatic distribution.

$$CDLM_2 = \left(\frac{1}{\mathrm{N}(\mathrm{N}-1)}\right)^{1/2}\sum_{\mathrm{i}=1}^{\mathrm{N}-1}\sum_{j=i+1}^{\mathrm{N}}(\mathrm{T}\hat{\rho}_{\mathrm{ij}}^2 - 1)$$

(3)

$CDLM_2$ statistics exhibit a standard normal distribution under Pesaran (2004), H_0 hypothesis, where $T\rightarrow\infty$ and $N\rightarrow\infty$.

Hypotheses of the CDLM_1 and CDLM_2 tests; according to the null hypothesis, there is no cross-sectional dependency in variables or the panel, whereas according to the alternative hypothesis there is cross-sectional dependency in the variables or the panel.

Table 1: Cross-sectional Dependency Tests

	GDP		**FDI**		**TR**		**OP**	
	S tatistic	p -value	S tatistic	p -value	S tatistic	p -value	S tatistic	p -value
Cl	5 50.011	0 .000	2 92.184	0 .000	2 21.992	0 .005	8 42.198	0 .000
Cl	2 0.495	0 .000	6 .553	0 .000	2 .757	0 .003	3 6.294	0 .000

Note: * refers to significance levels of 1%.

In panel data analyses, the use of traditional unit root tests in case of cross-sectional dependency, can provide erroneous results. The results of the Breusch-Pagan (1980) CDLM_1 and Pesaran et al. (2004) CDLM_2 tests are reported in Table 1. According to the CDLM_1test results, the test statistics of the GDP, FDI, TR and OP variables were found to be 550.011, 292.184, 221.992 and 842.198, respectively. According to the CDLM_2 test results, the test statistics of the GDP, FDI, TR and OP variables were found to be 20.495, 6.553, 2.757 and 36.294, respectively. Based on the obtained results, the null hypothesis that there is no cross-sectional dependency between the countries was rejected and a cross-sectional dependency was found in all variables. These findings show that shocks that may occur in any variable in a country may affect the variable in the other country as they have close economic ties.

3.2.2. Testing for Panel Unit Root

According to the results of the cross-sectional dependence test, it was found that the variables were cross-sectional dependence (Table 1). Therefore, Bai and Perron (2004) used a second generation unit root test in this study.

The Bai and Ng (2004) unit root test which tests the stationarity in the residual and general elements on an individual basis, handles the following dynamic factor model:

$$Y_{it} = \beta_i + \lambda_i f_i + \rho_i Y_{it-1}^0 \varepsilon_{it} \quad (4)$$

Since the stationarity of factors and the residual element are tested separately, it is possible to consistently estimate the factors without giving regard to whether the residues are unit rooted or not. One of these two terms may be stationary, while the other is not, or they may have different dynamic qualities such as being cointegrated on different levels. Bai and NG (2004) unit root test statistics:

$$P_{\hat{e}}^c = \frac{-2\sum_{i=1}^{N} logP_{\hat{e}}^c(i) - 2N}{2\sqrt{N}} \xrightarrow{d} N(0,1) \quad (5)$$

where; $P_{\hat{e}}^c(i)$ is the p value of the ADF tests of the residual shocks estimated for the cross section (Yerdelen, 2013).

Table 2: PANIC Panel Unit Root Tests

Levels		Statistic	p-value
GDP			
	$Z_{\hat{e}}^c$	-0.3620	0.6413
	$P_{\hat{e}}^c$	34.8441	0. 6162
FDI			
	$Z_{\hat{e}}^c$	0.1945	0.4229
	$P_{\hat{e}}^c$	39.6952	0.3944
TR			
	$Z_{\hat{e}}^c$	-0.8944	0.8145
	$P_{\hat{e}}^c$	30.2027	0.8122
OP			
	$Z_{\hat{e}}^c$	-1.0496	0.8531
	$P_{\hat{e}}^c$	28.8497	0.8577
First difference			

ΔGDP			
	$Z_{\hat{e}}^{c}$	5.030*	0.000
	$P_{\hat{e}}^{c}$	81.852*	0.000
ΔFDI			
	$Z_{\hat{e}}^{c}$	7.472*	0.000
	$P_{\hat{e}}^{c}$	103.144*	0.000
ΔTR			
	$Z_{\hat{e}}^{c}$	5.584*	0.000
	$P_{\hat{e}}^{c}$	86.685*	0.000
ΔOP			
	$Z_{\hat{e}}^{c}$	8.735*	0.000
	$P_{\hat{e}}^{c}$	114.157*	0.000

Note: * refers to significance levels of 1%. The maximum number of common factors is taken as 2.

The results of the Bai and Ng (2004) PANIC panel unit root test are reported in Table 2. According to the $P_{\hat{e}}^{c}$ and $Z_{\hat{e}}^{c}$ test statistics, it was not possible to reject the null hypothesis that all variables are unit-rooted at the level. The null hypothesis that all variables are unit-rooted was rejected upon taking the first difference of the variables, and the alternative hypothesis was accepted at a 1% significance level. Thus, it was found that the variables were stationary at the first level of I(1).

3.2.3. Testing for Slope Homogeneity

Pesaran and Yamagata (2008) developed Swamy's test. In this test;

$$Y_{it} = \alpha + \beta_i X_{it} + \varepsilon_{it} \quad (6)$$

In such a general cointegration equation, β_i slope coefficients are analyzed to see if they differ from one cross-section to another. Hypotheses of the test are as follows: the null hypothesis is that the slope coefficients in the cointegration equations are homogeneous, and the alternative hypothesis is that the slope coefficients in the cointegration equations are heterogeneous. The panel is estimated first through the OLS (Ordinary Least Squares) and then through Weighted Fixed Effect Model, to

produce the required testing statistics. Pesaran and Yamagata (2008) developed two distinct testing statistics to test the hypotheses:

For larger samples: $\tilde{\Delta} = \sqrt{N}\frac{N^{-1}\tilde{S}-k}{\sqrt{2k}}$

(7)

For smaller samples: $\tilde{\Delta}_{adj} = \sqrt{N}\frac{N^{-1}\tilde{S}-k}{\sqrt{Var(t,k)}}$

(8)

When the probability is found to be less than 0.05, H_0 hypothesis is rejected at a significance level of 5%, and thus H_1 hypothesis is accepted. Therefore, the cointegration factors are found to be non-homogenous (Pesaran and Yamagata, 2008).

Table 3: Cross Section Dependence and Slope Homogeneity Tests

MODEL		
$\boldsymbol{GDP_{it} = \gamma_1 + \beta_{1i}FDI_{it} + \beta_{2i}TR_{it} + \beta_{2i}OP_{it} + \varepsilon_{it}}$	**Statistic**	**p-value**
Cross-section dependency tests:		
$\mathbf{CDLM_1}$	355.421*	0.000
$\mathbf{CDLM_2}$	9.972*	0.000
Homogeneity tests:		
$\tilde{\Delta}$	19.980*	0.000
$\tilde{\Delta}_{adj}$	22.456*	0.000

Note: * refers to significance levels of 1%.

Table 3 presents the cross-sectional dependency results of the panel. According to the results of CDLM_1 and CDLM_2, the test statistics are 355.421 and 9.972 respectively. Based on the results of both tests, a cross-sectional dependency was identified in the panel. Any shock that may occur in a country may affect other countries as the countries used in the study are European countries and their economies are intertwined. Table 3 shows the results of the slope homogeneity test. The test statistics for $\tilde{\Delta}$ and $\tilde{\Delta}_{adj}$ are 19.980 and 22.456, respectively. Based on the findings, the null hypothesis that the cointegration coefficients are homogeneous were rejected in both tests, and the cointegration coefficients were found to be heterogenous at the.

3.2.4. Testing for Panel Cointegration

After identifying the cross-sectional dependency in the panel and the heterogeneity of the slope coefficients in the cointegration equations (Table 3), the cointegration test started. The use of first-generation cointegration tests (Pedroni, 1999, 2004; Kao, 1999; etc.) that don't take into account the cross-sectional dependency while there is one in the panel, may cause serious errors in the

cointegration results. Therefore, tests (Westerlund, 2008; Westerlund and Edgerton (2007)) that take into account the cross-sectional dependency must be used. The Westerlund and Edgerton (2007) panel cointegration test was used in this study. This test:

$$y_{it} = \sigma_i + x'_{it}\beta_i + z_{it} \quad (9)$$

where $t = 1,2,\dots,T$ and $i = 1,2,\dots,N$ indicate the time series and the cross-section units, respectively. The x_{it} vector has a K size. The regressors are assumed to follow a pure random walk process. Error terms z_{it} are presented as follows:

$$z_{it} = u_{it} + v_{it} \text{ with } v_{it} = \sum_{j=1}^{t} n_{ij} \quad (10)$$

The vector w_{it} is a linear process satisfying.

$$w_{it} = \sum_{j=0}^{\infty} \alpha_{ij} e_{it-j} \quad (11)$$

where e_{it} is zero error with i.i.d. throughout t. Westerlund and Edgerton (2007) panel cointegration test can be estimated as follows:

$$LM_N^+ = \frac{1}{NT^2} \sum_{i=1}^{N} \sum_{i=1}^{T} \widehat{\omega}_i^{-2} S_{it}^2 \quad (12)$$

where, S_{it} is the partial sum process of $\hat{z}_{it}$ and $\widehat{\omega}_i^2$ is the estimated long-run variance of u_{it} conditional on Δx_{it}.

Table 4: Results of the Panel Cointegration Test

	test-statistic	**bootstrap p-value**
$\boldsymbol{LM_N^+}$	3.381	0.997

Table 4 presents the results of the panel cointegration test. Since the null hypothesis that there is a cointegration relationship in the panel cannot be rejected, it shows that the variables in the model are cointegrated. Therefore, there is a long-term equilibrium relationship between GDP, FDI, TR and OP.

3.2.5. Testing for Panel Causality

As the cointegration analysis cannot determine the direction of causality, performance of an additional causality analysis would assist to increase the significance of the analysis results. The VECM Granger panel causality test and the Kónya (2006) panel causality test were used in this study. According to Engle and Granger (1987), the findings reached via the causality test based on a vector auto regression (VAR) model with reference to the first difference could be misleading, in case a cointegration relationship exists with the variable. To overcome this problem, the vector error correction model (VECM) entails estimation using the VAR model, by

increasing a lagged error correction term. To analyze the causality relationships in panel data, the VECM model can be formulated as follows (Nazlioglu and Soytas, 2012).

$$\Delta GDP_{it} = \gamma_{1i} + \sum_{p=1}^{k} \gamma_{11ip} \Delta GDP_{it-p} + \sum_{p=1}^{k} \gamma_{12ip} \Delta FDI_{t-p} + \sum_{p=1}^{k} \gamma_{13ip} \Delta TR_{t-p} + \sum_{p=1}^{k} \gamma_{14ip} \Delta OP_{t-p} + \theta_{1i} \hat{\varepsilon}_{it-1} + \vartheta_{1it} \quad (13)$$

$$\Delta FDI_{it} = \gamma_{1i} + \sum_{p=1}^{k} \gamma_{21ip} \Delta FDI_{it-p} + \sum_{p=1}^{k} \gamma_{22ip} \Delta GDP_{t-p} + \sum_{p=1}^{k} \gamma_{23ip} \Delta TR_{t-p} + \sum_{p=1}^{k} \gamma_{24ip} \Delta OP_{t-p} + \theta_{1i} \hat{\varepsilon}_{it-1} + \vartheta_{2it} \quad (14)$$

$$\Delta TR_{it} = \gamma_{1i} + \sum_{p=1}^{k} \gamma_{31ip} \Delta TR_{it-p} + \sum_{p=1}^{k} \gamma_{32ip} \Delta GDP_{t-p} + \sum_{p=1}^{k} \gamma_{33ip} \Delta FDI_{t-p} + \sum_{p=1}^{k} \gamma_{34ip} \Delta OP_{t-p} + \theta_{1i} \hat{\varepsilon}_{it-1} + \vartheta_{3it} \quad (15)$$

$$\Delta OP_{it} = \gamma_{1i} + \sum_{p=1}^{k} \gamma_{41ip} \Delta OP_{it-p} + \sum_{p=1}^{k} \gamma_{42ip} \Delta GDP_{t-p} + \sum_{p=1}^{k} \gamma_{43ip} \Delta FDI_{t-p} + \sum_{p=1}^{k} \gamma_{44ip} \Delta TR_{t-p} + \theta_{1i} \hat{\varepsilon}_{it-1} + \vartheta_{4it} \quad (16)$$

where k refers to optimal lag length; and $\hat{\varepsilon}_{it}$ refers to the residue from the panel FMOLS estimation of equation 1. This model enables both short- and long-term estimations with respect to Granger causality analysis.

Table 5: VECM Granger Causality Test Results

	Short-run F-statistics (p-value)			**Long-run t-statistics (p-value) ECM_{t-1}**
Dependent Variables	**ΔGDP**	**ΔFDI**	**ΔTR**	**ΔOP**	
ΔGDP	-	1.346 (0.375)	10.195*** (0.069)	18.780* (0.002)	-0.258* [-3.667]
ΔFDI	15.042** (0.010)	-	0.386 (0.995)	7.914 (0.161)	-0.878*** [-1.933]
ΔTR	13.265** (0.021)	4.156 (0.527)	-	13.133** (0.022)	-0.126 [-1.298]
ΔOP	12.228** (0.031)	5.828 (0.323)	2.285 (0.808)	-	0.026 [0.667]

Note: Critical values %1, 5% and 10% are represented by *, ** and ***, respectively.

Short-term and long-term causality relationships are reported in Table 5. According to the results: i) GDP is the causality of foreign direct investments; ii) there is a two-way causality between tourism revenues and GDP; and iii) there is a two-way causality between trade openness and GDP, in the short term. The long-term error correction terms are statistically significant in the variable of GDP, and in the foreign

direct investments variable. Therefore, there is a two-way causality between economic growth and foreign direct investments in the long run.

The Kónya (2006) causality test has two advantages. The first is the assumption that the panel is not homogeneous. Thus, the Granger causality can be tested separately for each country included in the panel. Secondly, it allows the use of additional information provided by the panel data, as simultaneous correlation is allowed between countries. On the other hand, this application can be analyzed without the need for unit root and cointegration analyses (Kónya, 2006: 990-981991).

The bootstrap panel causality model used in the bivariate model is provided below.

$$y_{1,t} = \alpha_{1,1} + \sum_{l=1}^{mly_1} \beta_{1,1,l} y_{1,t-1} + \sum_{l=1}^{mlx_1} \varphi_{1,1,l} x_{1,t-1} + \mu_{1,1,t} \quad (17)$$

$$y_{1,t} = \alpha_{1,2} + \sum_{l=1}^{mly_1} \beta_{1,2,l} y_{2,t-1} + \sum_{l=1}^{mlx_1} \varphi_{1,2,l} x_{2,t-1} + \mu_{1,2,t} \quad (18)$$

$$\vdots$$

$$y_{N,t} = \alpha_{1,N} + \sum_{l=1}^{mly_1} \beta_{1,N,l} y_{N,t-1} + \sum_{l=1}^{mlx_1} \varphi_{1,N,l} x_{N,t-1} + \mu_{1,N,t} \quad (19)$$

and

$$x_{1,t} = \alpha_{2,1} + \sum_{l=1}^{mly_2} \beta_{2,1,l} y_{1,t-1} + \sum_{l=1}^{mlx_2} \varphi_{2,1,l} x_{1,t-1} + \mu_{2,1,t} \quad (20)$$

$$x_{1,t} = \alpha_{2,2} + \sum_{l=1}^{mly_2} \beta_{2,2,l} y_{2,t-1} + \sum_{l=1}^{mlx_2} \varphi_{2,2,l} x_{2,t-1} + \mu_{2,2,t} \quad (21)$$

$$\vdots$$

$$x_{N,t} = \alpha_{2,N} + \sum_{l=1}^{mly_2} \beta_{2,N,l} y_{N,t-1} + \sum_{l=1}^{mlx_2} \varphi_{2,N,l} x_{N,t-1} + \mu_{2,N,t} \quad (22)$$

where; N: the number of countries in the panel (i = 1,…,N), t: the time period (t = 1,…,T) and l: the lag length. Each of the above equations belong to a different country which is why each of them is estimated through a different sample. The variables are the same in all equations, but the observations are different. Each equation has predetermined variables and the possible link between individual regressions is in the cross-sectional dependency (Kónya, 2006: 981).

Granger causality can be found for each country. For example, (i) while $\varphi_{1,i}$s are not equal to zero and all $\beta_{2,i}$s are equal to zero, a one-way Granger causality relationship is present from the y variable to the x variable. (ii), While all $\beta_{2,i}$s are not equal to zero and all $\varphi_{1,i}$s are equal to zero, a one-way Granger causality relationship from the x variable to the y variable is present. (iii) While neither any $\varphi_{1,i}$s nor any $\beta_{2,i}$s are equal to zero, a two-way causality relationship between the y variable and the x

variable is present. (iv) If all $\varphi_{1,i}$s and all $\beta_{2,i}$s are equal to zero, there is no causality between the y variable and the x variable.

The cross-sectional dependency and heterogeneity of countries show that the empirical study for the Kónya (2006) panel causality test is accurate (Table 3). In fact, the empirical results obtained in the study confirm this finding.

Table 6: Results of the Economic Growth - Foreign Direct Investments Causality

	FDI ↛ GDP					GDP ↛ FDI				
			Critical Values					Critical Values		
	Coef.	Wald Statistics	1%	5%	10%	Coef.	Wald Statistics	1%	5%	10%
Albania	-0.062	15.974	485.057	192.833	122.921	1.799	123.211***	296.008	133.316	84.903
Austria	0.004	17.237	888.020	368.027	236.768	0.585	0.533	57.434	27.336	17.510
Belarus	-0.013	7.851	560.570	218.999	138.563	1.521	96.321**	110.424	48.386	30.181
Bulgaria	0.089	245.184**	318.685	152.578	98.558	-0.118	0.683	127.746	56.691	35.533
Croatia	0.002	0.440	1009.902	427.359	280.379	0.348	1.090	63.222	30.144	19.203
Czech Republic	0.049	68.251	929.863	378.105	227.090	0.414	2.985	51.275	21.977	14.048
Germany	0.051	544.258**	887.365	366.883	239.982	-0.091	0.353	101.394	46.768	30.114
Greece	-0.021	50.056	718.967	287.747	176.333	2.026	7.272	134.369	67.145	42.258
Hungary	-0.004	0.455	535.752	217.115	134.185	0.577	3.745	162.397	74.676	47.945
Macedonia	0.051	495.675**	643.545	279.702	178.929	0.267	0.633	87.919	39.551	24.686
Moldova	0.025	3.447	578.698	231.046	142.824	0.279	3.225	141.137	60.004	37.164
Poland	0.018	11.146	777.555	290.612	173.204	0.491	2.682	62.149	26.840	17.034
Romania	0.098	504.265*	486.965	216.152	144.363	0.130	0.679	120.301	55.510	35.824
Russian Federation	0.170	53.298	677.584	272.811	170.711	0.222	1.067	183.620	80.786	50.209
Slovak Republic	0.057	490.151**	972.527	415.694	272.707	0.129	0.185	67.325	31.465	19.869
Slovenia	0.025	149.384	972.415	418.179	269.723	0.416	0.610	49.973	23.532	15.159
Switzerland	0.024	37.966	786.117	282.294	174.231	1.587	11.255	66.805	28.898	17.953
Turkey	0.087	111.404***	367.127	140.217	86.294	1.026	71.345	257.049	114.297	71.684
Ukraine	0.214	222.779**	478.244	202.473	125.229	0.264	1.711	182.024	84.711	55.481

Note: *, ** and *** refer to significance levels of 1%, 5% and 10%, respectively. Critical values were obtained through a 10,000-bootstrap replication.

Table 6 reports the causality results between GDP and foreign direct investments. The null hypothesis that the foreign direct investments are not the

causality of GDP is rejected at the significance level of 5% for Bulgaria, Germany, Macedonia, Romania, the Slovak Republic and Ukraine, and at the significance level of 10% for Turkey. The findings indicate that foreign direct investments were the causality of economic growth in these seven countries. In developing countries, foreign direct investments have a direct impact on GDP. Countries that couldn't develop due to lack of capital need to introduce a number of regulations in order to attract foreign capital. First of all, foreign capital does not want to go into risky areas. It stays far away from countries that would not provide any gains for it. In addition, foreign capital flows into regions where it can earn more profits. Therefore, developing countries must respond to the foreign capital investments through the opportunities they will offer, compared to developed countries.

There is also a positive link between foreign direct investments and GDP. The null hypothesis that economic growth is not the causality of foreign direct investments is rejected in Albania and Belarus where GDP in these two countries is the causality of foreign direct investments. There is also a positive link between GDP and foreign direct investments in these two countries. According to the empirical results, Albania and Belarus attract the attention of foreign investors as their GDP increases, but they need to maintain their growth potential in order to keep the foreign capital.

Table 7: Results of the Economic Growth - Tourism Revenues Causality

	TR ↛ GDP					GDP ↛ TR				
			Critical Values					Critical Values		
	Coef.	Wald Statistics	1%	5%	10%	Coef.	Wald Statistics	1%	5%	10%
Albania	0.105	31.929	736.000	288.843	175.701	-0.137	1.112	473.308	210.916	132.541
Austria	-0.067	11.250	1162.987	509.107	334.029	0.340	16.145	151.874	68.971	43.078
Belarus	0.077	18.065	639.098	294.797	199.004	0.019	0.102	228.120	105.324	68.913
Bulgaria	0.154	32.478	635.077	270.006	171.348	0.033	0.112	321.987	140.300	88.980
Croatia	0.181	207.194	1069.584	467.201	306.368	-0.122	4.227	222.574	110.116	72.774
Czech Republic	-0.463	86.488	511.551	250.710	171.136	0.525	89.283	305.039	161.930	107.076
Germany	0.345	111.150	673.699	337.333	231.205	-0.328	30.659	199.963	95.988	63.858
Greece	-0.015	1.074	824.546	371.585	245.495	-0.062	1.719	251.351	124.906	81.703
Hungary	-0.243	32.424	564.805	241.468	153.150	0.216	23.175	272.298	122.657	76.570
Macedonia	0.089	139.56	968.248	357.362	226.948	0.481	17.318	212.399	95.668	61.645
Moldova	0.267	21.029	499.770	219.705	137.839	0.032	0.974	307.501	150.756	98.289
Poland	-0.120	24.269	419.948	191.448	124.275	0.156	7.717	334.571	154.260	100.271
Romania	-0.040	3.664	534.439	236.215	151.240	0.562	48.212	310.361	136.751	89.044
Russian Federation	0.923	254.047**	424.906	203.732	135.591	0.881	657.987*	424.351	182.536	121.679

Slovak Republic	-0.030	5.974	884.033	438.252	313.034	0.635	95.933	177.937	91.088	59.941
Slovenia	-0.182	34.631	671.910	364.803	260.522	0.599	154.627**	259.560	134.386	92.018
Switzerland	-0.596	30.070	362.083	163.303	107.038	0.868	47.181	265.764	121.823	78.857
Turkey	0.329	228.427**	424.578	180.569	110.468	0.086	1.646	471.607	182.352	109.843
Ukraine	0.215	62.672	476.140	207.270	132.377	-0.397	8.316	202.046	93.622	58.538

Note: *, ** and *** refer to significance levels of 1%, 5% and 10%, respectively. Critical values were obtained through a 10,000-bootstrap replication.

The Kónya (2006) results of the causality between GDP and tourism revenues are presented in Table 7. The null hypothesis that tourism revenues in Turkey are not the causality of GDP is rejected at the significance level of 5%. In addition, the causality coefficient towards economic growth in tourism revenues in Turkey, was found to be positive. According to the World Bank, 3.62% of the average GDP of Turkey for the period between 1995 and 2017 is provided by tourism revenues. Tourism played an active role in Turkey's growth, which is also evidenced by the empirical results above. Directly affecting economic growth, tourism provides significant resources for Turkey. Also referred to as the industry without chimneys, tourism offers many macro and micro economic opportunities in Turkey. It plays an active role in the reduction of unemployment, closing the foreign trade deficit, the ability of sub-sectors to survive, etc. In the Russian Federation, a two-way causality between GDP and tourism revenues was identified as presented in Table 7. In Russia, where the causality coefficients were found to be positive, it can be concluded that tourism plays an active role in the economy. The null hypothesis that GDP is not the causality of the tourism revenues in the Slovak Republic is rejected at the significance level of 5%. It is concluded that economic growth is the causality of tourism revenues in the Slovak Republic. The obtained empirical findings are consistent with the studies of Husein and Kara (2011); Isik (2012); Pavlic; et al. (2015); Shahbaz et al. (2018).

Table 8: Results of the Economic Growth - Trade Openness Causality

	OP ↛ GDP					GDP ↛ OP				
			Critical Values					Critical Values		
	Coef.	Wald Statistics	1%	5%	10%	Coef.	Wald Statistics	1%	5%	10%
Albania	0.967	295.621**	653.217	272.474	164.958	-0.045	2.845	388.946	168.790	108.509
Austria	0.527	378.169***	973.396	429.346	298.381	0.037	3.598	249.214	126.402	87.026
Belarus	0.531	220.249**	487.854	217.521	133.481	-0.023	0.910	55.879	25.147	15.891
Bulgaria	-0.236	11.048	520.767	217.578	135.001	0.133	44.144	216.768	88.708	55.342
Croatia	0.597	302.324**	884.578	390.175	266.796	-0.034	2.719	188.507	97.165	62.758
Czech Republic	0.253	78.774	600.619	278.720	188.350	0.107	26.386	234.955	119.672	78.363
Germany	0.322	227.945	791.780	380.772	272.112	0.050	4.436	400.909	201.909	139.667

Greece	-0.029	0.748	530.027	242.026	156.244	-0.012	0.276	315.278	157.290	102.663
Hungary	0.168	21.651	543.745	245.680	164.520	0.055	9.085	254.172	132.491	88.271
Macedonia	0.023	0.304	655.897	294.995	188.808	0.221	42.244	182.357	82.502	51.008
Moldova	0.769	58.878	474.166	207.321	134.824	-0.035	6.390	116.586	52.419	33.171
Poland	0.406	165.543	652.805	273.987	176.870	-0.002	0.337	259.381	115.680	72.633
Romania	0.739	502.906**	631.464	272.405	175.777	-0.007	0.149	147.495	64.057	41.338
Russian Federation	1.222	278.612**	447.737	210.230	139.083	-0.063	15.259	205.510	102.093	67.457
Slovak Republic	0.274	46.860	648.388	333.187	241.688	0.093	22.995	385.763	207.721	146.552
Slovenia	0.330	157.841	847.926	444.319	308.083	0.063	8.592	387.396	213.440	151.967
Switzerland	0.386	57.781	581.968	246.978	158.772	0.159	26.354	187.908	83.947	52.661
Turkey	0.703	91.275	396.493	165.649	104.996	0.033	2.909	125.830	53.968	35.190
Ukraine	0.804	85.272	531.113	201.483	125.443	-0.021	1.249	132.611	58.569	35.348

Note: *, ** and *** refer to significance levels of 1%, 5% and 10%, respectively. Critical values were obtained through a 10,000-bootstrap replication.

The results of the panel causality between GDP and trade openness are reported in Table 8. The null hypothesis that trade openness is not the causality of GDP is rejected at a significance level of 5% in Albania, Belarus, Croatia, Romania and the Russian Federation, and at a significance level of 10% in Austria. For this reason, trade openness is the causality of economic growth in Albania, Austria, Belarus, Croatia, Romania and the Russian Federation. In addition, the causality coefficients in these countries were found to be positive. Therefore, trade openness in these countries has a positive impact on GDP.

4. Conclusion

This document explored the cointegration and causality relationship between foreign direct investments, tourism revenues, trade openness and economic growth in 19 Central and Eastern European countries for the period of 1995 - 2017. The cointegration relationship between the variables were analyzed through the panel cointegration test of Westerlund and Edgerton (2007). Experimental practice showed that the variables act together in the long run. The causality analysis was performed by two different methods. The short-term and long-term causality relationship of the panel was identified using the panel VECM Granger causality test. The causality test was applied for individual countries with the Kónya (2006) panel causality test. Thanks to this, the causality relationship for each country was observed.

The empirical findings presented in this study have some clear and significant policy implications. Policy makers need to encourage more foreign direct investments to come into the country to accelerate economic growth. Since it is assumed that investments will flow to countries with political and economic stability, policy makers should not ignore this issue. They also need to make the best decisions by maintaining

the internal dynamics for a win-win situation for both the foreign investors and the country. The industries in which foreign investments will be made should be identified in advance and investments should be encouraged to flow to these industries. Otherwise, foreign investors who will compete with domestic investors will harm the country, rather than provide benefits for it. Entry of foreign investors into the country will contribute to economic growth while at the same, play a role in balancing economic fluctuations. The objective should be to provide contributions to economic growth and minimize economic volatility by introducing policies to attract foreign investments to the country.

Another result of the study's findings is the contribution of tourism revenues to the country's economy. Countries, particularly those with geographical and natural beauty, which are prone to tourism should use their potentials, as this would be a factor that would invigorate the economy. The increase in tourism not only invigorates the economy, but can also lead to the revival of many different industries by promoting the country. If the tourists who arrived at the country are satisfied when they leave, they will open the door for new industries by talking about the different things that they saw around them with the people in their countries. Therefore, it is necessary for policy makers to play an active role in the experience of tourists, from their accommodation to their protection. Tourism, which is seriously affected by terrorist incidents, needs to be strongly protected from terrorism. Economic stability is also important for tourism. The careful selection of the investments in tourism will directly affect the number of tourists to come. That is why policy makers should work with investors. The support they will provide for them will improve the country in the medium and long term.

The empirical results suggest that trade openness improves economic growth. Policy makers need to make the necessary adjustments and take the balancing actions on trade openness which is a necessary condition for developing countries. If trade openness increases more than necessary, it can make the country politically and economically distressed. Trade openness is an indispensable factor, particularly for countries whose growth depends on external financial sources. Increasing even more with globalization, external dependence may put countries in trouble in the long run. Given that external dependence is a serious threat for developing countries, policymakers need to produce solutions for this issue. In particular, import substitution policies need to be introduced, and trade openness should no longer pose a threat. Working together with economists, policy makers should build a solid foundation for the country's future by controlling the trade openness balance.

Countries whose economies are prone to trade openness should use the outward-oriented growth model for sustainable economic growth. However, the growth rate of the countries that have dramatically and empirically brought trade openness under control is remarkable. The above causality results indicating that trade openness is the causality of economic growth for Albania, Austria, Belarus, Croatia, Romania and Russian Federation can suggest that trade openness in these countries is necessary for economic growth. However, if the trade openness balance is not maintained, the growth rate in these countries may slow down and even cause deep wounds that may lead to an economic crisis.

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