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THE CONTRIBUTION OF TOURISM DEVELOPMENT IN MEDITERRANEAN COUNTRIES. A DYNAMIC PANEL DATA APPROACH

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Abstract

Like the most developing countries, the Mediterranean countries have also given priority to the development of tourism industry as a part of their economic growth strategy. This study intends to investigate the relationship between tourism development and economic growth in eight Mediterranean countries. In order to investigate empirically the long-run relationship between economic growth and tourism development we use a multivariate model with GDP per capita, real receipts per capita, inflation in average consumer prices and real effective exchange rate using the new heterogeneous panel cointegration technique. In pursuit of this objective, the tests of panel cointegration, the Hausman Test and Fully Modified Ordinary Least Squares (FMOLS) are conducted by using panel data. The data used in this study are annual covering the period 1980 - 2014.

JEL Classification: C33, Z32, E31
Keywords: Tourism Development, Economic Growth, Mediterranean countries, Panel Data, Hausman Test, FMOLS

1. Introduction

Tourism is considered one of the most important sectors in many countries. It has experienced continuous development over the last decades, and it has become one of the largest and fast growing sectors. For the most developing countries is considered as an essential instigator of the economic growth. Balaguer and Cantavella (2002) stated that tourism receipts, has been served as an alternative form of exports and can contribute to the balance of payment, through the foreign exchange earnings and proceeds generated from tourism expansion. For that reason most of the countries are laying upon a lot of emphasis in order to enhance the growth of the tourism industry. Moreover, Mckinnon (1964) argued that the foreign exchange earnings from tourism can also be used in order to import capital goods to produce goods and services, which in turn lead to economic growth.

The importance of the role of tourism to the economic growth and to the progress of modern societies has become a common awareness in many political authorities worldwide. That is the explanation of the too many attempts which are being made in order to develop tourism, being amongst the most important sectors of the economic activity, to the benefit of their economies as quickly and as effectively as possible (Dritsakis, 2004). The fact that tourism is an economic activity of primary value and importance for many countries is accepted by all the researchers and countries. Many developing countries (such as the Mediterranean countries) are considering tourism as a sector that could potentially cover their needs in foreign currency (Dritsakis and Athanasiadis (2000), Payne and Mervar (2002)).

In this paper we are focusing on eight Mediterranean countries namely (with alphabetical order) Cyprus, France, Greece Italy, Morocco, Spain, Tunisia and Turkey. The economies of these countries have been evolved very differently during the last decades. Their alternative governance structures and economic policies have produced many different paths for the economic growth of the regions. Given as a fact that the eight Mediterranean countries namely above are possessing similar tourist features but different paths of economic growth, it seems very interesting to analyze the relationship between tourism and economic growth.

Although the fact that tourism industry is playing a crucial role in the world economy, the applied economists until now have given very little attention to the empirical investigation of tourism's contribution to economic growth. In our study we are focusing on eight Mediterranean countries and we are trying to investigate whether tourism has any effect on economic growth in these countries. Regarding to this, the major contribution of this paper is to utilize a panel data approach to investigate whether tourism contributes to economic growth for the Mediterranean countries.

The remaining paper is organized as follows: Section 2 reviews the theoretical and empirical findings related to the topic. The model specification and data issues are presented in Section 3. The econometric methodology and empirical findings are given in section 4, while concluding remarks are given in the final section.

2. Literature review

Direct theoretical studies regarding the relationship between exchange rate, tourism inflation and economic growth are very scant. From the other hand there are a lot of empirical studies that are focusing on the investigation of the relationship between tourism development and economic growth. All these studies are giving different results for different countries in the same subject or region, different time periods within the same country and different methodologies in different regions.

The fact that there are a lot of studies it's very helpful when many countries (as Mediterranean countries) have the same aim for tourism development and the researchers might like to compare inter-country relationships between economic development and tourism activity. Lee and Chang (2008), suggest that responding for a better understanding of the relationship between groups of countries and their interactions, it is recommended that the panel data approach must be taken.

There is a general conclusion about positive impact of tourism on growth which is derived not only from researches on a single country case but also and studies based on large number of countries. For instance we can mention the studies: Balaguer and Cantavella-Jord´a (2002) for Spain; Gunduz and Hatemi-J.(2005) for Turkey; Katircioglu (2009) for Cyprus; Dritsakis (2004) for Greece; Oh (2005) for South Korea; Durbarry (2004) for Mauritis; Kim et al. (2006) and Lee and Chang (2008) for Taiwan; Mishra et al. (2011) for India; Brida et al. (2008) for Mexico, Kreishan (2010)for Jordan. Some studies with panel data along with the conclusion about existence of relationship between tourism and economic growth, state about different directions of the causality and conditionality of this relationship on other factors

Dritsakis (2004) using data for the period 1980 to 2007 for 7 Mediterranean Countries found solid evidence of panel cointegration relations between tourism development and GDP. His study also indicated that tourist receipts have a higher impact on GDP in all Mediterranean countries.

An innovative study by Lee and Chang (2008) applied the new heterogeneous panel cointegration technique in order to reinvestigate the long-run co-movements and the causal relationships between tourism development and economic growth for OECD and non-OECD countries covering the period 1990 to 2002. They found that tourism development has a greater impact on GDP in non-OECD countries than in the OECD countries. Moreover, in the long run, the panel causality test showed a unidirectional causality relationship from tourism development to economic growth in OECD countries, bidirectional relationship in non-OECD countries, but only weak relationship in Asia.

The researchers Sequeira and Nunes (2008) used panel data methods to examine the relationship between tourism and economic growth. They used annual data for a group of countries for the period 1980 to 2002. Their results show that tourism is a positive determinant of economic growth both in a broad sample of countries and in a sample of poor countries. Contrary to the previous contributions of other researchers tourism is not more relevant in small countries than in a general sample.

The study of Katircioglu (2009) is employing the bounds test for cointegration and Granger causality tests in order to investigate the long-run equilibrium relationship between tourism, trade and real income growth, and the direction of causality among themselves for Cyprus. He used annual data covering the period from 1960 to 2005. The results of the study reveal that tourism, trade and real income growth are cointegrated; thus, a long-run equilibrium relationship can be inferred between these three variables. Moreover, the Granger causality test results suggest that real income growth stimulates growth in international trade (both exports and imports) and international tourist arrivals to the island.

In a recent study Narayan et al (2010) used panel data for the four Pacific Island countries to test the long-run relationship between real GDP and real tourism exports. They found support for panel cointegration and the results suggest that a 1% increase in tourism exports increases GDP by 0.72% in the long run and by 0.24% in the short run. Antonakakis et al. (2013) in his paper investigated the relationship between tourism and economic growth using VAR model for ten selected European countries. The results highlighted the Tourism-Led Growth hypothesis for Italy and Netherlands; the Economic Driven Tourism Growth hypothesis in Cyprus, Germany, Greece; the Bidirectional Hypothesis in the cases of Austria, Portugal, Spain and the Neutrality Hypothesis was identified for Sweden and UK.

Pavlic et al. (2014) has tried to investigate the causal relationship between tourism and economic growth applying the Johansen Maximum Likelihood cointegration technique and VECM in Croatia. The results indicates that causal relationship between openness of the economy and GDP for the short run, as well as between reel effective exchange rate and GDP but also shows that there are no short-run causality between tourist arrivals and GDP.

Finally, Aslan (2014) examined 12 Mediterranean countries with Granger causality and found bidirectional relation between tourism and growth for Portugal, Israel and Turkey and unidirectional relation from growth to tourism for Spain and Italy, Tunisia, Cyprus, Croatia, Bulgaria and Greece.

3. Model Specification and Data

In our empirical analysis, we use the new heterogeneous panel cointegration technique. We use the following model specification to investigate the long-run relationship between real GDP per capita (GDP), real receipts per capita (TOUR), Inflation in average consumer prices (CPI) and real effective exchange rate (EXR) for 8 Mediterranean countries namely with alphabetical order Cyprus, France, Greece, Italy, Morocco, Spain, Tunisia and Turkey. The basic regression model is:

$$Y_{it} = \beta_{0i} + \beta_{1i}X_{1it} + \beta_{2i}X_{2it} + \beta_{3i}X_{3it} + u_{it} \quad (1)$$

where X_{it} represents the explanatory variables, t shows time and i shows country.

Following Oh (2005) and Lee and Chang (2008) the model includes real GDP, a tourism development variable, real exchange rate and inflation, which can be written as:

$$GDP_{it} = \beta_{0i} + \beta_{1i}TOUR_{1it} + \beta_{2i}EXR_{2it} + \beta_{3i}CPI_{3it} + e_{it} \quad (2)$$

Where:

GDP_{it} = is the real GDP per capita

$TOUR_{it}$ = is the real receipts per capita

EXR_{it} = is the nominal effective exchange rate (the exchange rate measures the effective prices of goods and services in competing tourism destination countries Dritsakis, 2004)

CPI_{it} = inflation in average consumer prices and

e_{it} = the error term

All the data used in the analysis are annual time series during the period 1980 – 2014. The data were obtained from World Development Indicator (WDI) and World Tourism Organization. All the variables are expressed in logarithmic forms so that elasticities can be determined.

4. Econometric Methodology

For the estimation of Equation (2) we use panel unit root tests and panel cointegration. With the usage of panel data we can exploit both and the time series dimensions of the data and the cross-sectional dimensions. If all or any from the variables we use are non-stationary, the panel data estimations will be spurious such as the effect of the defence expenditures on the growth (Dunne, Perlo - Freeman & Soydan, 2004). With panel cointegration and panel unit root tests we avoid the problem of spurious regressions because of the examining the order of integration of the variables and if we find them non-stationary then we test them if they are cointegrated. If we find that they are cointegrated then a linear combination of the non-stationary variable will be stationary.

In this paper first, we examine whether our variables contain a panel unit root. Then if they contain a panel unit root we examine whether we have a panel cointegration.

4.1 Panel Data Unit Root Tests

From the many and different panel data unit root tests we have chosen the tests proposed by Breitung (2000), Im, Pesaran & Shin (2003) (IPS), Hadri (2000), Levin et al. (2002) (LLC), PP Fisher Chi-Square test (PP-Fisher) (Maddala and Wu, 1999) and finally ADF - Fisher Chi-square test (ADF - Fisher). In the Hadri test the null hypothesis is that the variable is stationary.

- In the LLC test we have a panel-based ADF test that restricts parameters γ_i by keeping them identical across cross-sectional regions. The above are expressed in the following equation :

$$\Delta y_{it} = c_i + \gamma_i y_{i,t-1} + \sum_{j=1}^{k} c_j \Delta y_{i,t-j} + e_{i,t} \tag{3}$$

Where t=1,…, T time periods and i=1,…, N members of the panel. The null hypothesis for the LLC test is that $\gamma_1 = \gamma_2 = \gamma = 0$ for all i, and the alternative is that $\gamma_1 = \gamma_2 = \gamma \prec 0$ for all i. The test is based on the statistics $t_\gamma = \dfrac{\widehat{\gamma}}{s.e(\widehat{\gamma})}$

The test assumes homogeneity in the dynamic of the AR coefficients for all panel members. Also the LLC test allows the introduction of lags of the dependent variables to allow for serial correlation in the errors.

- The IPS test (Im et al., 2003) allows individual effects, time trends, and common time effects for heterogeneous panels. The test is based on individual Augmented Dickey-Fuller (ADF) regressions and allows heterogeneity between units in a dynamic panel framework. The model they proposed is:

$$\Delta Y_{it} = \rho_i y_{it-1} + \sum_{k=1}^{pt} \gamma_{ik} \Delta Y_{it-k} + Z_{it}\delta + \varepsilon_{i,t} \tag{4}$$

where p, is the number of lags for correlation free residuals

Z_{it} shows the vector of determinist variables in the model including fixed effects or individual trends

Y_{it} lies for each variable under consideration in the model and

δ is the corresponding vector of the coefficients. The null hypothesis is that each series in the panel contains a unit root, i.e., H_0 : ρi = 0 for all i and the alternative hypothesis allows for some (but not all) of the individual series to have unit roots, i.e.,

$$H_1 = \begin{cases} \rho_i \prec 0 \;\; for \quad i = 1,2,......, N_1 \\ \rho_i = 0 \;\; for \quad i = N_1 + 1,..., N \end{cases} \tag{5}$$

N is the number of cross sections

The IPS proposed and the use of a t-bar statistic which is defined as the average of the individual ADF statistics as:

$$\bar{t} = \frac{1}{N}\sum_{i=1}^{N} t_{\rho_i}$$

Where t_{pi} is the t-statistic for testing the null hypothesis.

If we accept the null hypothesis then all series in the panel are nonstationary. If we accept the alternative then a fraction of the series in the panel is assumed to be stationary.

- Breitung (2000) finds that the LLC and IPS tests suffer from a dramatic loss of power if individual-specific trends are included. So he proposed a t–ratio type test statistic for testing a panel unit root. Through Monte Carlo experiments and numerical analysis, he claimed that his test has 'nice' power properties within a certain local neighbourhood of unity. The difference between the Levin, Lin & Chu (2002) test and the Breitung (2000) test is that the LLC test requires bias correction factors to correct for crosssectionally heterogeneous variances to allow for efficient pooled OLS estimation, while the Breitung (2000) test achieves the same result by appropriate variable transformations (Dunne, Perlo-Freeman & Soydan, 2004).
- Hadri (2000) derives a residual-based Lagrange multiplier (LM) test where the null hypothesis is that there is no unit root in any of the series in the panel against the alternative of a unit root in the panel. This is a generalization of the KPSS test from time series to panel data. It is based on OLS residuals of Yit on a constant, or on a constant and a trend (Baltagi, 2005).
- Maddala and Wu (1999) propose a panel unit root test, which has roots in the work of Fisher (1932). Their test basically considers the p–values of the individual country test statistic for a unit root, and combines it to a panel statistic. The test is chi-squared distributed with two degrees of freedom and has the following form:

$$\lambda = -2 \sum log_e \pi_i$$

Where π_i is the p value of the test statistic in unit i

The most important advantage of this test is that it can be used regardless of whether the null is one of integration or stationarity. The p-value is computed from the ADF test and the PP test. This test is attractive and many researchers are using it because it's simple and robust to the choice of lag length and sample size.

4.2 Fixed and Random Effects Models

In the literacy there are two approaches to estimate panel data, namely fixed effects model and random effects model (Baltagi, 2008; Baldemir and Keskiner, 2004). Let us now look at these models, in short.

4.2.1 Fixed effects model.

The general formulation assumption of panel data model is the differences among units can be caught in differences in constant term (Greene, 1997). So, the panel data are estimated with the help of dummy variables (Pazarlioglu, 2001). For example, when the panel data model is:

$$Y_{it} = \beta_{1it} + \beta_{2it}X_{2it} + \beta_{3it}X_{2it} + e_{it} \quad (6)$$

Where I= 1,…,N and t= 1,…,T $\beta_{1it}= \beta_1$; $\beta_{2it} = \beta_2$; $\beta_{3i}t = \beta_3$ is assumed. Only the parameter is changing and no time dimension is used in determining the constant term. This term is constant for all times. When we are considering both cross-section and time, the model becomes:

$$Y_i = X_1\beta_{1j} + X_N\beta_S + e_t \quad (7)$$

In equation (7), different constants exist for different units.

4.2.2 Random Effects Model

According to the literacy if the units are taken randomly or the unit is taken from its population as representative, the random effects model is more useful.

In this model the units are randomly selected, so the differences in units are random. Random effects are result of sampling period. In equation (6), β_{1i} is the random variable and it can be modeled as:

$$\beta_{1i} = \bar{\beta}_1 + \mu_i \quad (8)$$

When the parameter transformation model in equation (8) is put in model number 6:

$$Y_{it} = \left(\bar{\beta}_1 + \mu_i\right) + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it} \quad (9a)$$

$$Y_{it} = \bar{\beta}_1 + \sum_{k=2}^{K} \beta_k X_{kit} + (e_{it} + \mu_i) \quad (9b)$$

equations are reached. The component in 9b is the general type of error component model. e_{it} shows all errors and μ_i shows specific errors. They both form error component term. The second one, namely the specific errors connecting to one unit, shows the differences of the unit and the changes in units according to constant time (Baldemir and Keskiner, 2004). Which one to be selected among fixed effect and random effect models we will use Hausman test which is explained in next section.

4.3 Hausman Specification Test

The most commonly used specification test is Hausman specification test, which tests the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator. If they are insignificant, then it is safe to use random effects model. If we get a significant P-value, however, we should use fixed effects model. The Hausman test is a kind of Wald χ^2 test with k-1 degrees of freedom (where k = number of regressors) on the difference matrix between the variance-covariance of the LSDV with that of the Random Effects model. The Wald statistic is:

$$W = (\beta_{FE} - \beta_{RE})'(V_{FE} - V_{RE})^{-1}\,(\beta_{FE} - \beta_{RE})$$

4.4 Panel Cointegration Tests

When we are differencing the data we are preventing the spurious regression problem. From the other hand it may also cause the loss of the long term information that the series may contain. With panel cointegration analysis “even though the series themselves may contain stochastic trends (i.e. non-stationary), they will nevertheless move together over time and the difference between them will be stable (i.e. stationary)", (Harris, 1995:22) we can examine the data to find the long-term information the series may include.

In this paper three types of panel cointegration are implemented. The first test developed by Pedroni (1999, 2004), and the residual based panel cointegration test by Kao (1999).

- Pedroni(1999) developed seven test statistics to test the null of no cointegration between two variables.; The seven component tests are: the panel v-test, panel rho-test, panel PP-test, panel ADF-test, group rho-test, group PP-test, and group ADF-test.

  - Panel v statistic

$$T^2 N^{3/2} Z_{\hat{V}N,T} \equiv T^2 N^{3/2} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^2 \right)^{-1}$$

  - The panel rho-test statistic

$$T\sqrt{N} Z_{\hat{\rho}N,T} \equiv T\sqrt{N} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^2 \right)^{-1} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i \right)$$

  - The panel t statistic (Non-parametric)

$$Z_{tN,T} \equiv \left(\tilde{\sigma}_{N,T}^2 \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^2 \right)^{-1/2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i \right)$$

  - The panel t statistic (parametric)

$$Z_{tN,T}^* \equiv \left(\tilde{S}_{N,T}^{*2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^{*2} \right)^{-1/2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \left(\hat{e}_{i,t-1}^* \Delta \hat{e}_{i,t}^* \right)$$

  - The group ρ statistic (parametric)

$$TN^{-1/2} \tilde{Z}_{\tilde{\rho}N,T-1} \equiv TN^{-1/2} \sum_{i=1}^{N} \left(\sum_{t=1}^{T} \hat{e}_{i,t-1}^2 \right)^{-1} \sum_{t=1}^{T} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i \right)$$

  - The group t statistic (non-parametric)

$$N^{-1/2} \tilde{Z}_{tN,T-1} \equiv N^{-1/2} \sum_{i=1}^{N} \left(\hat{\sigma}_i^2 \sum_{t=1}^{T} \hat{e}_{i,t-1}^2 \right)^{-1/2} \sum_{t=1}^{T} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i \right)$$

  - The group t statistic (parametric)

$$N^{-1/2} \tilde{Z}_{tN,T}^* \equiv N^{-1/2} \sum_{i=1}^{N} \left(\sum_{t=1}^{T} \hat{S}_i^{*2} \hat{e}_{i,t-1}^{*2} \right)^{-1/2} \sum_{t=1}^{T} \left(\hat{e}_{i,t-1}^* \Delta \hat{e}_{i,t}^* \right)$$

- Kao (1999)

  Kao test use a similar approach as the Pedroni tests. The differences are that Kao specifies a cross-section specific intercepts and homogeneous coefficients on the first stage regressors. Also the null hypothesis is that the residuals, are non-stationary (i.e., there is no cointegration).The alternative hypothesis, the residuals are stationary (i.e., there is a cointegrating relationship among the variables).

Table 1: Panel Unit Roots

VARIABLES	LLC		BREITUNG	IPS		ADF		PP		HADRI	
	PANEL LEVEL SERIES										
	τ_μ	τ_τ	τ_τ	τ_μ	τ_τ	τ_μ	τ_τ	τ_μ	τ_τ	τ_μ	τ_τ
LGDP	0.061 (0.525)	0.585 (0.721)	-2.076** (0.019)	2.355 (0.991)	-0.315 (0.377)	3.55 (0.998)	12.5 (0.566)	1.265 (0.99)	10.990 (0.687)	9.167*** (0.000)	2.907*** (0.001)
LTOUR	-1.729* (0.042)	0.576 (0.718)	0.789 (0.785)	1.922 (0.973)	0.912 (0.820)	11.624 (0.637)	8.574 (0.857)	12.38 (0.114)	11.846 (0.619)	10.438*** (0.000)	5.872*** (0.000)
LEXR	-2.120** (0.020)	1.315 (0.905)	1.547 (0.940)	-1.463* (0.072)	0.622 (0.733)	19.735 (0.139)	11.264 (0.665)	16.124 (0.306)	6.465 (0.953)	9.678*** (0.000)	3.929*** (0.000)
LCPI	-4.037*** (0.000)	-0.942 (0.173)	2.404 (0.992)	-1.294 (0.101)	0.378 (0.647)	18.245 (0.196)	14.156 (0.438)	15.88 (0.090)	15.225 (0.112)	10.255*** (0.000)	5.372*** (0.000)

VARIABLES	LLC		BREITUNG	IPS		ADF		PP		HADRI	
	PANEL FIRST DIFFERENCE SERIES										
	τ_μ	τ_τ	τ_τ	τ_μ	τ_τ	τ_μ	τ_τ	τ_μ	τ_τ	τ_μ	τ_τ
DLGDP	-3.524*** (0.000)	-1.855** (0.032)	-3.477*** (0.000)	-4.024*** (0.000)	-2.191** (0.014)	40.696*** (0.000)	24.645** (0.038)	70.919*** (0.000)	49.9*** (0.000)	-0.747 (0.773)	1.609* (0.055)
DLTOUR	-2.230** (0.013)	-3.478*** (0.000)	-3.691*** (0.000)	-7.827*** (0.000)	-7.701*** (0.000)	80.586*** (0.000)	73.729*** (0.000)	88.029*** (0.000)	77.819*** (0.000)	1.207 (0.114)	-0.257 (0.601)
DLEXR	-2.925*** (0.002)	-1.823** (0.034)	-3.294*** (0.001)	-4.752*** (0.000)	-3.531*** (0.000)	49.363*** (0.000)	35.259*** (0.001)	48.793*** (0.000)	34.389*** (0.002)	1.075 (0.141)	0.487 (0.313)
DLCPI	-6.055*** (0.000)	-2.602*** (0.005)	-7.665*** (0.000)	-4.162*** (0.000)	-2.317*** (0.010)	48.098*** (0.000)	36.695*** (0.001)	46.094*** (0.000)	31.389*** (0.005)	1.324* (0.093)	0.909 (0.182)

Notes:
1. Panel data include all countries
2. All variables are in natural logarithms.
3. The numbers in parentheses denote p-values
4. ***, **, * denotes rejection of null hypothesis at the 1%, 5% and 10% level of significance, respectively.
5. The null hypothesis of these tests is that the panel series has a unit root (non-stationary series) except with the Hadri test which has no unit root in panel series.

4.5 Long-run relationship (FMOLS)

Finally, after finding cointegration in the third step, we estimate the coefficients on GDP by using panel fully modified ordinary least squares method (FMOLS) proposed by Pedroni (2000).

It is very important to mention that the panel cointegration tests do not provide us the estimation of the long run relationship. The fundamental economic principles involves, that the cointegration vector must be common for the members of the panel. Also, a very critical issue is the hypothesis testing. In fact, the nuisance parameters determine the asymptotic distribution of the OLS estimator. That problem seems to be much more serious in panel environment because the bias can accumulate with the size of the cross section. Hence, in order to overcome these deficits, efficient methods like fully modified (FMOLS) are required. The technique of FMOLS can control for potential endogeneity of the regressors and serial correlation, so asymptotically unbiased estimations of the long run can be obtained.

5. Empirical Findings

5.1 Panel Unit Root Tests

As preconditions in this work, panel unit root tests and panel cointegration tests, are implemented as individual intercept and intercept and trend for all data. The results of the panel unit root tests, which are generally used in the empirical work with the non-stationary panel variables, are in table 1.

All the unit root tests indicate that the panel level series of the four variables are non stationary, but the four panel first-difference series are stationary. Thus, we use the first-difference of the variables panel to study the cointegration tests.

5.2 Fixed versus Random Effects Model

Estimation results of equation (2) using both fixed and random effects models are presented in Table 2 and Table 3, respectively. As can be seen from the tables, both specifications yield similar results. F - test under fixed effects model shows that there are statistically significant individual effects. Thus, the pooled OLS regression is not appropriate.

Table 2: Fixed effects model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEXR	0.477361	0.117315	4.069048	0.0001
LCPI	-0.175993	0.032324	-5.444658	0.0000
LTOUR	1.294309	0.055052	23.51085	0.0000
C	-0.760686	0.684847	-1.110739	0.2682
F-statistic	652.3320	Prob (F-statistic)		0.000000

Table 3: Random effects model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEXR	0.154981	0.112650	1.375772	0.1706
LCPI	-0.068479	0.030432	-2.250226	0.0257
LTOUR	1.054746	0.049398	21.35182	0.0000
C	1.820187	0.740151	2.459210	0.0149
F-statistic	207.5341	Prob(F-statistic)		0.000000

Table 4 represents the estimations of the Hausman test in order to decide which model is the most appropriate (FEM or REM).

Table 4: Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	97.849352	3	0.0000

In the light of Hausman test, we accept the null hypothesis that the coefficients estimated by the efficient random effects estimator are the same as the ones estimated by the consistent fixed effects estimator in this study. In other words the Hausman test provides evidence for the use of fixed effects.

5.3 Panel Cointegration Tests

Once the order of stationarity has been defined, our next step is to apply panel cointegration methodology in order to determine whether there is a long-run relationship to control for in the econometric specification. We are using the Pedroni's and Kao tests. Table 5 shows the results of panel cointegration tests. It also compares the cases with and without trend.

Table 5: Panel Cointegration Tests

	Constant without trend	**Constant and trend**
Pedroni Residual Cointegration Tests		
Panel Statistics		
Panel v – Statistic	-1.108 (0.866)	-2.544 (0.994)
Panel rho – Statistic	-2.201 (0.014)**	-1.173 (0.120)
Panel pp – Statistic	-5.158 (0.000) ***	-5.067 (0.000)***
Panel ADF – Statistic	-1.187 (0.000) ***	-5.102 (0.000)***
Group Statistics		
Group rho – Statistic	-1.099 (0.136)	-0.659 (0.255)
Group pp – Statistic	-5.410 (0.000)***	-1.062 (0.144)
Group ADF – Statistic	-5.366 (0.000)***	-1.872 (0.031)**
Kao Residual Cointegration Tests		

ADF– Statistic	-6.119 (0.000) ***	

Notes:
1. The test statistics are distributed as N(0,1).
2. The variance ratio test (Panel v – Statistic) is right sided, while the others are left-sided.
3. ***, ** and * denotes significance respective at the 1%, 5% and 10% level.
4. The critical value is -1,64 except v-statistic which has 1,64

As is evident from table 5, the null hypothesis (in which there is no cointegration relationship) is rejected in almost all statistics applied in our model. As the existence of the cointegration relationship was supported for the model we estimated the function using the fully modified ordinary least squares (FMOLS) method developed by Pedroni (2000).

5.4 Panel FMOLS Estimates

Given that our variables are cointegrated, the next step is to estimate the long - run relationship. Therefore, we will estimate the long-run relationship using the FMOLS approach suggested by Pedroni (2000, 2001). The estimator of FMOLS not only generates consistent estimates of the β parameters in small samples, but it controls for the likely endogeneity of the regressors and serial correlation.

Table 6: Panel FMOLS Results

Country	**Variables**		
	LTOUR	**LEXR**	**LCPI**
Cyprus	2.438 (0.000)***	0.865 (0.103)*	-2.047 (0.016)**
France	1.012 (0.000)***	3.668 (0.000)***	0.254 (0.478)
Greece	0.834 (0.001)***	0.936 (0.011)***	-0.159 (0.034)**
Italy	1.459 (0.052)**	1.866 (0.001)***	-0.226 (0.032)**
Morocco	1.003 (0.001)***	0.832 (0.006)***	-0.156 (0.015)**
Spain	0.737 (0.004)***	2.371 (0.000)***	0.030 (0.218)
Tunisia	0.819 (0.003)***	-0.083 (0.795)	-0.100 (0.736)
Turkey	0.849 (0.248)	0.080 (0.856)	-0.027 (0.846)
PANEL	1.283 (0.000)***	0.442 (0.014)***	-0.153 (0.002)***

Notes:
1. The numbers in parentheses denote p-values
2. ***, **, * denotes rejection of null hypothesis at the 1%, 5% and 10% level of significance, respectively.

Table 6 represents the results for the FMLOS estimates. As the table demonstrates, the sign condition of the economic growth function holds. The tourism development elasticity is significantly estimated at a positive value of 1.283 for the panel of seven countries, while the exchange rate of elasticity is significantly estimated at a positive value of 0.442 for the panel of the seven countries. From the other hand the inflation elasticity has a negative value of -0.153.

According the above FMOLS estimations β1 parameter is statistically significant for all the examined Mediterranean countries except Turkey. The biggest value is for the country of Cyprus (2.438), for three countries is larger than one (France, Italy and Morocco) while for the other three countries (Greece, Spain and Tunisia) is smaller than one. That means that tourist receipts are affecting the GDP in each country.

The β2 parameter is positive and statistically significant for the six of the eight countries (except Turkey and Tunisia). That means that the real exchange rate is affecting also GDP. Moreover, for the three of the six countries β2 parameter is above one while for the other three is near to one. Therefore, the real effective exchange rate has the common scale impact on GDP. So we can conclude that with a higher exchange rate, the destination country has an increased number of foreign exchange tourism receipts. Also, the tourism industry which is provided either by the recipient or host country is more competitive in terms of price, which means that it can make a more positive contribution to GDP of the country.

Finally the β3 parameter is statistically significant and negative for the four of the examined Mediterranean countries. That means that the inflation rate is affecting also GDP but in a negative way. For the other four countries (France, Spain, Tunisia and Turkey) the inflation rate is not statistically significant.

6. Conclusion and Policy Implications

According to data and announcements of the United Nations World Tourism Organization the real receipts per capita from 1995 to 2014 are increasing not only in global but also and regional levels.

The increasing of the receipts is fundamental for the economic significance of tourism and is implying an income increase of the tourist from the countries they come from. As the disposable income of the tourists is increasing, they will spend more, and they will be more likely to look for destinations with higher tourist products. On the other hand, the increasing of euro against U.S. dollar rate is showing that fewer and fewer people and countries will rely exclusively on the U.S. dollar for their international business transactions, including tourism. That may have serious implications for the longer – term exchange rate of the currency. The increasing will possible lead and to fewer tourists and subsequently and fewer revenues for the Mediterranean Euro-zone countries. Consequently, Mediterranean countries such as France, Spain, Italy, Greece and Cyprus (countries from the Euro-area zone) may face a substantial cost disadvantage against the other countries of the Mediterranean region such as Morocco, Tunisia and Turkey. In order to face this challenge, the Euro-area Mediterranean countries must invest heavily on improving their service quality and to eliminate this cost disadvantage.

This study is attempting not only to analyze the relationship between economic growth, tourism, exchange rate and inflation but also if the regional effects should be considered as a product of geographical groups. Therefore we are applying a heterogeneous panel co-integration technique to reinvestigate the long-run co-movements. It is more preferable to compare the any relations will be found between tourism and economic activity within groups of countries rather than in an individual country. Our data are covering the period 1995-2014 for eight Mediterranean countries. The results indicate that the tourist receipts are affecting the economic growth in each country. Furthermore, it is worth mentioning, that generally the real exchange rate shows an increase in our sample economies and has significant effects on the economic growth rates. Finally the inflation rate is affecting also GDP but in a negative way.

In the light of our results, all the governments should commit to help the tourism industry to expand as much as possible, and at the same time, they should focus on long - run policies. The current financial crisis which is affecting all the countries globally has significant effects for tourism in both the short and the long run. The results of the study are crucial and important to the policy makers. The relationship found between tourism and economic growth shows that it is essential to promote tourism in Mediterranean countries in order to maintain growth. All the decisions that will be taken by the government may have significant impacts on the variables. Therefore, it is necessary for the governments of the examined Mediterranean countries to keep developing the tourism industry. Moreover the tourist policy makers should take initiatives for the “green development”. That could be done by destroying the old polluting machinery and to substitute them with new ones and also to replace the energy-consuming tourism structures with new eco - friendly facilities.

Meanwhile the Mediterranean countries should establish a direction of tourism towards a cleaner, greener, and more sustainable growth. Except from the economic benefits that will be raised the role of tourism for social development, international understanding, and well-being of destination communities can also be noted. Finally the buying exchange rate should be established by the decision makers in such a way in order to enhance tourism which is an important ingredient for economic development.

A lesson that we should have learn from the recessions of the recent history is that during these periods of economic downturn, collective strategies and peripheral collaboration are very helpful. So all the Mediterranean countries should collaborate and have common strategy in order to overcome the recession periods. The Mediterranean Sea should be served as a region and to promote peace and partnership among the countries surrounding it. If they will be able to achieve that every country in the region will be benefited.

7. Discussion and future proposals

In the literacy there are a lot of empirical studies that are focusing on the investigation of the relationship between tourism development and economic growth. All these studies are giving different results for different countries in the same subject or region, different time periods within the same country and different methodologies in different regions. The results of our study are consistent with many of them such as Dritsakis (2004), Sequeira and Nunes (2008), Pavlic et al. (2014), suggesting positive impact of tourism on growth and exchange rate but negative impact of the inflation rates on GDP.

Future research should focus on testing for additional explanatory variables and their relations. Also the future research should also focus on the decomposition of the tourism receipts, by market of origin. This fact would further enhance the understanding of which country of origin contributes to a long-run relation with economic growth. Finally one other aspect for future research is to disaggregate the tourism receipts into cash and non-cash payments.

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