TOURISM DEVELOPMENT AND ECONOMIC GROWTH IN
SEVEN MEDITERRANEAN COUNTRIES: A PANEL DATA
APPROACH

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This paper examines the relationship between economic growth and tourism development in seven Mediterranean countries. The purpose of this paper is to investigate empirically the long-run relationship between economic growth and tourism development in a multivariate model with tourism real receipts per capita, the number of international tourist arrivals per capita; real effective exchange rate, and real GDP per capita using the new heterogeneous panel cointegration technique. In pursuit of this objective, the tests of panel cointegration 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 - 2007.

**Keywords:** Tourism Development, Economic Growth, Mediterranean countries, Panel Data, FMOLS
INTRODUCTION

Tourism activities are considered to be one of the sources of economic growth in the world. Tourist spending has served as an alternative form of exports, contributing to an ameliorated balance of payments through foreign exchange earning in many countries. A balanced and harmonic growth of tourist economy in relation to the other sectors of economic activity and mainly the most basic sectors, such as agricultural and industrial economy, ensures with the types of nutrition and the capital equipment the production of tourist products, which are necessary for the satisfaction of tourist needs or wishes. As a result, the development of tourism has generally been considered a positive contribution to economic growth.

Taking into account that a large proportion of tourist expenditures are spent on the consumption of non-traded goods and services in the host country, there exist factors, which can have either a positive role or an unfavourable impact on economic growth. Non-traded goods and services are not exportable in the traditional sense, because their price is not determined in the international market, but in the local market (Balaguer and Cantavella-Jorda 2002).

On the past several decades, international tourism has been gaining importance in many economies of the world. It continued to grow throughout the world, in line with vigorous world economic expansion especially in countries with high tourist outflows. The number of tourists worldwide went up in 2008 to almost 914 million. By region, Europe remained the leading tourist destination in world with 492 million visitors, posting a market share of 53.8% in 2008 (World Bank 2010).

We consider the study of seven Mediterranean countries namely Spain, France, Italy, Greece, Turkey, Cyprus, and Tunisia. However, their economies have evolved very differently during last century. Alternative governance structures and
economic policies have produced very different paths for the economic growth of the regions. Given that seven Mediterranean countries possess similar tourist features but different paths of economic growth, it seems an interesting pursuit to analyse the relationship between tourism and economic growth within the framework suggested above.

The purpose of this paper is to empirically re-examine the long-run co-movements between economic growth and tourism development in a multivariate model with tourism real receipts per capita, the number of international tourist arrivals per capita, real effective exchange rate i.e., a proxy variable for external competitiveness and real GDP per capita (GDP) using the new heterogeneous panel cointegration technique. We affirm the first two variables measure the tourism benefits, whereas the exchange rate measures the effective prices of goods and services in competing tourism destination countries (Dritsakis, 2004).

The main aim of the current paper is two fold. First, the paper aims as investigating whether tourism benefits have different impact on destination countries under consideration, due to specific characteristic. The second objective is to consider “regional effects” as being determined by geographical groups in seven Mediterranean countries.

The paper is organised as follows. Section 2 reviews various studies related to tourism development. 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.
LITERATURE REVIEW

There has been a number of empirical studies focus on investigating the relationship between tourism development and economic growth. Many studies about the relationships between tourism development and economic give different results for different countries in the same subject or region, different time periods within the same country and different methodologies in different regions. However, such country analysis is invaluable for those countries when they design their specific strategy. However, when many countries (as Mediterranean countries) have the same aim for tourism development, called for further in-depth studies, suggesting researchers might like to compare inter-country relationships between economic development and tourism activity. Responding for a better understanding of the relationship between groups of countries and their interactions, it is recommended that the panel data approach be taken (Lee and Chang, 2008).

There are cross-sectional studies, panel data-based studies and time-series studies. Among the main issues examined has been cointegration between tourism and economic growth and Granger causality in order to examine the direction of causation. In this section, we provide a brief overview of the selected studies related to our study.

Balaguer and Cantavella-Jorda (2002) examine the role of tourism’s long-run economic development in Spain. The hypothesis of tourism-led economic growth was confirmed by applying cointegration and causality tests. Eugenio-Martin et al. (2004) investigate the relationship between tourism and economic growth for Latin American countries from 1985 until 1998. They have underscored the fact that the tourism sector is conducive to economic growth in medium- and low-income countries. With this in mind, dissimilarities in the degree of economic development in various regions
are considered to determine if tourism development and the growth relationship differs for developed and developing economies. Consistently, the empirical results by Kim et al. (2006) also indicated a long-run equilibrium relationship and a bidirectional causality between the two factors in examining the relationship between tourism expansion and economic development in Taiwan using a Granger causality test and cointegration approach.

However, in South Korea, the tourism-led economic growth hypothesis did not hold according to the research of Oh (2005) who investigated the causal relations between tourism growth and economic expansion for the Korean economy by using Engle and Granger two-stage approach and a bivariate vector autoregression (VAR) model. The results of this research indicated that there is no long-run equilibrium relation between two series, while a one-way causal relationship of economic-driven tourism growth.

Furthermore, Lee and Chien (2008) empirically investigated the co-momements and the causal relationships among real GDP, tourism development variables and the real exchange rate using unit root tests and cointegration tests. The results suggested that the causality between tourism and economic growth is bidirectional. Furthermore the study found the structural breakpoints which is corresponding to critical economic, political or tourist incidents.

Lee and Chang (2008) used the new heterogeneous panel cointegration technique panel to examine the long-run relationship between tourism development and economic growth for OECD and non-OECD countries, including those countries in Asia, Latin America and sub-Saharan Africa for the period between 1990 and 2002. They find that tourism has a greater impact on GDP in non-OECD countries than in OECD countries.
Narayan et al (2010) use panel data for the four Pacific Island countries to test the long-run relationship between real GDP and real tourism exports. They find 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.

In addition, over recent years, there have been some studies models focused on examining the relationship between tourism development and economic growth in various countries, such as Spanish and Italian regions (Cortez-Jimenez 2008), Nicaragua (Croes and Vanegas, 2008), 17 Latin American (Fayissa et al, 2009) East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, North America, South Asia, and Sub-Saharan Africa (Chia-Lin Chang et al, 2009).

In conclusion, it seems that there is a clear empirical consensus in the literature that tourism promotes economic growth. More specifically, it seems that the role of tourism in economic growth is larger for smaller developing countries than for the developed countries.

National economies around the world, during last years, have been seriously affected by the financial crisis that broke in the summer of 2007, and experienced an unprecedented decline in real GDP. According to International Monetary Fund (IMF) all countries economies have a serious collapse on real GDP by 7.5%. Due to this situation, credit easing towards enterprises, continued provision of ample liquidity and public guarantees have been minimized in fear of a continuing failure. In this context, the financial activity and credit growth have decreased for tourist enterprises.

Commodity prices have rebounded ahead to expectations that market dynamics are shifting from significant oversupply to more balanced conditions. The economic recession has also led to a downturn in the world labor market. The IMF
stressed that the unemployment rate is likely to peak at more than 10% of the labor force. (Papatheodorou et al, 2010).

From a regional perspective, it seems that the macroeconomic indicators point to a small rate of deterioration, including the labour market. In Europe, consumer and business indicators are recovering but, data on real activity show signs of stabilization. This macroeconomic environment as sketched by international economy will also give the necessary background information to understand how tourism industries can react to these challenging times. The economists tend to rely on quantitative forecasts based on econometric modelling, which is often the most popular tool to project future scenarios for tourism demand and tourism development (Turner and Witt, 2001, Witt et al, 2003, Wong et al, 2006, Song, et al, 2009, Smeral, 2010).

The purpose of this paper is to empirically examine the long-run relationship between economic growth and tourism development in a multivariate model. The new heterogeneous panel cointegration technique is applied and tourism real receipts per capita (TOUR1), the number of international tourist arrivals per capita (TOUR2), real effective exchange rate (EXR) and real GDP per capita (GDP) are used as variables.

**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 (TOUR1) or the number of international tourist arrivals per capita (TOUR2), and real effective exchange rate (EXR) for 7 Mediterranean countries.

\[ Y_{it} = \beta_{0i} + \beta_{1i}X_{1it} + \beta_{2i}X_{2it} + u_{it} \]  

(1)
Following Lee and Chang (2008) the model includes real GDP, a tourism development variable, and real exchange rate, which can be written as:

\[ GDP_{it} = \beta_{0i} + \beta_{1i} \text{TOUR}_{it} + \beta_{2i} \text{EXR}_{it} + e_{it} \]  \hspace{1cm} (2)

where

- \( GDP_{it} \) is the real GDP per capita
- \( \text{TOUR}_{it} \) is real receipts per capita
- \( \text{TOUR}_{2it} \) is the number of international tourist arrivals per capita.
- \( \text{EXR}_{it} \) is the nominal effective exchange rate (the exchange rate measures the effective prices of goods and services in competing tourism destination countries Dritsakis, 2004).
- \( e_{it} \) is the error term.

All the data used are annual observations of the variables, and the estimation period is 1980–2007. Annual data for all variables are obtained from the World Development Indicators (WDI, 2009), World Tourism Organization (2008), and World Bank (2008). The unit is expressed in US dollars. All the variables are expressed in natural logarithms so that elasticities can also be determined.

**METHODOLOGY AND EMPIRICAL FINDINGS**

Cointegration analysis is the appropriate technique to investigate the long-run relationship between real GDP per capita, real receipts per capita (number of international tourist arrivals per capita), and real effective exchange rate. Before applying the cointegration technique, the first step is to investigate the stationarity properties of the variables. The power of standard time-series unit root test may be
quit low given the sample sizes and time spans. Therefore, we adopt the recently
developed panel unit root tests.

The second step is to test for the existence of a long-run relationship between
real GDP per capita, real receipts per capita (number of international tourist arrivals
per capita), and real effective exchange rate. The Pedroni, Kao, and Johansen panel
cointegration tests, which takes into account heterogeneity by using specific
parameters, is applied in this study to examine the long-run relationship. Finally, on
finding cointegration in the third step, we estimate the coefficients on real GDP per
capita by using panel fully modified ordinary least squares method (FMOLS).

Therefore, instead of a time-series or traditional fixed or random effect panel
data approach, cointegration tests for a panel of countries are used. Theoretically,
panel cointegration tests have many advantages over the traditional panel models:

Firstly, cointegration tests for panel data are more powerful and allow an
increase in the amount of information coming from the cross-sections. This means
they have the ability to estimate long-run relationships that link the variables in the
cointegration tests and estimates, which permits heterogeneity among individual
members of the panel and heterogeneity in both the long-run cointegration vectors and
the dynamics (Baltagi, 2008).

Second, most previous studies that have used the traditional panel model had a
disadvantage in the sense that they cannot account for much of the dynamics
regardless of whether they are time averaged (Sarantis and Stewart, 2001).

Hence, by using the panel fully modified OLS (hereafter FMOLS) that deals
with the problem of endogeneity of the regressors and after allowing for a country-
specific effect, the results provide evidence supporting a long-run steadystate
relationship between GDP, tourism development and exchange rate.
Unit root tests are traditionally used to test for the order of integration of the variables or to verify their stationarity. The Augmented Dickey-Fuller (ADF) (1979, 1981) technique, as well as other traditional tests, test for unit root in time series. In case there are both cross sections and panel data, we use modern techniques for testing unit root such as those of Breitung (2000), Levin, et al. (2002) (LLC), Im, et al. (2003) W-test (IPS), ADF-Fisher Chi-square test (ADF-Fisher), PP Fisher Chi-Square test (PP-Fisher) (Maddala and Wu, 1999) and Hadri (2000).

From the above tests the most popular are those of Levin, et al. (2002) (LLC) test that assumes homogeneity in the dynamics of the autoregressive (AR) coefficients for all panel members. The test of Im, et al. (2003) (IPS) test is more general than the LLC test because heterogeneity is allowed in dynamic panel and intertemporal data. Both tests are based on the ADF test.

We first test the stationarity of the four panel series (GDP, TOUR1, TOUR2 and EXR). Recent econometric literature has proposed several methods for testing the presence of a unit root under panel data setting. Since different panel data unit root tests may yield different testing results, we have chosen Breitung (2000), Levin et al. (2002) (LLC), Im et al. (2003) W-test (IPS), ADF-Fisher Chi-square test (ADF-Fisher), PP Fisher Chi-Square test (PP-Fisher) (Maddala and Wu, 1999) and Hadri (2000) to perform the panel data unit root test and compare their results. In the Hadri the null is that the variable is stationary.

- Levin et al. (2002) have proposed a panel-based ADF test that restricts parameters $\gamma_i$ by keeping them identical across cross-sectional regions as represented in the following:
\[ \Delta y_{it} = c_i + \gamma_1 y_{i,t-1} + \sum_{j=1}^{k} c_j \Delta y_{i,t-j} + e_{it} \]

where

t = 1, \ldots, T \text{ time periods,} \\
and i = 1, \ldots, N \text{ members of the panel.} \\
LLC test the null hypothesis of \( \gamma_1 = \gamma_2 = \gamma = 0 \) for all i, \\
against the alternate \( \gamma_1 = \gamma_2 = \gamma < 0 \) for all i, with the test \\
based on the statistics \( t_{\bar{\gamma}} = \frac{\bar{\gamma}}{s.e(\bar{\gamma})} \)

Levin et al. test (LLC) assumes homogeneity in the dynamic of the autoregressive (AR) coefficients for all panel members. Specifically, LLC test assumes that each individual unit in the panel shares the same AR(1) coefficient, but allows for individual effect, time effects and eventually a time trend. Lags of the dependent variables may be introduced in the model to allow for serial correlation in the errors.

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

\[ \Delta Y_{i,t} = \rho_i Y_{i,t-1} + \sum_{k=1}^{p} \gamma_{ik} \Delta Y_{i,t-k} + Z_{it} \delta + \epsilon_{it} \]

where

\( Y_{i,t} \) stands for each variable under consideration in our model, \\
p is the number of lags for correlation free residuals
$Z_\omega$ indicates the vector of determinist variables in the model including any fixed effects or individual trends.

$\delta$ is the corresponding vector of coefficients.

The null and alternative hypotheses are defined as:

$$H_1 = \begin{cases} 
\rho_i = 0 & \text{for } i = 1, \ldots, N \\
\rho_i < 0 & \text{for } i = N+1, N+2, \ldots, N 
\end{cases}$$

where

$N$ is the number of cross-sections.

Im, et al. use separate unit root tests for the $N$ cross-sections units. IPS also propose the use of a group–mean t-bar statistic, where the statistics from each ADF test are averaged across the panel; again, adjustment factors are needed to translate the distribution of t-bar into a standard Normal variate under the null hypothesis. The average of individual ADF statistics and is defined as:

$$\bar{t} = \frac{1}{N} \sum_{i=1}^{N} (t_{pi})$$

where

$t_{pi}$ is the individual $t$–statistic for testing the null hypothesis.

Under the null hypothesis, all series in the panel are nonstationary processes; under the alternative, a fraction of the series in the panel are assumed to be stationary.

- Breitung (2000) proposed a $t$–ratio type test statistic for testing a panel unit root. Through numerical analysis, he claimed that his test has ‘nice’ power properties within a certain local neighborhood of unity. The Breitung test (2000) differs from the Levin et al. test in the following two points:
First, to generate the standardized process, the autoregressive component of the model is removed:

\[
\Delta Y_{it} = \frac{\Delta Y_{it} - \sum_{k=1}^{\infty} y_{ik} \Delta Y_{it-k}}{s_i}
\]

\[
\tilde{Y}_{it-1} = \frac{Y_{it-1} + \sum_{k=1}^{\infty} y_{ik} \Delta Y_{it-k}}{s_i}
\]

where

\(s_i\) are the estimated standard errors.

and second, the proxies are transformed and detrended:

\[
\Delta Y_{it} = \frac{(T-t)}{T-t+1} \left[ \Delta Y_{it} \frac{\Delta Y_{it+1} + \ldots + \Delta Y_{it+T}}{T-t} \right]
\]

\[
\Delta Y_{it-1} = Y_{it-1} - c_{it}
\]

where

\[
c_{it} = \begin{cases} 
0 & \text{if no intercept or trend} \\
Y_{it} & \text{with intercept no trend} \\
Y_{it} - (T^{-1}(t-1))Y_{it} & \text{with intercept and trend}
\end{cases}
\]

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:

\[
\lambda = -2 \sum_{i=1}^{N} \log_e \pi_i
\]

where,

\(\pi_i\) is the p-value of the test statistic in unit i.
An 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 are computed from the ADF test and the PP test. The simplicity of this test and its robustness to the choice of lag length and sample size make its use attractive. However, our experience with the Maddala and Wu test is somewhat less encouraging.

• Hadri (2000) argues differently, claiming that the null should be reversed so as to become the stationary hypothesis in order to have a test with stronger power. This is a generalization of the KPSS test from time series to panel data. The Kaddour Hadri test is based on the residuals from the individual OLS regressions from the following regression model:

\[ y_{it} = \pi_i + \theta_i t + \mu_{it} = \pi_i + \theta_i t + \sum_{s=1}^{i} u_{it} + \varepsilon_{it} \]

where

\[ \mu_{it} = \sum_{s=1}^{i} u_{it} + \varepsilon_{it} \]. The stationarity hypothesis is simply \( H_0 : \sigma_{it}^2 = 0 \) in which case

\[ \mu_{it} = \varepsilon_{it} \]

Given the residuals \( \hat{\mu} \) from the individual regressions, the LM statistic is:

\[
LM_1 = \frac{1}{N} \sum_{i=1}^{N} \frac{1}{T^2} \sum_{t=1}^{T} S_{it}^{1/2} \sigma_{it}^2, \quad 1 = \mu, T
\]

where \( S_{it}^{1/2} \) are the cumulative sum of the residuals

\[ S_{it} = \sum_{j=1}^{i} \tilde{\varepsilon}_{it}, \quad 1 = \mu, T \]

Hadri (2000) considers the standardised statistics:

\[
Z_{\mu} = \frac{\sqrt{N} (LM_{\mu} - \xi_{\mu})}{\xi_{\mu}} \Rightarrow N(0,1)
\]
and

\[ Z_\mu = \frac{\sqrt{N} (LM_\mu - \xi_\mu)}{\zeta_\mu} \Rightarrow N(0,1) \]

The mean and the variance of the random variable \( Z_\mu \) are \( \xi_\mu = 1/6 \) and \( \zeta_\mu^2 = 1/45 \), respectively. The mean and the variance of the random variable \( Z_\tau \) are \( \xi_\tau = 1/15 \) and \( \zeta_\tau^2 = 11/6300 \), respectively.

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 variables are expressed in natural logarithms so that elasticities can also be determined.

Table 1 show the panel unit root test results. All 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 four variables panel to study the cointegration tests.

Insert Table 1

Next, using these results, LGDP, LTOUR1 (or LTOUR2) and LEXR are tested for cointegration in order to determine whether there is a long-run relationship to control for in the econometric specification. The econometric terms of the equation are revised as which allows for cointegrating vectors of differing magnitudes between countries, as well as for country \( (\beta_{0it}) \).

\[ LGDP_{it} = \beta_{0it} + \beta_{1it} LTOUR1_{it} + \beta_{2it} LEXR_{it} + e_{it} \]

The above equation describes a cointegrated regression that allows for heterogeneity in the panel since heterogenous slope coefficients, fixed effects and individual specific deterministic trends are all permitted (Pedroni, 1999, 2004).
Finally, $\beta_0$, $\beta_1$, $\beta_2$ are the parameters of the model to be estimated, and $e_i$ is the residual.

**Panel Cointegration Tests**

Once the order of stationarity has been defined, our next step is to apply panel cointegration methodology. We perform panel cointegration tests for two models (LGDP, LTOUR1, LEXR) and (LGDP, LTOUR2, LEXR). Three types of panel cointegration tests were conducted. The first test developed by Pedroni (1999, 2004). The second text conducted is the residual based panel cointegration test developed by Kao (1999). The third panel cointegration test we apply is the Johansen-type panel cointegration test developed by Maddala and Wu (1999).

- **Pedroni (1999)**

He proposes several tests for cointegration that allow for heterogeneous slope coefficients across cross-sections. This consists of seven component tests: the panel $v$-test, panel rho-test, panel PP-test, panel ADF-test, group rho-test, group PP-test, and group ADF-test.

- **Kao (1999)**

Kao test follows the same approach as the Pedroni tests, but it specifies cross-section specific intercepts and homogeneous coefficients on the first stage regressors. In the null hypothesis, the residuals, are non-stationary (i.e., there is no cointegration). In the alternative hypothesis, the residuals are stationary (i.e., there is a cointegrating relationship among the variables).

- **Johansen-type Maddala and Wu (1999).**

As an alternative test for cointegration in panel data, Maddala and Wu used Fisher’s result to propose a method for combining test from individual cross-sections
to obtain a test statistic for the full panel. Two kinds of Johansen-type tests have been developed: the Fisher test from the trace test and the Fisher test from the maximum eigen-value test. In the Johansen-type panel cointegration test, we set the lag order as one.

Table 2 shows the results of panel cointegration tests for both models. It also compares the cases with and without trend. The case without trend is more interesting especially for the first model.

Insert Table 2

As is evident from table 2, the null hypothesis (in which there is no cointegration relationship) is rejected in all three hypotheses applied in model A. As the existence of the cointegration relationship was supported for model A we estimated the function using the fully modified ordinary least squares (FMOLS) method developed by Pedroni (2001).

Panel FMOLS Estimates

Given that our variables are cointegrated (model A), the next step is the estimation of the long-run relationship. The OLS estimator is a biased and inconsistent estimator when applied to cointegrated panels. Therefore, we estimate the long-run relationship using FMOLS approach suggested by Pedroni (2000, 2001). The FMOLS estimator 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.

Insert Table 3
Table 3 shows the results for the FMLOS estimates (model A). 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 1.235 for the panel of seven countries, while the exchange rate of elasticity is significantly estimated at a positive value of 0.077 for the panel of the seven countries.

On the basis of the above results, we find that the use of panel data for the seven Mediterranean countries, clearly supports a cointegration relationship for model A, and thus we can conclude that the existence of the economic growth function is statistically supported.

For the FMLOS estimations, $\beta_1$ parameter is statistically significant and larger than one, for all Mediterranean countries (except Turkey). This means that tourist receipts affects in a large scale the GDP for each country. Also, $\beta_2$ parameter is positive and statistically significant for all countries (except Turkey) which means that real exchange rate affects also GDP. Moreover, because for the four of the seven countries $\beta_2$ parameter is above one, this means that the real effective exchange rate has the common scale impact on GDP. Therefore, with a higher exchange rate, the destination country has an increased number of foreign exchange tourism receipts. Apart from this, the tourism industry provided by the recipient or host country is more competitive in terms of price, which means it makes a more positive contribution to GDP.

Moreover, if $\beta_2$ is close to 1, then it means the real effective exchange rate has the common scale impact on GDP. Therefore, with a higher exchange rate, the destination country has an increased number of foreign exchange tourism receipts. Aside from this, the tourism industry provided by the recipient or host country is more
competitive in terms of price, which means it makes a more positive contribution to GDP.

**CONCLUDING REMARKS**

According to the United Nations World Tourism Organization and International Monetary Fund, real per capita international tourism receipts from 1960 to 2007 increased in global and regional levels. This increase in receipts is very important for the economic significance of tourism. The increase of real per capita international tourism receipts also implies an income increase of the tourist from the countries they come from. As the income of tourists increase, they will spend more, and they are more likely to look for destinations with higher tourist products. On the other hand, the increase of euro against U.S. dollar shows that fewer people and countries will rely exclusively on the U.S. dollar for their international business transactions, including tourism. This may have important implications for the longer-term exchange rate of the currency. This increase will lead to fewer tourists and subsequently fewer revenues in the Mediterranean Euro-zone countries. Therefore, Mediterranean countries such as France, Spain, Italy, Greece and Cyprus (all part of the Euro-zone) may face a substantial cost disadvantage against other countries of the region such as Tunisia and Turkey. To face this challenge, Euro-Mediterranean countries will have to invest heavily on improving service quality.

While econometric models try to extrapolate future tourism behavior according to patterns exhibited in the past, it could be argued that in a changing world, the usefulness of models is rather limited. Crises periods are usually
characterised by changes in consumption plans which are adapted to new corporate models aiming to satisfy new and emerging demands.

This paper investigated not only whether tourism benefits have a different and more significant impact on the destination country in terms of economic development, but also whether regional effects should be considered a product of geographical groups. The paper differs from previous studies since it applies a new heterogeneous panel cointegration technique to reinvestigate the long-run comovements. With respect to globalization, it is preferable to compare the relations between tourism and economic activity with groups of countries rather than in an individual country. In other words, the regional effects are considered and determined within the scope of the model’s ability.

To conclude, there is solid evidence of the panel cointegration relations between tourism development and GDP in the case of seven Mediterranean countries under consideration. As for the FMLOS estimates, the parameters $\beta_1$ is significantly high (greater than one). This indicates that tourist receipts have a higher impact on GDP in all Mediterranean countries. 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.

In light of these results, all governments should commit to helping their tourism industry expand as much as possible, and at the same time, they should focus their attention on long-run policies. The current financial crisis is related to the greed of major banks, which did not hesitate to take great risks based on the excess market liquidity and eventually had significant effects for tourism in both the short and the long run. If the effects of economic crisis with respect to tourist revenues for 2009 and 2010 are still unknown, then one should note the following aspects:
1) In the short to medium term, it is almost certain that an important group of travelers will opt for a reduction in their travel expenditure. The international tourism statistics estimate 2011 to be the year of recovery in international level. From a regional point of view, and according to the various economic forecasts, Euro-zone will suffer mostly from the reduction of tourist arrivals and tourist revenues.

2) In the context of economic downturns, the prospects show a change in an international level. The global economy is beginning to emerge out of a significant recession, and recovery is not expected in the near future. Moreover, the economic recovery is expected to be asymmetric across world regions, which will have implications for tourism.

3) Major developing countries are recognized as important pillars of the world’s financial system. The countries such as China are requested to reduce their notable trade surpluses against the United States and other advanced economies. In this context, outbound tourism from developing countries may play an important role in restoring reciprocity and stability of world trade.

4) Tourist policy makers should take initiatives for the so-called “green development” by destroying the old polluting machinery and substituting them by new ones and also replacing energy-consuming tourism structures to new, eco-friendly facilities.

5) Since tourism is structurally intertwined with peace, this development should only have positively effects in the long run. Following this, it is also essential to note that intergovernmental bodies should promote tourism internationally as a force of social–cultural (re)construction and community well-being.

6) Meanwhile, a direction of tourism towards a cleaner, greener, and more sustainable growth should be established by all countries and especially Mediterranean countries. In addition to economic benefits, the role of tourism for social development,
international understanding, and well-being of destination communities is also highlighted.

7) During periods of economic downturn, collective strategies and peripheral collaboration between Mediterranean countries will be useful in order to overcome these periods. Mediterranean sea should serve as a region which promotes peace and partnership among the countries surrounding it.

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Table 1: Panel Unit Root Tests

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<td>LGDP</td>
<td>0.075 (0.530)</td>
<td>2.345 (0.990)</td>
<td>3.389 (0.998)</td>
<td>1.532 (1.000)</td>
<td>7.942*** (0.000)</td>
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<tr>
<td>Individual Effects</td>
<td>0.534 (0.703)</td>
<td>-2.294*** (0.011)</td>
<td>-0.713 (0.237)</td>
<td>14.837 (0.389)</td>
<td>14.279 (0.429)</td>
<td>2.199*** (0.013)</td>
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<td>LTOUR1</td>
<td>0.423 (0.664)</td>
<td>4.122 (1.000)</td>
<td>6.550 (0.950)</td>
<td>17.076 (0.252)</td>
<td>9.039*** (0.000)</td>
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<td>Individual Effects</td>
<td>0.541 (0.705)</td>
<td>-1.258 (0.104)</td>
<td>1.108 (0.866)</td>
<td>8.675 (0.851)</td>
<td>11.908 (0.613)</td>
<td>5.282*** (0.000)</td>
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<td>Individual Effects and</td>
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<td>Individual Effects</td>
<td>-1.907** (0.027)</td>
<td>1.300 (0.903)</td>
<td>11.091 (0.678)</td>
<td>16.306 (0.295)</td>
<td>8.425*** (0.000)</td>
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<td>Individual Effects and</td>
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<td>0.721 (0.764)</td>
<td>0.563 (0.713)</td>
<td>10.741 (0.706)</td>
<td>11.818 (0.528)</td>
<td>6.325*** (0.000)</td>
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<tr>
<td>LEXR</td>
<td>-2.133** (0.019)</td>
<td>-1.481* (0.069)</td>
<td>2.016 (0.125)</td>
<td>16.751 (0.269)</td>
<td>8.003*** (0.000)</td>
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<td>Individual Effects</td>
<td>0.960 (0.831)</td>
<td>1.084 (0.860)</td>
<td>0.261 (0.603)</td>
<td>12.553 (0.561)</td>
<td>7.419 (0.917)</td>
<td>4.292*** (0.000)</td>
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<td>IPS-W</td>
<td>ADF</td>
<td>PP</td>
<td>Hadri</td>
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<tr>
<td>LGDP</td>
<td>-3.940*** (0.000)</td>
<td>-4.854*** (0.000)</td>
<td>49.177*** (0.000)</td>
<td>86.75*** (0.000)</td>
<td>-1.05 (0.853)</td>
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<td>Individual Effects</td>
<td>-2.662*** (0.003)</td>
<td>-3.775*** (0.000)</td>
<td>-2.918*** (0.001)</td>
<td>30.46*** (0.006)</td>
<td>63.55*** (0.004)</td>
<td>0.901 (0.183)</td>
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<tr>
<td>LTOUR1</td>
<td>-1.012 (0.155)</td>
<td>-4.219*** (0.000)</td>
<td>42.39*** (0.001)</td>
<td>86.76*** (0.000)</td>
<td>1.270 (0.102)</td>
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<tr>
<td>Individual Effects</td>
<td>-0.397 (0.345)</td>
<td>-0.686 (0.246)</td>
<td>-3.217*** (0.000)</td>
<td>33.21*** (0.002)</td>
<td>71.95*** (0.000)</td>
<td>0.958 (0.169)</td>
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<td>Individual Effects and</td>
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<td>LTOUR2</td>
<td>-3.492*** (0.000)</td>
<td>-5.518*** (0.000)</td>
<td>57.76*** (0.000)</td>
<td>104.6*** (0.000)</td>
<td>4.419*** (0.000)</td>
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<tr>
<td>Individual Effects</td>
<td>-2.440*** (0.007)</td>
<td>-3.820*** (0.000)</td>
<td>-4.761*** (0.000)</td>
<td>47.83*** (0.000)</td>
<td>126.8*** (0.000)</td>
<td>3.447*** (0.000)</td>
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<td>Individual Effects and</td>
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### Table 2: Panel Cointegration Tests

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<tr>
<th></th>
<th>Model A (LTOUR1)</th>
<th>Model B (LTOUR2)</th>
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<tbody>
<tr>
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<td>Constant</td>
<td>Constant</td>
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<tr>
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<td>without trend</td>
<td>and trend</td>
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<tr>
<td>a) Pedroni Residual Cointegration Tests</td>
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<tr>
<td><strong>Panel Statistics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel v – Statistic</td>
<td>2.346 (0.025)**</td>
<td>0.256 (0.386)</td>
</tr>
<tr>
<td>Panel rho - Statistic</td>
<td>-1.588 (0.113)</td>
<td>-0.037(0.398)</td>
</tr>
<tr>
<td>Panel pp - Statistic</td>
<td>-2.509 (0.017)**</td>
<td>-1.487 (0.132)</td>
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<tr>
<td>Panel ADF – Statistic</td>
<td>-1.809 (0.077)*</td>
<td>-0.337(0.376)</td>
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<tr>
<td><strong>Group Statistics</strong></td>
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<tr>
<td>Group rho – Statistic</td>
<td>-0.168 (0.393)</td>
<td>1.031(0.234)</td>
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<tr>
<td>Group pp – Statistic</td>
<td>-1.803 (0.078)*</td>
<td>-0.869(0.273)</td>
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<tr>
<td>Group ADF – Statistic</td>
<td>-1.803 (0.078)*</td>
<td>-0.599(0.333)</td>
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<td>b) Kao Residual Cointegration Tests</td>
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<tr>
<td>ADF– Statistic</td>
<td>-4.016 (0.00)***</td>
<td>-3.30 (0.00)***</td>
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<tr>
<td>c) Johansen Fisher Panel Cointegration Tests</td>
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<tr>
<td>Fisher Statistic from the trace test</td>
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<tr>
<td>None</td>
<td>26.72 (0.020)**</td>
<td>15.66 (0.334)</td>
</tr>
<tr>
<td>At most 1</td>
<td>21.63 (0.086)*</td>
<td>9.312(0.810)</td>
</tr>
<tr>
<td>At most 2</td>
<td>18.41 (0.188)</td>
<td>5.565 (0.976)</td>
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<tr>
<td>Fisher Statistic from the maximum eigenvalue test</td>
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<tr>
<td>None</td>
<td>5.603 (0.338)</td>
<td>12.59 (0.561)</td>
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<tr>
<td>At most 1</td>
<td>18.90 (0.168)</td>
<td>10.40 (0.832)</td>
</tr>
<tr>
<td>At most 2</td>
<td>18.41 (0.188)</td>
<td>5.565 (0.976)</td>
</tr>
</tbody>
</table>

**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.
<table>
<thead>
<tr>
<th>Country</th>
<th>Explanatory Variables</th>
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<tbody>
<tr>
<td></td>
<td>LTOUR1</td>
<td>LEXR</td>
</tr>
<tr>
<td>France</td>
<td>1.191 (0.000)***</td>
<td>3.669 (0.000)***</td>
</tr>
<tr>
<td>Cyprus</td>
<td>1.158 (0.000)***</td>
<td>0.414 (0.190)</td>
</tr>
<tr>
<td>Greece</td>
<td>1.168 (0.000)***</td>
<td>1.367 (0.002)***</td>
</tr>
<tr>
<td>Italy</td>
<td>1.094 (0.000)***</td>
<td>1.839 (0.001)***</td>
</tr>
<tr>
<td>Spain</td>
<td>1.029 (0.000)***</td>
<td>2.319 (0.000)***</td>
</tr>
<tr>
<td>Tunisia</td>
<td>1.106 (0.000)***</td>
<td>0.834 (0.000)***</td>
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<tr>
<td>Turkey</td>
<td>0.924 (0.000)***</td>
<td>-0.129 (0.332)</td>
</tr>
<tr>
<td>Panel</td>
<td>1.235 (0.000)***</td>
<td>0.077 (0.082)*</td>
</tr>
</tbody>
</table>

**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.