# The relationship between tourism and economic growth in greece economy: a time series analysis

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## Summary

*In this study it's analyzed how and in what way the expenditures of foreign visitors who came to Greece between 1980 and 2013 affected economic growth for Greece. For this purpose Granger Causality Test was used, the results of unit root tests such as Augmented Dickey Fuller (ADF) and the Philips Perron (PP) were tested and because it's a time series analysis, unit root and co-integraion tests were applied. At this point lag coefficient was obtained using by Akaike Information Criteria (AIC). Using five different criteria, it was confirmed that the best suited lag period is 2. GDP and tourism data were obtained from the World Bank Statistical Data. The result showed that there was a strong unidirectional causality from the expenditures of foreign tourists who visited Greece to the growth of Greece at 1 % level of significance.*

## 1. Introduction

As accepted by World Travel and Tourism Council, tourism has been the most rapidly growing sector. Tourism shows that it is one of the most important sectors by providing employment to 255 million people and supporting 6 billion dollars, which is 9 % of the total revenue of the world (Chou, 2013: 226). Greece, a Mediterreanean country, reached 13 billion dollar revenue with 17 million foreign visitors annually (UNWTO, 2014: 8). Because tourism makes a great contribution to economy, it is considered as an important tool for both growth and development. On the other hand, tourism has crucial functions such as eliminating external deficit, obtaining finance, creating new employment opportunities and reducing unemployment rate (Yavuz, 2006: 162; Çoban ve Özcan. 2013:244).

Although tourism has some differences from country to country, socio- economic contribution for national economies can be classified as follows (Pao, 2004: 81; Akan ve Işık, 2009: 198);

- Balance of payments: can be seen as a main source of foreign capital inflows.
- Regional development: provides for spreading economic activities into the country.
- Variety of economics: makes a contribution to economy by affecting different areas.
- Income level: provides many people income opportunities.
- Job opportunities: provides employment especially for areas where unskilled labor force is available.
- Government revenues: assures funds for certain expenditures.

Tourism is an important sector for Greece, which has been struggling with economic crisis. According to Greek Tourism Business Association's data (SETE), it's expected that tourism revenues of Greece will reach 13 billion euros in 2015. Greece ranks at 17 in the world in tourism revenues gained. According to data of 2012, tourism's contribution to employment was 18.3 % of the total employment in Greece, and it's contribution to GDP is approximately 16.4 %. This data shows that tourism is one of the competitive sectors in global extent for Greek economy.

## 2. Literature study

In this part of the study previous studies about how the expenditure of foreign visitors affected economic growth were presented with a table. In literature the effect of tourism on economic growth was analyzed by using methods like Granger Causality Test, Toda-Yamamato, Error-Correction Model and Panel Data Analysis, and so

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the direction of this relationship between tourism and economic growth was determined. It was also shown that the direction between variables were unidirectional or bidirectional.

Despite tourism has a residual importance, the development of tourism sector related to economic growth hasn't been searched yet in economic literature. In the light of previous studies; if there is a relationship between tourism and economic growth, it affects both the economy and tourism positively.

**Table 1.** Literature Summary

| *Sample* | *Authors* | *Method* | *Period* | *Countries* | *Causality Relationship* |
|---|---|---|---|---|---|
| One Country | Dritsakis (2004) | Error Correction Model | 1960-2000 | Greece | Tourism ⇔ Growth |
| | Oh (2005) | Granger Causality Test | 1975-2001 | Korea | Growth ⇨ Tourism |
| | Özdemir and Öksüzler (2006) | Granger Causality Test | 1963-2003 | Turkey | Tourism ⇨ Growth |
| | Yavuz (2006) | Granger Causality Test | 1992-2004 | Turkey | None |
| | Vanegas et al. (2007) | Granger Causality Test | 1980-2005 | Nikaragua | Tourism ⇨ Growth |
| | Kızılgöl and Erbaykal (2008) | Toda- Yamamato Causality Test | 1992-2006 | Turkey | Growth ⇨ Tourism |
| | Akan and Işık (2009) | Granger Causality Test Johansen Cointegration Test | 1970-2007 | Turkey | Tourism ⇨ Growth |
| | Brida et al. (2010) | Granger Causality Test | 1980-2006 | İtaly | Tourism ⇨ Growth |
| | Kapiki (2011) | Field Research | 2010 | Greece | - |
| | Polat and Günay (2012) | Error Correction Model | 1969-2009 | Turkey | Tourism ⇨ Growth |
| | Çoban and Özcan (2013) | Johansen Cointegration Method | 1963-2010 | Turkey | |
| More Than One Country | Gökovalı and Bahar (2006) | Panel Data Analysis | 1987-2002 | Mediterreanean Countries | Tourism ⇨ Growth |
| | Holzner (2011) | Panel Data Analysis | 1970-2007 | 134 countries | Tourism ⇨ Growth |
| | Chou (2013) | Panel Data Analysis | 1988-2011 | 10 Transition Countries | Causality in 7 countries |

Some of the previous studies show that tourism affects economic growth unidirectionally. Özdemir and Öksüzler (2006), explained that tourism affected economic growth in Turkey between 1963 and 2003 by using Granger Causality Test. Similiarly Brida et al. (2010), in their study in İtaly's Trentino Alto-Adige Region proved that tourism affected economic growth with Granger Causality Test. In a study which error-correction model was applied, Polat and Günay (2012), concluded that tourism affected the economic growth in Turkey between 1969-2009 unidirectionally.

There are also some views which rejects that tourism causes economic growth in the literature. Oh (2005), analyzed the relationship between tourism and economic growth in Korea by using Engle and Granger and bivariete VAR Approach. As a result of the study it's revealed that there wasn't a causality between tourism revenues and economic growth. Contrary to other studies, it's claimed that tourism was a reason of economic growth in this study. It's clearly understood that tourism had no impact on Korean economy. Similiarly, Kızılgöl and Erbaykal (2008), argued that economic growth had an impact on tourism in Turkey between 1992 and 2006, by using Toda Yamamato Causality Test, therefore they claimed that tourism was the result of economic growth.

Dritsakis (2004), analyzed the impact of tourism on Greek economic growth in the long run using Johansen Cointegration and ECM tests with 1960-2000 data. As a result of the study it's claimed that there was a bidirectional relationship between international tourism and economic growth in the long run. For another

example about Greek tourism, Kapiki (2011) studied the impact of economic crisis on tourism and hospitality industry. As a result of his survey study, due to the financial crisis in Greece, profits of hotels in Greece has lowered and therefore operating costs such as electricity and wages has increased. Despite the crisis, number of accomodation in 5-star hotels has decreased only about 1.7 % in 2009-2010 when compared with the before-crisis period.

When it comes to multiple country applications, Chou (2013), used panal data analysis on 10 transition countries, and claimed that tourism didn't affect economic growth only in 3 transition countries (Bulgaria, Romania and Slovenia). Tourism was one of the main reasons of economic growth in other 7 countries, according to the results of the study. Gökovalı and Bahar (2006), concluded that tourism was a triggering factor of economic growth for Mediterranean countries between 1987 and 2002, as a result of panel data analysis. Holzner (2011), who analyzed the Dutch Disease Effect[17] on countries which were dependent upon tourism, concluded that tourism had positive impact on countries' output levels and Dutch Disease couldn't jeopardize in countries which were dependent upon tourism in the long run, according to his panel data analysis.

## 3. Econometric method and empirical results

In this study, we investigate the interaction between variables, which are Economic Growth of Greece and a variable of foreign visitor's expenditure by employing Granger Causality Test. The study is based upon time series data between the years 1980 to 2013. On the grounds that the time series data has been used in this study, stationary and cointegration tests were implemented. At this point, the lag criterion was obtained by using 'Akaike Information Criteria' (AIC).

In this paper, variables of Economic Growth and Expenditure of Foreign Visitors were inclusive of the periods of 1980 to 2013. We procured the data of Economic Growth of Greece and Tourism from The World Bank. To analyze the study, we made use of E –Views 8 econometric software.

**Table 2.** Results of ADF and PP Unit Root Test

| | **ADF UNIT ROOT TEST** | | | **PHİLİP PERRON** | | |
|---|---|---|---|---|---|---|
| Variables | Constant adf t statistics | Constant and trend adf t statistics | Without constant and trend adf t statistics | Constant pp t statistics | Constant and trend pp t statistics | Without constant and trend pp t statistics |
| lngdp | -1.411638 | -2.367683 | 1.283650 | -0.897125 | -1.903325 | 1.698096 |
| lntourism | -0.329243 | -2.429080 | 1.852193 | -0.224590 | -2.571546 | 1.883251 |
| dlngdp | -3.452813** | -3.499312* | -3.048711*** | -3.406145** | -3.271036* | -3.016161*** |
| dlntourism | -4.884152*** | -4.806298*** | -4.313786*** | -4.816250*** | -4.719211*** | -4.324275*** |

* statistically significant at 0.10 significance level
** statistically significant at 0.05 significance level
*** statistically significant at 0.01 significance level

In this analysis, economic growth variable and expenditures of foreign visitors were indicated "GDP", and "TOURISM", respectively. ADF and PP Unit Root Test Results was shown as constant, constant and trend, and without constant and trend at Table-2. For both two variables, unit root test results in their levels showed that variables were not stationary, in other words these series contained unit root.The non-stationary series were tested again by taking their first difference in order to make them stationary. In this respect, both of the series were again subjected to the stationary test by taking the difference. TOURISM as series which were taken difference was stationary at 1% significance level after ADF and PP statistics tests which are constant, constant and trend, and non-constant and non-trend were employed. In addition, GDP was statistically significant at 5 % level in constant, at 10 % level in constant and trend, and at 1 % level in non-constant and non-trend ADF and PP tests.

[17] Dutch Disease; can explain as a decrease in production as a result of a country change their production factors to a new resource, which provides a sudden and high wealth level. For the first time in history it occured in Holland in 1960s, due to rich natural gas resources. That's why it's called *''Dutch Disease''*.

**Table 3.** Determining Lag Length Upon VAR Model

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|---|---|---|---|---|---|
| 0 | -26.60317 | NA | 0.026447 | 2.043083 | 2.138241 | 2.072174 |
| 1 | 42.59717 | 123.5720 | 0.000251 | -2.614083 | -2.328611 | -2.526812 |
| 2 | **56.60962** | **23.02046*** | **0.000124*** | **-3.329259*** | **-2.853471*** | **-3.183806*** |
| 3 | 57.34024 | 1.095929 | 0.000158 | -3.095731 | -2.429629 | -2.892097 |
| 4 | 57.89870 | 0.757904 | 0.000208 | -2.849907 | -1.993490 | -2.588092 |
| 5 | 65.25967 | 8.938320 | 0.000171 | -3.089976 | -2.043244 | -2.769980 |

In the first difference of the series which are at stationary state must have the proper lag length for future analysis. In Table-3, LR (Likelihood), FPE (Final Prediction Error), AIC (Akaike Information Criterion), SC (Schwarz Information Criterion), HQ (Hannan- Quinn Information Criterion) were investigate to find the most proper lag length. According to this, we estimated 2 ( as a value ) which is the most appropriate lag length. Therefore, the estimated value "2" will be used as a lag length in the analysis.

**Table 4.** Engle-Granger Cointegration Test Results

| Cointegration Equation | Lag Length | ADF Statistics | McKinnon Criteria Value | |
|---|---|---|---|---|
| | | | 1 % | 5 % |
| Gdp=f (tourism) | 2 | -3.648962 | -3.661661 | -2.960411 |
| Tourism=f(gdp) | 2 | -3. 311773 | -3.661661 | -2.960411 |

In Table 4, we estimated cointegration between GDP and TOURISM by employing Engle-Granger Cointegration Method. According to Engle-Granger Cointegration test results, null hyphothesis can't be rejected, which states a long-term relationship between variables.

**Table 5.** Granger Causality Test Results

| Number of lags | The Direction of Causality | Wald Test | Probability Value |
|---|---|---|---|
| 5 | TOURISM ⟶ GDP | 22.16014 | 0.0005*** |
| 5 | GDP ⟶ TOURISM | 2.142391 | 0.8291 |

***significance level at 0.01

Error correction model test results indicate that there is a causality to GDP from TOURISM. That is to state that TOURISM variable in the equation which GDP is the dependent variable was statistically significant at the 1% level shows that the cause of the GDP. This situation explained that there was a strong, long and unidirectional causality relationship from the expenditures of foreign tourists in Greece to GDP of Greece.

## 4. Conclusion

Tourism is one of the most important sectors for Greece. Tourism is both the engine of economic growth and effective for other economic areas. Tourism provides 255 million people employment opportunities and 6 trillion dollar to world's total revenue. Tourism affects Greek economy in an important way with it's annual 17 million foreign tourists. On the other hand tourism has many important functions such as creating new job opportunities, reducing the unemployment rate, providing funds to country, decreasing the balance of payments deficit.

In this study, the relationship between tourism and economic growth was tested with time series analysis for Greek economy, which has been coping with crisis and considering tourism as a solution to escape from the negative effects of it. Greek economy has been facing with problems such as budget deficit, high public debt, low competitive capacity in the market and underinvestment by foreign investors. For these reasons, global economic crisis which occured firstly in international financial market and involved real economy, has been affecting Greece severely. Negative situation in other sectors increased the importance of rise and fall in the number of foreign visitors. So this paper will lead similiar economies like Greece in terms of the increasing importance of tourism.

## 5. References


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